



TRANSMITTAL

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Murray, Utah 84107

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TO: Melissa Harrison

CONTRACT NO.: NFG FM100 Project

FROM: Theresa Albanese

PURCHASE ORDER NO: N/A

DATE: 20200203

TASK: Permit Application Approval

SUBJECT: NFG FM100 Project Incompleteness Notification

- | | | | |
|--|---|--|--|
| <input checked="" type="checkbox"/> For Review | <input type="checkbox"/> Please Comment | <input type="checkbox"/> For Approval | <input type="checkbox"/> For Signature |
| <input type="checkbox"/> Urgent | <input type="checkbox"/> As Requested | <input type="checkbox"/> Approved as Noted | <input type="checkbox"/> Please Reply |

MESSAGE:

Dear Ms. Harrison,

Enclosed you will find one CD containing the response to the SWQC permit incompleteness notification date 12/24/2019 for National Fuel Gas Supply Corporations' FM100 Project. Please let me know if you have any questions or if there is anything else I can do to assist you.

Regards,

Douglas Gibbons

CC: PROJECT FILE

This document outlines National Fuel Gas Supply Corporation's response to the Pennsylvania Department of Environmental Protection Incompleteness Notification letter issued for the FM100 Project on December 24, 2019. Each comment has been reproduced and a corresponding answer provided. Revised versions of these documents are being provided in digital format as part of this response.

Comment 1

Please revise the Environmental Assessment (EA) to be consistent with and correspond to any and all changes made to the 105 Joint Permit Application for this Project

Response:

To be consistent with the materials submitted with the incompleteness response to the 105 Joint Permit Application, copies of the PA Wetland Condition Level 2 Rapid Assessment forms and the PA Riverine Condition Level 2 Rapid Assessment forms are included with this submission. All rapid assessment forms are included in this submission as Attachment A.

Attachment A

Riverine Assessment Form 1

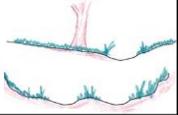
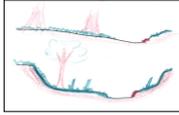
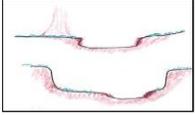
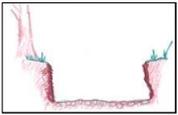
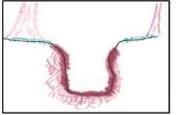
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		600 ft
Latitude	41.788263	Longitude	-78.270619	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information		Notes: 150-200 feet away from railroad and road. Surrounded by a pond, connecting intermittent stream, PSS and PEM wetlands. Average width of approximately 30 ft, average depth of 2 ft. Temporary impacts to 129.25 ft.		
T. Malecki, M. Groomer		Allegheny Portage Creek				

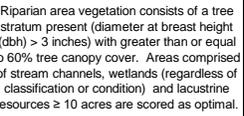
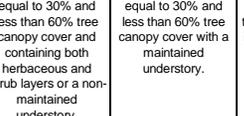
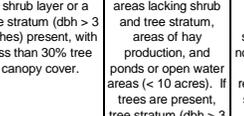
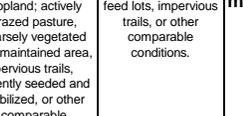
1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated

CI = (Score)/20	CI
SCORE	18
	0.90

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)									<p>Comments: Tree canopy approximately 40% on the right floodplain and approximately 30% on the left floodplain. Dense herbaceous vegetation with a shrub layer on both sides of the floodplain. Crosses maintained pipeline ROW where most vegetation has been cleared.</p>											
	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>		<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>		<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>													
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	0%	10%	40%	25%	25%			0%
Right Side	Score:	0	14	12	9	4	0	0.47	Side Sub-Index = SUM(%Areas*Scores)/20
	Total Sub-score:	0.00	1.40	4.80	2.25	1.00	0.00		
	Condition Category								
Left Side	% Riparian Area:	0%	10%	30%	35%	25%	0%	0.46	CI = (Left Side CI + Right Side CI)/2
	Score:	0	14	12	9	4	0		
	Total Sub-score:	0.00	1.40	3.60	3.15	1.00	0.00		
								0.47	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Both sides of floodplain include a portion of maintained pipeline ROW.							
		Optimal					Suboptimal			Marginal			Poor								
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low		High		Low		High		Low		High		Low						
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20		
Right Side	% Riparian Area:	0%		10%		40%		25%		25%		0%	
	Score:	0		14		12		9		4		0	
	Total Sub-score:	0.00		1.40		4.80		2.25		1.00		0.00	
									0.47				
Left Side	% Riparian Area:	0%		10%		30%		35%		25%		0%	
	Score:	0		14		12		9		4		0	
	Total Sub-score:	0.00		1.40		3.60		3.15		1.00		0.00	
									0.46		CI = (Left Side CI + Right Side CI)/2		CI
											0.47		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
		Optimal					Suboptimal			Marginal			Poor											
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.														
		High					Low			High			Low											
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	18

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:										
		Negligible					Minor			Moderate			Severe											
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
		High					Low			High			Low											
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	18

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5 **0.73**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

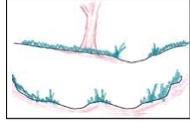
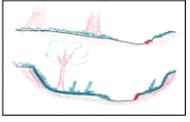
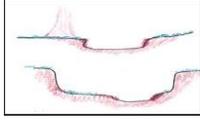
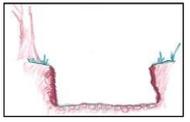
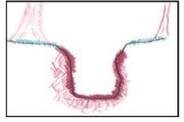
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		635 ft
Latitude	41.795826	Longitude	-78.260145	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information			Notes: Perennial stream with average width of approximately 120 ft, average depth of 3 ft. Temporary impacts to 169.61 ft.	
J. Miner, M. Groomer		Allegheny River				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

		Condition Category																			
		Optimal			Suboptimal			Marginal			Poor			Severe							
	Channel / Floodplain																				
<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain a few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>			<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	18
	0.90

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

		Condition Category																			
		Optimal			Suboptimal			Marginal			Poor										
	Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>			<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>			<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>			<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>			
SCORE			20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

		Condition Category						Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	20%	25%	25%	20%	10%	0%	0.49		
	Score:	14	12	9	7	4	0			
	Total Sub-score:	2.80	3.00	2.25	1.40	0.40	0.00			
		Condition Category								CI = (Left Side CI + Right Side CI)/2
Left Side	% Riparian Area:	20%	25%	25%	20%	10%	0%	0.49		
	Score:	14	12	9	7	4	0			
	Total Sub-score:	2.80	3.00	2.25	1.40	0.40	0.00			0.49

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category										Comments:										
Optimal		Suboptimal			Marginal			Poor												
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.		High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
			High			Low			High			Low			High			Low		
			SCORE		20 19 18 17 16		15 14 13 12 11			10 9 8 7 6			5 4 3		2 1					

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20			
Right Side	% Riparian Area:	15%		15%		20%		25%				25%	
	Score:	14		12		9		7		4		0	
	Total Sub-score:	2.10		1.80		1.80		1.75		1.00		0.00	
0.42													
Left Side	% Riparian Area:	20%		20%		20%		15%		25%		0%	
	Score:	14		12		9		7		4		0	
	Total Sub-score:	2.80		2.40		1.80		1.05		1.00		0.00	
0.45													
										CI = (Left Side CI + Right Side CI)/2		CI	
										0.44			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category										Comments:			
Optimal		Suboptimal			Marginal			Poor					
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				
	High		Low			High			Low				
	SCORE		20 19 18 17 16		15 14 13 12 11			10 9 8 7 6		5 4 3 2 1			
										CI = (Score)/20		CI	
										SCORE 18		0.90	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category										Comments:					
Negligible		Minor			Moderate			Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.		Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	
			High			Low			High			Low			
			SCORE		20 19 18 17 16		15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		
										CI = (Score)/20		CI			
										SCORE 18		0.90			

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

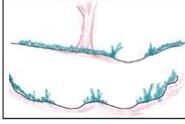
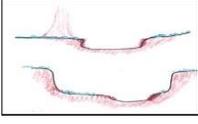
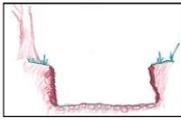
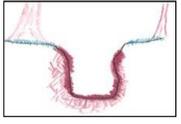
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		476 ft
Latitude	41.795777	Longitude	FGM Level 1 Channel Classification		B	
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW. Average width of approximately 15 ft, average depth of 1 ft. Temporary impacts to 16.15 ft.	
J. Miner, M. Groomer		Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

		Condition Category											
		Optimal		Suboptimal			Marginal			Poor		Severe	
Channel / Floodplain													
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) mid-channel bars and transverse bars are rare and if present, they are not connected to the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain a few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>			
SCORE	20 19 18 17	16 15 14 13			12 11 10 9			8 7 6 5		4 3 2 1			

Comments:		CI = (Score)/20	CI
		SCORE	13 0.65

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

		Condition Category										Comments:				
		Optimal		Suboptimal			Marginal			Poor						
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>			<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>			<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>		<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>	
	SCORE	20 19 18 17 16	15 14 13 12 11			10 9 8 7 6			5 4 3 2 1							

1. Identify Condition Category areas along the floodplain using the descriptors above.									
2. Estimate the % area within each condition category.									
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.								Ensure the sum of the % Riparian Area Blocks equal 100	
		Condition Category				Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20	
Right Side	% Riparian Area:	10%	15%	40%	15%	20%	0%		
	Score:	14	12	9	7	4	0		
	Total Sub-score:	1.40	1.80	3.60	1.05	0.80	0.00	0.43	
		Condition Category				Side Sub-Index		CI = (Left Side CI + Right Side CI)/2	
Left Side	% Riparian Area:	10%	15%	40%	15%	20%	0%		
	Score:	14	12	9	7	4	0		
	Total Sub-score:	1.40	1.80	3.60	1.05	0.80	0.00	0.43	
								CI	
								0.43	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category										Comments:								
Optimal					Suboptimal			Marginal			Poor							
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						SCORE					High			Low		High		Low

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
% Riparian Area:									
Right Side	10%							0.39	
	Score:								
	Total Sub-score:								
Left Side	10%							0.37	CI = (Left Side CI + Right Side CI)/2
	Score:								
	Total Sub-score:								

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category										Comments:			
Optimal					Suboptimal			Marginal			Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.		Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		
	SCORE					High			Low		High		Low

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category										Comments:							
Negligible			Minor			Moderate		Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.																
												High			Low		
SCORE										High		Low		High		Low	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

0.53

Riverine Assessment Form 1

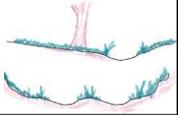
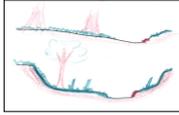
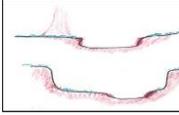
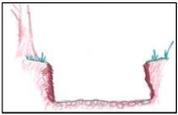
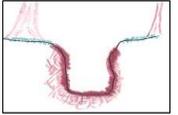
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		87 ft
Latitude	41.80863	Longitude	-78.22252	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 8 ft, average depth of 0.5 ft. Temporary impacts to 10 ft.		
J. Miner, M. Groomer		Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal			Marginal				Poor										
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
			<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>				<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>		<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	10%	20%	20%	20%	20%	10%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.80	0.20				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.40	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	10%	20%	20%	20%	20%	10%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.80	0.20	0.40			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:															
		Optimal				Suboptimal				Marginal					Poor														
Riparian ZOI		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20								
		% Riparian Area:							0.34										
		Score:																	
Right Side	Condition Category																		
	% Riparian Area:	10%		10%		20%		20%		20%									
	Score:	14		12		9		7		4									
Total Sub-score:		1.40		1.20		1.80		1.40		0.80		0.20							
Left Side	Condition Category																		
	% Riparian Area:	10%		10%		15%		20%		20%		15%		0.32		CI = (Left Side CI + Right Side CI)/2		CI	
	Score:	14		12		9		7		4									
Total Sub-score:	1.40		1.20		1.35		1.40		0.80		0.30		0.33						

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal				Suboptimal				Marginal						Poor							
Instream Habitat/ Available Cover		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.						Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.							
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:											
		Negligible				Minor				Moderate						Severe									
Channel Alteration		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		13		0.65	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI
RCI = (Sum of all CI's)/5	0.38

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

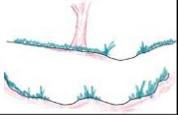
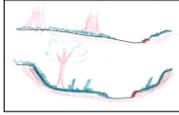
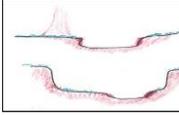
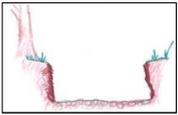
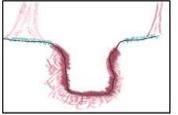
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/10/17	Designated: Existing:		650 ft
Latitude	41.733276	Longitude	-78.443685	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that runs through PSS and PEM wetlands. Average width of approximately 6 ft, average depth of 0.5 ft. Temporary impacts to 7 ft.		
J. Miner, M. Groomer		Donley Fork				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	12
	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
Right Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.46	
	Score:	14	12	9	7	4	0		
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00		
Left Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.46	
	Score:	14	12	9	7	4	0		
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00		
								CI = (Left Side CI + Right Side CI)/2	CI
									0.46

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

								Ensure the sums of % Riparian ZOI Blocks equal 100																	
Right Side	Condition Category																		Side Sub-Index						
	% Riparian Area:		20%				20%				20%				20%				0%		0.46	Side Sub-Index = SUM(%Areas*Scores)/20			
	Score:		14				12				9				7				4				0		
	Total Sub-score:		2.80				2.40				1.80				1.40				0.80				0.00		
Left Side	Condition Category																		Side Sub-Index						
	% Riparian Area:		20%				20%				20%				20%				0%		0.46	CI = (Left Side CI + Right Side CI)/2	CI 0.46		
	Score:		14				12				9				7				4					0	
	Total Sub-score:		2.80				2.40				1.80				1.40				0.80					0.00	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal						Poor																															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																					
		CI = (Score)/20		CI																																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		11	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Crosses maintained ROW																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		CI = (Score)/20		CI																																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		15	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

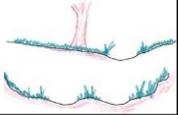
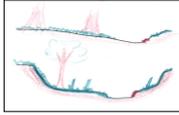
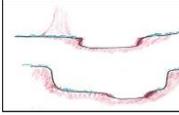
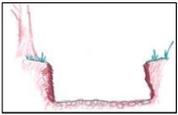
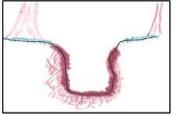
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/06/17	Designated: Existing:		1330 ft
Latitude	41.753903	Longitude	-78.394116	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that runs through PSS and PEM wetlands. Average width of approximately 90 ft, average depth of 2 ft. Temporary impacts to 205.16 ft.		
J. Miner, M. Groomer		Potato Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	17
	0.85

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:	20%	20%	20%	20%	20%	0%			Side Sub-Index
	Score:	14	12	9	7	4	0			0.46
Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	Side Sub-Index = SUM(%Areas*Scores)/20			
	Condition Category									
	% Riparian Area:	20%	20%	20%	20%	20%	0%			Side Sub-Index
	Score:	14	12	9	7	4	0			0.46
Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	0.46	CI = (Left Side CI + Right Side CI)/2	CI	
								0.46	0.46	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:							
		Optimal				Suboptimal				Marginal					Poor						
Riparian ZOI		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
														SCORE		20	19	18	17	16	15

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20			
		Optimal											
Right Side	% Riparian Area:	20%		20%		20%		20%		20%		0%	
	Score:	14		12		9		7		4		0	
	Total Sub-score:	2.80		2.40		1.80		1.40		0.80		0.00	
										0.46			
		Condition Category							Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	CI		
		Optimal											
Left Side	% Riparian Area:	15%		20%		20%		20%		10%			
	Score:	14		12		9		7		4			
	Total Sub-score:	2.10		1.80		1.80		1.40		0.80			
										0.40		0.43	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:							
		Optimal				Suboptimal				Marginal					Poor						
Instream Habitat/ Available Cover		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																			
														SCORE		20	19	18	17	16	15
										CI = (Score)/20		CI									
										SCORE		15		0.75							

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Crosses maintained ROW							
		Negligible				Minor				Moderate					Severe						
Channel Alteration		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																			
														SCORE		20	19	18	17	16	15
										CI = (Score)/20		CI									
										SCORE		14		0.70							

RIVERINE CONDITION INDEX (RCI) RCI

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 0.64

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

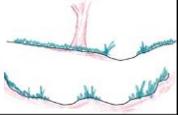
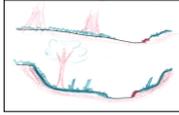
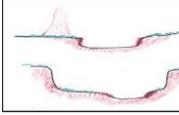
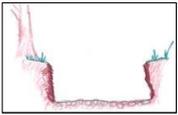
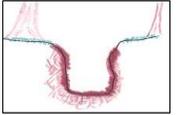
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/06/17	Designated: Existing:		1330 ft
Latitude	41.753903	Longitude	-78.394116	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that runs through PSS and PEM wetlands. Average width of approximately 90 ft, average depth of 2 ft. Temporary impacts to 205.16 ft.		
J. Miner, M. Groomer		Potato Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	17
	0.85

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:	20%	20%	20%	20%	20%	0%			Side Sub-Index
	Score:	14	12	9	7	4	0			0.46
Right Side	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	Side Sub-Index = SUM(%Areas*Scores)/20		
	Condition Category									
	% Riparian Area:	20%	20%	20%	20%	20%	0%			
	Score:	14	12	9	7	4	0	0.46		
Left Side	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	CI = (Left Side CI + Right Side CI)/2	CI	
								0.46	0.46	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High					Low			High			Low			
						20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1			
SCORE																				

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Right Side								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20	
Condition Category											
% Riparian Area:								20%			
Score:								14		0.46	
Total Sub-score:								2.80		0.00	
Left Side								Side Sub-Index		CI = (Left Side CI + Right Side CI)/2	
Condition Category											
% Riparian Area:								15%			
Score:								14		0.40	
Total Sub-score:								2.10		0.10	
SCORE								15		0.43	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:		
Optimal					Suboptimal			Marginal			Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			
	High					Low			High			Low		CI = (Score)/20	
	20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		SCORE 15	
SCORE													0.75		

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Crosses maintained ROW							
Negligible					Minor			Moderate			Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
						High					Low			High			Low		CI = (Score)/20	
						20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		SCORE 14	
SCORE													0.70							

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

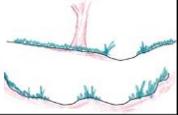
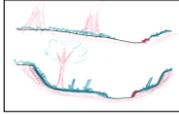
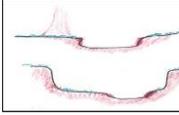
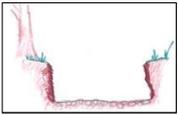
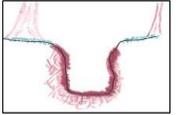
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/10/17	Designated: Existing:		810 ft
Latitude	41.730039	Longitude	-78.448072	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that runs through PFO and PEM wetlands. Average width of approximately 15 ft, average depth of 1 ft. Temporary impacts to 27 ft.		
J. Miner, M. Groomer		Robbins Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	16 0.80

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:	20%	20%	20%	20%	20%	0%			Side Sub-Index
	Score:	14	12	9	7	4	0			0.46
Right Side	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	Side Sub-Index = SUM(%Areas*Scores)/20		
	Condition Category									
	% Riparian Area:	20%	20%	20%	20%	20%	0%			
	Score:	14	12	9	7	4	0	0.46		
Left Side	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	CI = (Left Side CI + Right Side CI)/2	CI	
								0.46	0.46	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

										Ensure the sums of % Riparian ZOI Blocks equal 100																																	
Right Side	Condition Category																	Side Sub-Index																									
	% Riparian Area:	20%		20%		20%		20%		20%		20%		0%		0.46		Side Sub-Index = SUM(%Areas*Scores)/20																									
	Score:	14		12		9		7		4		0																															
	Total Sub-score:	2.80		2.40		1.80		1.40		0.80		0.00																															
Condition Category																																											
Left Side	Condition Category																	Side Sub-Index																									
	% Riparian Area:	20%		20%		20%		20%		20%		20%		0%		0.46		CI = (Left Side CI + Right Side CI)/2																									
	Score:	14		12		9		7		4		0																															
	Total Sub-score:	2.80		2.40		1.80		1.40		0.80		0.00																															
Condition Category																																											
SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		CI	
																								SCORE		16		0.46															

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal						Poor																															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																					
		High				Low				High				Low				CI = (Score)/20		CI																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		16	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Crosses maintained ROW																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low				CI = (Score)/20		CI																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		16	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5 0.66

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

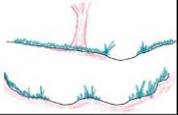
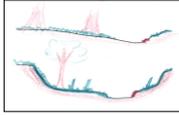
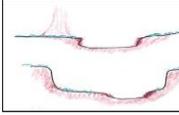
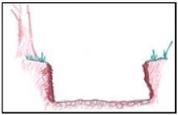
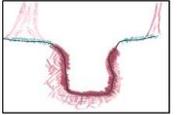
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		1600 ft
Latitude	41.820425	Longitude	-78.191486	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information		Notes: Surrounded by agricultural pastures, connecting intermittent streams, PEM and PSS wetlands. Average width of approximately 15-20 ft, average depth of 1 ft. Temporary impacts to 28.49 ft.		
T. Malecki, M. Groomer		Sartwell Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are dominated by herbaceous vegetation and some areas have a dense shrub layer.

CI = (Score)/20	CI
SCORE	18
	0.90

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Optimal: Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								<p>Comments: No tree canopy as surrounding areas are agricultural pasture land. Dense and maintained herbaceous cover on both sides of floodplain. Some areas along both sides of floodplain have a dense shrub layer as well.</p>											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
	% Riparian Area:	0%	0%	0%	20%	40%		40%	0.31
Score:	0	0	0	9	7	4			
Total Sub-score:	0.00	0.00	0.00	1.80	2.80	1.60			
	Condition Category							Side Sub-Index	
	% Riparian Area:	0%	0%	0%	20%	40%		40%	0.31
Score:	0	0	0	9	7	4			
Total Sub-score:	0.00	0.00	0.00	1.80	2.80	1.60	0.31	0.31	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Both sides of floodplain are surrounded by agricultural pasture land.						
Riparian ZOI	Optimal	Suboptimal					Marginal					Poor								
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with	High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.													
		High	Low	High	Low	High	Low	High	Low											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	20%	40%	40%	0.31	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	0	0	0	9	7	4			
	Total Sub-score:	0.00	0.00	0.00	1.80	2.80	1.60			
Left Side	% Riparian Area:	0%	0%	0%	20%	40%	40%	0.31	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	0	0	9	7	4			0.31
	Total Sub-score:	0.00	0.00	0.00	1.80	2.80	1.60			0.31

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
Instream Habitat/ Available Cover	Optimal	Suboptimal					Marginal					Poor												
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																				
	High	Low	High	Low	High	Low	High	Low																
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	13	CI	0.65

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Culverts feed into and drain creek and the connecting tributaries.										
Channel Alteration	Negligible	Minor				Moderate				Severe														
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																		
		High	Low	High	Low	High	Low	High	Low															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	12	CI	0.60

RIVERINE CONDITION INDEX (RCI) RCI

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 0.55

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

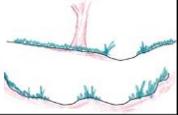
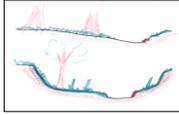
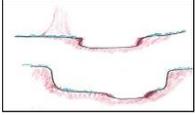
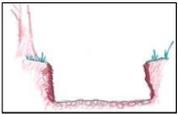
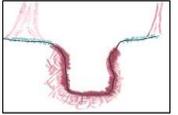
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/04/17	Designated: Existing:		850 ft
Latitude	41.704147	Longitude	-78.499271	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that runs across road and through PEM wetland. Connects to multiple streams and has several culverts. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream 001; UNT to Warner Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	12
	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index			
	Right Side	% Riparian Area:	20%	10%	10%	30%	20%	10%		0.40	Side Sub-Index = SUM(%Areas*Scores)/20
		Score:	14	12	9	7	4	1			
	Total Sub-score:	2.80	1.20	0.90	2.10	0.80	0.10				
Left Side	Condition Category							0.40	CI = (Left Side CI + Right Side CI)/2		
	% Riparian Area:	20%	10%	10%	30%	20%	10%				
	Score:	14	12	9	7	4	1				
	Total Sub-score:	2.80	1.20	0.90	2.10	0.80	0.10		0.40		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High					Low			High			Low			
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
Right Side	% Riparian Area:	20%	10%	10%	30%	20%	10%	0.40			
	Score:	14	12	9	7	4	1				
	Total Sub-score:	2.80	1.20	0.90	2.10	0.80	0.10				
Condition Category									0.40	CI = (Left Side CI + Right Side CI)/2	CI
Left Side	% Riparian Area:	20%	10%	10%	30%	20%	10%				
	Score:	14	12	9	7	4	1				
	Total Sub-score:	2.80	1.20	0.90	2.10	0.80	0.10	0.40			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.								
	High					Low			High			Low								
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Crosses road and has several culverts							
Negligible					Minor			Moderate			Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				
						High					Low			High			Low			
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

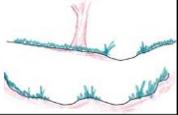
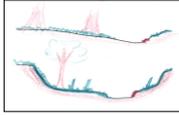
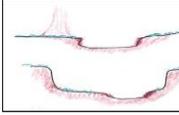
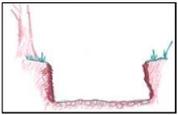
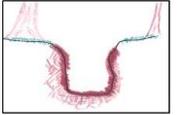
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/04/17	Designated: Existing:		140 ft
Latitude	41.704438	Longitude	-78.499989	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream with spring head and pond at road crossing. Average width of approximately 2 ft, average depth of 0.5 ft. Temporary impacts to 4 ft.		
J. Miner, M. Groomer		Stream 005; UNT to Warner Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated

CI = (Score)/20	CI
SCORE	13 0.65

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments: Tree canopy cover on right side is approximately 40 percent with dense shrub and herbaceous stratus. Left side has less vegetation as it is near the road.</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
	% Riparian Area:	0%	55%	20%	20%	5%	0%	0.61	
Right Side	Score:	0	14	12	9	4	0	0.61	Side Sub-Index = SUM(%Areas*Scores)/20
	Total Sub-score:	0.00	7.70	2.40	1.80	0.20	0.00		
Left Side	Condition Category	0%	20%	30%	30%	20%	0%	0.50	CI = (Left Side CI + Right Side CI)/2
	Score:	0	14	12	9	4	0		
	Total Sub-score:	0.00	2.80	3.60	2.70	0.80	0.00		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Right side of floodplain is heavily vegetated and has multiple wetlands and streams within 100 feet. Left side of floodplain has multiple wetlands and a stream. It also has roads within 100 feet and is less vegetated than the right side.											
		Optimal				Suboptimal				Marginal					Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index															
Right Side	% Riparian Area:	0%	50%	20%	20%	5%	5%	0.59		Side Sub-Index = SUM(%Areas*Scores)/20														
	Score:	0	14	12	9	7	4																	
	Total Sub-score:	0.00	7.00	2.40	1.80	0.35	0.20																	
Left Side	% Riparian Area:	20%	20%	20%	20%	5%	15%	0.44		CI = (Left Side CI + Right Side CI)/2														
	Score:	14	12	9	7	4	1																	
	Total Sub-score:	2.80	2.40	1.80	1.40	0.20	0.15																	
SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	11	0.55

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal				Suboptimal				Marginal						Poor							
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
		CI = (Score)/20		CI																			
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Crosses road									
		Negligible				Minor				Moderate						Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		CI = (Score)/20		CI																			
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CIs)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

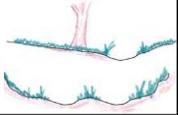
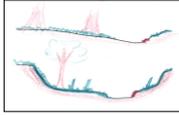
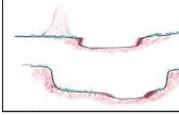
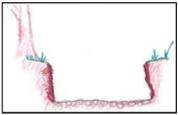
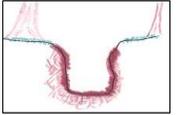
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		420 ft
Latitude	41.709713	Longitude	-78.484439	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that runs through PEM and PFO wetlands. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream 006; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	12
	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							
Right Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	14	12	9	7	4	0	
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	
Left Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	CI = (Left Side CI + Right Side CI)/2
	Score:	14	12	9	7	4	0	
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	
								CI
								0.46

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:
Riparian ZOI	Optimal	Suboptimal					Marginal					Poor		
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with	High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.							
		High	Low	High	Low	High	Low	High	Low					
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1							

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.46		
	Score:	14	12	9	7	4	0			
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00			
		Condition Category							Side Sub-Index	CI = (Left Side CI + Right Side CI)/2
Left Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.46		
	Score:	14	12	9	7	4	0			
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00			
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	7	0.46

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:
Instream Habitat/ Available Cover	Optimal	Suboptimal					Marginal					Poor		
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
	High	Low	High	Low	High	Low	High	Low	High	Low				
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	7	0.35				

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Crosses maintained ROW
Channel Alteration	Negligible	Minor				Moderate				Severe				
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
		High	Low	High	Low	High	Low	High	Low					
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	15	0.75				

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

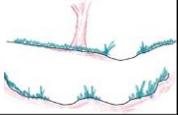
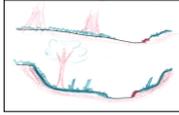
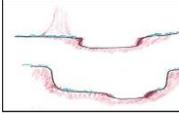
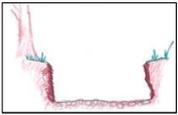
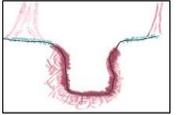
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		800 ft
Latitude	41.711613	Longitude	-78.480528	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that runs through PEM and PFO wetlands and two ponds. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 4 ft.		
J. Miner, M. Groomer		Stream 007; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	16
	0.80

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
	High		Low		High		Low			High		Low								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
Right Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.46	
	Score:	14	12	9	7	4	0		
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00		
Left Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.46	
	Score:	14	12	9	7	4	0		
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00		
								CI = (Left Side CI + Right Side CI)/2	CI
									0.46

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:											
		Optimal					Suboptimal			Marginal					Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High	Low		High	Low		High	Low		High	Low		High	Low										
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20	
Right Side	% Riparian Area:	20%		20%		20%		20%		0%		0.46
	Score:	14	12	9	7	4	0					
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00					
Left Side	% Riparian Area:	20%		20%		20%		20%		0%		0.46
	Score:	14	12	9	7	4	0					
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00					
		CI = (Left Side CI + Right Side CI)/2										CI
		0.46										0.46

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal					Suboptimal			Marginal				Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI							
		High	Low		High	Low		High	Low		High	Low		High	Low								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Crosses maintained ROW									
		Negligible					Minor			Moderate				Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				CI = (Score)/20		CI			
		High	Low		High	Low		High	Low		High	Low		High	Low								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

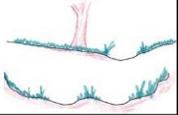
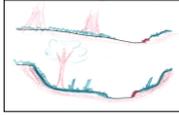
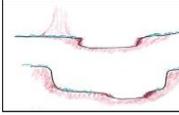
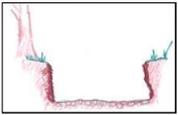
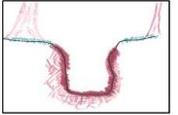
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		540 ft
Latitude	41.713413	Longitude	-78.477334	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs through a PFO and PEM wetland. Average width of approximately 5 ft, average depth of 0.5 ft. Temporary impacts to 6.5 ft.	
T. Malecki, M. Groomer		Stream 008; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	14
	0.70

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments: Majority of the stream runs through a PFO wetland, and the remainder runs through a PEM wetland. Small portion of the stream occurs in maintained pipeline ROW.</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
	% Riparian Area:	0%	40%	40%	10%	10%		0%	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	14	12	9	4		0	
Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00	0.59		
	Condition Category							Side Sub-Index	
	% Riparian Area:	0%	40%	40%	10%	10%		0%	CI = (Left Side CI + Right Side CI)/2
	Score:	0	14	12	9	4		0	
Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00	0.59	0.59	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category														Comments:				
Riparian ZOI		Optimal					Suboptimal					Marginal					Poor			
		High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6				5 4 3 2 1				

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

								Ensure the sums of % Riparian ZOI Blocks equal 100									
Right Side		Condition Category												Side Sub-Index = SUM(%Areas*Scores)/20			
		% Riparian Area:		0%		40%		40%		10%		10%				0%	
		Score:		0		14		12		9		4				0	
Total Sub-score:		0.00		5.60		4.80		0.90		0.40		0.00		0.59			
Left Side		Condition Category												Cl = (Left Side Cl + Right Side Cl)/2			
		% Riparian Area:		0%		40%		40%		10%		10%				0%	
		Score:		0		14		12		9		4				0	
Total Sub-score:		0.00		5.60		4.80		0.90		0.40		0.00		0.59			
SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE		5		Cl			
														0.59			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category														Comments:							
Instream Habitat/ Available Cover		Optimal					Suboptimal					Marginal						Poor					
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.						Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6				5 4 3 2 1				Cl = (Score)/20		Cl	
																						0.25	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category														Comments: Portion of stream runs through maintained pipeline ROW.							
Channel Alteration		Negligible					Minor					Moderate						Severe					
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.		Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6				5 4 3 2 1				Cl = (Score)/20		Cl	
																						0.75	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

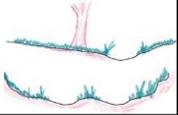
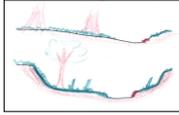
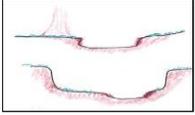
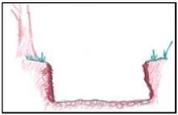
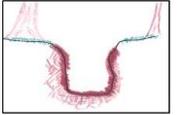
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		400 ft
Latitude	41.714609	Longitude	-78.474887	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Runs through a PFO wetland. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
T. Malecki, M. Groomer		Stream 011; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	13 0.65

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments: Stream runs through a PFO wetland and maintained pipeline ROW.</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

Condition Category	0%	40%	40%	10%	10%	0%	Side Sub-Index
Right Side	% Riparian Area:	0%	40%	40%	10%	10%	0%
	Score:	0	14	12	9	4	0
	Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00
Side Sub-Index = SUM(%Areas*Scores)/20							
Condition Category	0%	40%	40%	10%	10%	0%	Side Sub-Index
Left Side	% Riparian Area:	0%	40%	40%	10%	10%	0%
	Score:	0	14	12	9	4	0
	Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00
CI = (Left Side CI + Right Side CI)/2							CI
							0.59

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																						
Riparian ZOI		Optimal					Suboptimal					Marginal					Poor																			
		High					Low					High					Low																			
		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1																			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20									
Right Side		% Riparian Area:							0.59											
		Score:																		
		Total Sub-score:							0.00		5.60		4.80		0.90		0.40		0.00	
		Condition Category							Side Sub-Index		Cl = (Left Side Cl + Right Side Cl)/2		Cl							
Left Side		% Riparian Area:							0.59											
		Score:																		
		Total Sub-score:							0.00		5.60		4.80		0.90		0.40		0.00	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:															
Instream Habitat/ Available Cover		Optimal					Suboptimal					Marginal					Poor												
		High					Low					High					Low												
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.												
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE		4		Cl		0.20	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Portion of stream runs through maintained pipeline ROW.											
Channel Alteration		Negligible				Minor				Moderate						Severe									
		High				Low				High						Low									
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		15		Cl		0.75	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

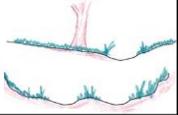
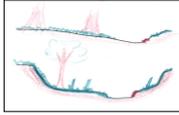
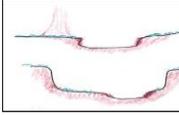
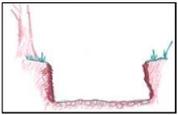
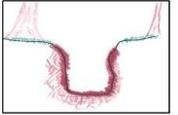
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		840 ft
Latitude	41.714527	Longitude	-78.474213	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs through a PEM wetland and has multiple tributaries. Average width of approximately 6 ft, average depth of 0.5 ft. Temporary impacts to 6.5 ft.	
T. Malecki, M. Groomer		Stream 012; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal			Suboptimal			Marginal			Poor			Severe							
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>			<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>			<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	12
		0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category										Comments: Stream runs through a PEM wetland and maintained pipeline ROW.										
	Optimal			Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>																				
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>		<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>			<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Right Side	Condition Category						Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	0%	40%	40%	10%	10%			0%
	Score:	0	14	12	9	4			0
	Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00	0.59	
Left Side	Condition Category						Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	
	% Riparian Area:	0%	40%	40%	10%	10%			0%
	Score:	0	14	12	9	4			0
	Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00	0.59	0.59

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High		Low		High		Low		High		Low				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	40%	40%	10%	10%	0%	0.59		
	Score:	0	14	12	9	4	0			
	Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00			
Condition Category									Side Sub-Index	CI = (Left Side CI + Right Side CI)/2
Left Side	% Riparian Area:	0%	40%	40%	10%	10%	0%	0.59	CI	
	Score:	0	14	12	9	4	0		0.59	
	Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00		0.59	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	CI = (Score)/20		CI																				
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	3

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Portion of stream runs through maintained pipeline ROW.										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.						
						High		Low		High		Low											
						SCORE	20	19	18	17	16	15	14	13	12	11			10	9	8	7	6

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.53
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

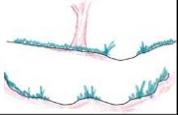
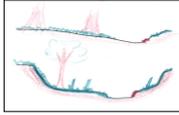
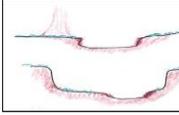
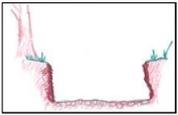
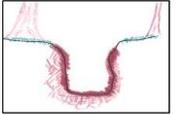
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		840 ft
Latitude	41.715266	Longitude	-78.473937	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Tributary to Stream 012. Average width of approximately 3.5 ft, average depth of 0.5 ft. Temporary impacts to 1 ft.	
T. Malecki, M. Groomer		Stream 014; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	12	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		0%	40%	40%	10%	10%			0%
	Score:	0	14	12	9	4			0
Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00	0.59		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
		0%	40%	40%	10%	10%			0%
	Score:	0	14	12	9	4			0
Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00	0.59		
CI = (Left Side CI + Right Side CI)/2									
							CI		
							0.59		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:
Riparian ZOI	Optimal	Suboptimal					Marginal					Poor		
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with	High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.							
		High	Low	High	Low	High	Low	High	Low					
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1							

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
Right Side	% Riparian Area:	0%	40%	40%	10%	10%	0%	0.59			
	Score:	0	14	12	9	4	0				
	Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00				
		Condition Category							Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	CI
Left Side	% Riparian Area:	0%	40%	40%	10%	10%	0%	0.59			
	Score:	0	14	12	9	4	0				
	Total Sub-score:	0.00	5.60	4.80	0.90	0.40	0.00				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:
Instream Habitat/ Available Cover	Optimal	Suboptimal					Marginal					Poor		
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
	High	Low	High	Low	High	Low	High	Low	High	Low				
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	3	0.15				

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Portion of stream runs through maintained pipeline ROW.
Channel Alteration	Negligible	Minor				Moderate				Severe				
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
		High	Low	High	Low	High	Low	High	Low					
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	15	0.75				

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

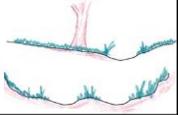
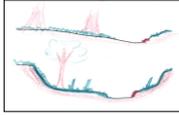
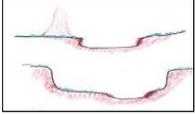
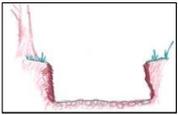
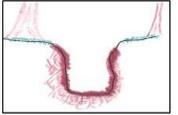
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/08/17	Designated: Existing:		802 ft
Latitude	41.716614	Longitude	-78.47038	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs through a PEM wetland and maintained pipeline ROW. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 017; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	12	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained			High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.								
	High		Low		High		Low			High		Low								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.47	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	0%	20%	30%	20%	30%	0%				
	0	14	12	9	4	0				
	0.00	2.80	3.60	1.80	1.20	0.00				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.47	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	0%	20%	30%	20%	30%	0%				
	0	14	12	9	4	0				
	0.00	2.80	3.60	1.80	1.20	0.00	0.47			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream runs through a PEM wetland and maintained pipeline ROW. There are multiple PEM wetlands surrounding the stream and one PFO wetland.									
		Optimal					Suboptimal			Marginal			Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20		
Right Side	% Riparian Area:	0%	30%	30%	10%	10%	0%	0.46					
	Score:	0	14	12	9	4	0						
	Total Sub-score:	0.00	4.20	3.60	0.90	0.40	0.00						
Condition Category													
Left Side	% Riparian Area:	0%	30%	30%	10%	10%	0%	0.46		CI = (Left Side CI + Right Side CI)/2	CI		
	Score:	0	14	12	9	4	0				0.46		
	Total Sub-score:	0.00	4.20	3.60	0.90	0.40	0.00				0.46		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:						
		Optimal					Suboptimal			Marginal			Poor							
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI				
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	SCORE	5	0.25		
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Portion of stream runs through maintained pipeline ROW.						
		Negligible					Minor			Moderate			Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				CI = (Score)/20		CI	
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	SCORE	15	0.75		
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

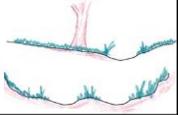
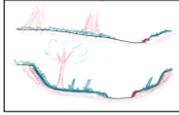
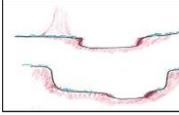
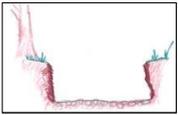
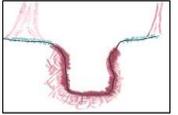
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/08/17	Designated: Existing:		375 ft
Latitude	41.719955	Longitude	-78.465486	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs through maintained pipeline ROW, a PFO and PEM wetland. Average width of approximately 2.5 ft, average depth of 0.3 ft. Temporary impacts to 2.5 ft.	
T. Malecki, M. Groomer		Stream 019; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	11	0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category														
	% Riparian Area:								0%	20%	30%	25%	25%	0%	
	Score:								0	14	12	9	4	0	
Right Side	Total Sub-score:						0.00	2.80	3.60	2.25	1.00	0.00	0.48	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category														
	% Riparian Area:								0%	20%	30%	25%	25%		0%
	Score:								0	14	12	9	4	0	
Left Side	Total Sub-score:						0.00	2.80	3.60	2.25	1.00	0.00	0.48	CI = (Left Side CI + Right Side CI)/2	CI
													0.48	0.48	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream runs through maintained pipeline ROW, PFO and PEM wetland. There is another intermittent stream and PEM wetland within 150-200 ft.										
		Optimal					Suboptimal				Marginal				Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low											
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	20%	30%	25%	25%	0%	0.48			
	Score:	0	14	12	9	4	0				
	Total Sub-score:	0.00	2.80	3.60	2.25	1.00	0.00				
		Condition Category									
Left Side	% Riparian Area:	0%	20%	30%	25%	25%	0%	0.48		CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	14	12	9	4	0				0.48
	Total Sub-score:	0.00	2.80	3.60	2.25	1.00	0.00			0.00	0.48

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal					Suboptimal				Marginal					Poor							
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.												
		CI = (Score)/20		CI																			
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Portion of stream runs through maintained pipeline ROW and two culverts are on the stream.									
		Negligible					Minor				Moderate					Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.						
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low										
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

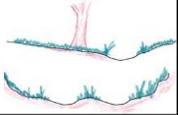
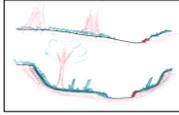
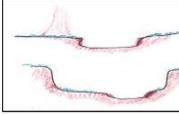
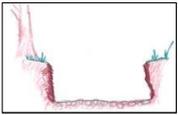
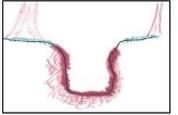
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/08/17	Designated: Existing:		265 ft
Latitude	41.720129	Longitude	-78.464934	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Runs through maintained pipeline ROW, a PFO and PEM wetland. Average width of approximately 2.5 ft, average depth of 0.3 ft. Temporary impacts to 2.5 ft.		
T. Malecki, M. Groomer		Stream 020; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	11
		0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
	High		Low		High		Low			High		Low								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category										
	% Riparian Area:		0%	20%	30%	25%			25%	0%	
	Score:		0	14	12	9			4	0	
Right Side	Total Sub-score:		0.00	2.80	3.60	2.25	1.00	0.00	0.48	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category										
	% Riparian Area:		0%	20%	30%	25%			25%		0%
	Score:		0	14	12	9			4	0	
Left Side	Total Sub-score:		0.00	2.80	3.60	2.25	1.00	0.00	0.48	CI = (Left Side CI + Right Side CI)/2	CI
									0.48	0.48	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream runs through maintained pipeline ROW, PFO and PEM wetland. There is another intermittent stream and PEM wetland within 150-200 ft. There are two ponds within 80 ft.							
		Optimal					Suboptimal			Marginal			Poor								
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low						
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index												
Right Side	% Riparian Area:	0%	20%	30%	20%	10%	20%	0.49		Side Sub-Index = SUM(%Areas*Scores)/20											
	Score:	0	14	12	9	7	4														
	Total Sub-score:	0.00	2.80	3.60	1.80	0.70	0.80														
Left Side	% Riparian Area:	0%	20%	30%	20%	10%	20%	0.49		CI = (Left Side CI + Right Side CI)/2											
	Score:	0	14	12	9	7	4														
	Total Sub-score:	0.00	2.80	3.60	1.80	0.70	0.80														
SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal					Suboptimal			Marginal			Poor										
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				SCORE		4	0.20
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Portion of stream runs through maintained pipeline ROW and two culverts are on the stream.									
		Negligible					Minor			Moderate			Severe										
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				CI = (Score)/20		CI	
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				SCORE		13	0.65
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

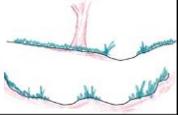
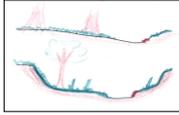
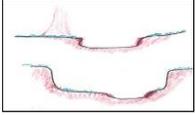
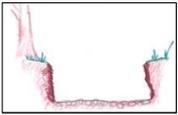
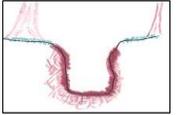
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		55 ft
Latitude	41.722494	Longitude	-78.453977	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream021; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		10%	10%	10%	10%	30%			30%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	1.20	0.90	0.70	1.20	0.60	0.30		
Right Side							0.30	Side Sub-Index = SUM(%Areas*Scores)/20	
Left Side							0.30		CI = (Left Side CI + Right Side CI)/2
Total Sub-score:	1.40	1.20	0.90	0.70	1.20	0.60	0.30		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:																
Optimal					Suboptimal				Marginal					Poor															
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
						High					Low				High				Low										
						20 19 18 17 16					15 14 13 12 11				10 9 8 7 6				5 4 3 2 1										
SCORE														20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category								Side Sub-Index														
Right Side	% Riparian Area:		10%		10%		10%		30%		30%		0.30	Side Sub-Index = SUM(%Areas*Scores)/20								
	Score:		14		12		9		7		4				2							
	Total Sub-score:		1.40		1.20		0.90		0.70		1.20				0.60							
Left Side	% Riparian Area:		10%		10%		10%		10%		30%		30%		0.30	CI = (Left Side CI + Right Side CI)/2	CI					
	Score:		14		12		9		7		4		2									
	Total Sub-score:		1.40		1.20		0.90		0.70		1.20		0.60					0.30				
SCORE														20 19 18 17 16		15 14 13 12 11			10 9 8 7 6		5 4 3 2 1	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:						
Optimal					Suboptimal				Marginal				Poor						
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
	SCORE														CI = (Score)/20		CI		
	20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1														SCORE		2		0.10

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:												
Negligible					Minor				Moderate				Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
						High					Low				High				Low						
						20 19 18 17 16					15 14 13 12 11				10 9 8 7 6				5 4 3 2 1						
SCORE														CI = (Score)/20		CI									
20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1														SCORE		11		0.55							

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.34
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

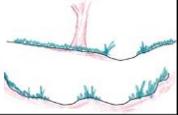
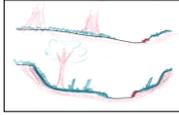
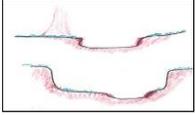
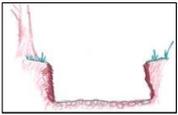
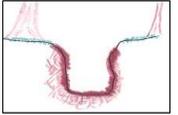
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		92 ft
Latitude	41.717799	Longitude	-78.452962	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream022; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
		10%	10%	10%	35%	35%		0%	0.37	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	14	12	9	7	4		0		
Total Sub-score:	1.40	1.20	0.90	2.45	1.40	0.00				
	Condition Category							Side Sub-Index		
		10%	10%	10%	35%	35%		0%	0.37	CI = (Left Side CI + Right Side CI)/2
	Score:	14	12	9	7	4		0		
Total Sub-score:	1.40	1.20	0.90	2.45	1.40	0.00	0.37	0.37		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																				
		Optimal					Suboptimal					Marginal					Poor																	
		Riparian ZOI area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1																	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20						
Right Side	% Riparian Area:	10%		10%		10%		35%		35%		0%		0.37		
	Score:	14		12		9		7		4		0				
	Total Sub-score:	1.40		1.20		0.90		2.45		1.40		0.00				
Left Side	% Riparian Area:	10%		10%		10%		35%		35%		0%		0.37	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12		9		7		4		0				
	Total Sub-score:	1.40		1.20		0.90		2.45		1.40		0.00				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:											
		Optimal					Suboptimal					Marginal					Poor								
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.								
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE		3	CI
														CI = (Score)/20		CI									
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE		3	0.15

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		15	CI		
														CI = (Score)/20		CI							
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		15	0.75		

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.42**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

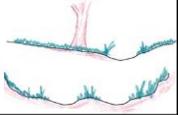
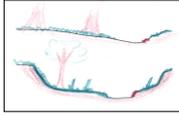
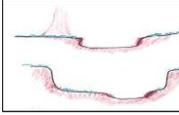
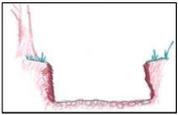
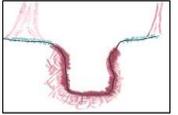
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		65 ft
Latitude	41.716627	Longitude	-78.451536	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream023; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																					
	Optimal		Suboptimal		Marginal		Poor															
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:													
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	10%	10%	30%	40%			0%
	Score:	14	12	9	7	4			0
Total Sub-score:	1.40	1.20	0.90	2.10	1.60	0.00	0.36	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	10%	10%	30%	40%		0%	
	Score:	14	12	9	7	4		0	
Total Sub-score:	1.40	1.20	0.90	2.10	1.60	0.00	0.36	CI = (Left Side CI + Right Side CI)/2	CI
								0.36	0.36

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category											Comments:										
Optimal					Suboptimal			Marginal				Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High					Low			High			Low				
						20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1				

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

								Side Sub-Index					
Right Side	Condition Category										0.36	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	10% 10% 10% 30% 40% 0%											
	Score:	14 12 9 7 4 0											
Total Sub-score:		1.40		1.20		0.90		2.10		1.60		0.00	
Left Side	Condition Category									0.36	CI = (Left Side CI + Right Side CI)/2	CI	
	% Riparian Area:	10% 10% 10% 30% 40% 0%											
	Score:	14 12 9 7 4 0											
Total Sub-score:		1.40		1.20		0.90		2.10		1.60		0.00	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category											Comments:				
Optimal					Suboptimal			Marginal					Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			
	High					Low			High			Low			
	20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1			
SCORE		2		0.10								CI = (Score)/20		CI	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category											Comments:									
Negligible					Minor			Moderate					Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
						High					Low			High					Low	
						20 19 18 17 16					15 14 13 12 11			10 9 8 7 6					5 4 3 2 1	
SCORE		15		0.75								CI = (Score)/20		CI						

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

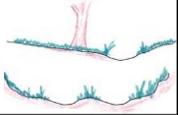
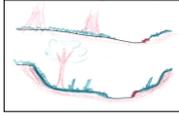
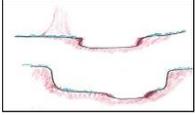
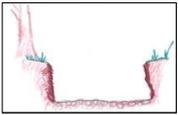
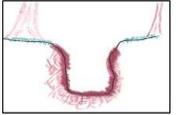
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		230 ft
Latitude	41.7138	Longitude	-78.446349	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream024; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	High	Low	High	Low	High	Low	High	Low												
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index			
		5%	5%	5%	5%	40%			40%	
	% Riparian Area:	5%	5%	5%	5%	40%			40%	
Right Side	Score:	14	12	9	7	4	2	0.23	Side Sub-Index = SUM(%Areas*Scores)/20	
Total Sub-score:		0.70	0.60	0.45	0.35	1.60	0.80			
Condition Category										
Left Side	% Riparian Area:	5%	5%	5%	5%	40%	40%	0.23	CI = (Left Side CI + Right Side CI)/2	
	Score:	14	12	9	7	4	2			0.23
	Total Sub-score:		0.70	0.60	0.45	0.35	1.60			
								0.23	0.23	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:								
Optimal					Suboptimal			Marginal			Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
						High			Low		High		Low	High		Low					
						SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20					
Right Side	% Riparian Area:	5%		5%		5%		5%			40%		40%		0.23
	Score:	14		12		9		7			4		2		
	Total Sub-score:	0.70		0.60		0.45		0.35		1.60		0.80			
Left Side	% Riparian Area:	5%		5%		5%		5%		40%		40%		0.23	
	Score:	14		12		9		7		4		2			
	Total Sub-score:	0.70		0.60		0.45		0.35		1.60		0.80			
										CI = (Left Side CI + Right Side CI)/2		CI			
										0.23		0.23			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:								
Optimal					Suboptimal			Marginal			Poor										
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.									
	High			Low		High		Low	High		Low										
	SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
										CI = (Score)/20		CI									
										SCORE		1		0.05							

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:								
Negligible					Minor			Moderate			Severe										
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
						High			Low		High		Low								
						SCORE		20	19	18	17	16	15	14	13			12	11	10	9
										CI = (Score)/20		CI									
										SCORE		11		0.55							

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

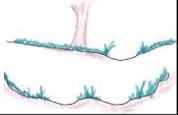
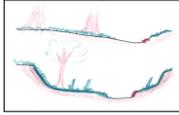
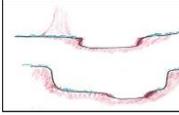
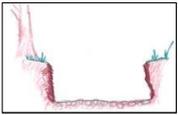
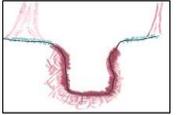
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		230 ft
Latitude	41.71266	Longitude	-78.446597	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream025; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	10%	10%	15%	15%	30%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	1.20	1.35	1.05	1.20	0.40	0.33		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
	% Riparian Area:	10%	10%	15%	15%	30%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	1.20	1.35	1.05	1.20	0.40	0.33		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.33		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:									
Riparian ZOI		Optimal					Suboptimal					Marginal					Poor						
		High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	
		High					Low					High					Low						
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1						

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20	
Right Side		% Riparian Area:							0.33			
		Score:										
Total Sub-score:		1.40 1.20 1.35 1.05 1.20 0.40										
		Condition Category							Side Sub-Index		Cl = (Left Side Cl + Right Side Cl)/2	
Left Side		% Riparian Area:							0.33			
		Score:										
Total Sub-score:		1.40 1.20 1.35 1.05 1.20 0.40							0.33		0.33	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:								
Instream Habitat/ Available Cover		Optimal					Suboptimal					Marginal					Poor					
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1		SCORE 2		0.10	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
Channel Alteration		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 12		0.60			

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

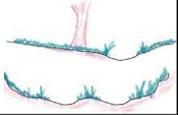
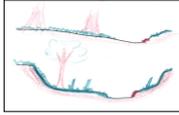
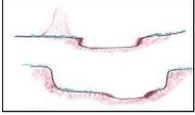
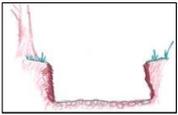
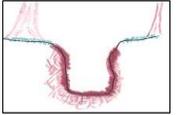
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		230 ft
Latitude	41.71266	Longitude	-78.446597	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream025; UNT to Red Mill Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	9
		0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.33	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	10%	10%	15%	15%	30%	20%				
	14	12	9	7	4	2				
	1.40	1.20	1.35	1.05	1.20	0.40				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.33	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	10%	10%	15%	15%	30%	20%				
	14	12	9	7	4	2				
	1.40	1.20	1.35	1.05	1.20	0.40	0.33			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

										Ensure the sums of % Riparian ZOI Blocks equal 100													
Right Side		Condition Category																Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20			
		% Riparian Area:		10%		10%		15%		15%		30%		20%		0.33							
		Score:		14		12		9		7		4		2									
		Total Sub-score:		1.40		1.20		1.35		1.05		1.20		0.40									
Left Side		Condition Category																Side Sub-Index		CI = (Left Side CI + Right Side CI)/2		CI	
		% Riparian Area:		10%		10%		15%		15%		30%		20%		0.33		0.33					
		Score:		14		12		9		7		4		2									
		Total Sub-score:		1.40		1.20		1.35		1.05		1.20		0.40								0.33	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal						Poor																															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																					
		CI = (Score)/20		CI																																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		CI = (Score)/20		CI																																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		12	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

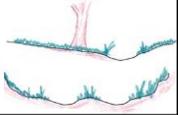
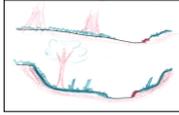
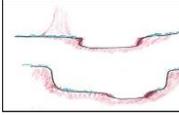
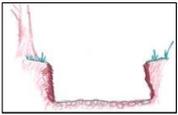
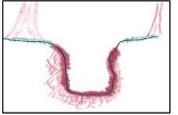
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/08/17	Designated: Existing:		644 ft
Latitude	41.7263	Longitude	-78.452367	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs through maintained pipeline ROW and a PEM wetland. Drains into a PFO wetland. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 026; UNT to Robbins Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	10	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.								Comments:											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.			High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.								
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:	0%	30%	40%	10%	20%		0%	0.54	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	0	14	12	9	4		0		
Total Sub-score:	0.00	4.20	4.80	0.90	0.80	0.00				
	Condition Category							Side Sub-Index		
	% Riparian Area:	0%	30%	40%	10%	20%		0%	0.54	CI = (Left Side CI + Right Side CI)/2
	Score:	0	14	12	9	4		0		
Total Sub-score:	0.00	4.20	4.80	0.90	0.80	0.00	0.54			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream runs through maintained pipeline ROW and PEM wetland. Drains into PFO wetland.												
		Optimal					Suboptimal			Marginal			Poor													
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.									
																			High	Low	High	Low	High	Low	High	Low
																			SCORE	20	19	18	17	16	15	14

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20		
Right Side	% Riparian Area:	0%	30%	40%	10%	20%	0%	0.54					
	Score:	0	14	12	9	4	0						
	Total Sub-score:	0.00	4.20	4.80	0.90	0.80	0.00						
		Condition Category									0.54	CI = (Left Side CI + Right Side CI)/2	CI
Left Side	% Riparian Area:	0%	30%	40%	10%	20%	0%						
	Score:	0	14	12	9	4	0						
	Total Sub-score:	0.00	4.20	4.80	0.90	0.80	0.00						

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
		Optimal					Suboptimal			Marginal			Poor											
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI								
																	High	Low	High	Low	High	Low	High	Low
																	SCORE	20	19	18	17	16	15	14

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Portion of stream runs through maintained pipeline ROW and four culverts are on the stream.															
		Negligible					Minor			Moderate			Severe																
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				CI = (Score)/20		CI								
																						High	Low	High	Low	High	Low	High	Low
																						SCORE	20	19	18	17	16	15	14

RIVERINE CONDITION INDEX (RCI)											RCI	
NOTE: The CIs and RCI should be rounded to 2 decimal places.											RCI = (Sum of all CI's)/5	0.46

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

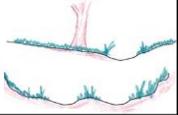
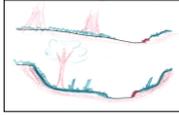
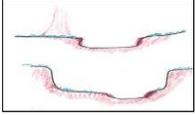
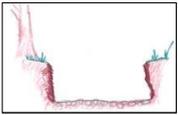
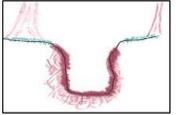
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/08/17	Designated: Existing:		530 ft
Latitude	41.729771	Longitude	-78.447509	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that runs through PEM wetland and is a tributary of Robbins Brook. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream 027; UNT to Robbins Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	12	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	0%	20%	20%	30%	30%			0%
	Score:	0	12	9	7	4			0
Total Sub-score:	0.00	2.40	1.80	2.10	1.20	0.00	0.38		
Right Side							0.38	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category								
	% Riparian Area:	0%	20%	20%	30%	30%			
	Score:	0	12	9	7	4		0	
Total Sub-score:	0.00	2.40	1.80	2.10	1.20	0.00	0.38	CI = (Left Side CI + Right Side CI)/2	CI
Left Side							0.38	0.38	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:											
		Optimal				Suboptimal				Marginal					Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20		
		0%		20%		30%		30%			0%	
Right Side	% Riparian Area:	0%		20%		30%		30%		0%		
	Score:	0		12		9		7		4		
	Total Sub-score:	0.00		2.40		1.80		2.10		1.20		
									0.38			
Left Side	% Riparian Area:	0%		20%		30%		30%		0%		
	Score:	0		12		9		7		4		
	Total Sub-score:	0.00		2.40		1.80		2.10		1.20		
									0.38	Cl = (Left Side Cl + Right Side Cl)/2		Cl
											0.38	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
		Optimal				Suboptimal				Marginal					Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.														
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	6
									0.30				0.30											

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Crosses maintained ROW										
		Negligible				Minor				Moderate					Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	14
									0.70				0.70											

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5 0.47

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

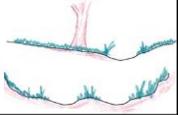
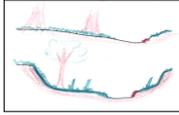
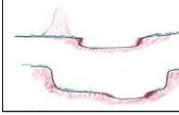
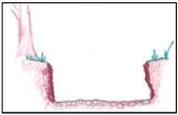
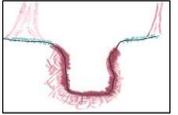
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		586 ft
Latitude	41.742997	Longitude	-78.425544	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Runs through maintained pipeline ROW, access road, PEM and PFO wetland. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.		
T. Malecki, M. Groomer		Stream 030; UNT to Robbins Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
		0%	25%	25%	20%	30%		0%	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	0	14	12	9		4	
Total Sub-score:		0.00	3.50	3.00	1.80	1.20	0.00	0.48	
	Condition Category							Side Sub-Index	
		0%	25%	25%	20%	30%		0%	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	0	14	12	9		4	
Total Sub-score:		0.00	3.50	3.00	1.80	1.20	0.00	0.48	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream runs through maintained pipeline ROW, PEM and PFO wetland. Another PFO wetland is above the stream and there is a ditch within 100 ft.																											
		Optimal				Suboptimal				Marginal					Poor																										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

									Ensure the sums of % Riparian ZOI Blocks equal 100										
Right Side	Condition Category															Side Sub-Index			
	% Riparian Area:	0%		30%		20%		20%		30%		0%		0.48		Side Sub-Index = SUM(%Areas*Scores)/20			
	Score:	0		14		12		9		4		0							
	Total Sub-score:	0.00		4.20		2.40		1.80		1.20		0.00							
Condition Category																			
Left Side	% Riparian Area:	0%		30%		20%		20%		30%		0%		0.48		CI = (Left Side CI + Right Side CI)/2		CI	
	Score:	0		14		12		9		4		0		0.48				0.48	
	Total Sub-score:	0.00		4.20		2.40		1.80		1.20		0.00		0.48				0.48	
	Condition Category																		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																			
		Optimal				Suboptimal				Marginal						Poor																																	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI																																	
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		1		0.05	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Portion of stream runs through maintained pipeline ROW, access road, and four culverts are on the stream.																																			
		Negligible				Minor				Moderate						Severe																																	
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shared with gabion, riprap, or concrete.				CI = (Score)/20		CI																									
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		11		0.55	

RIVERINE CONDITION INDEX (RCI)												RCI			
NOTE: The CIs and RCI should be rounded to 2 decimal places.												RCI = (Sum of all CI's)/5		0.40	

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

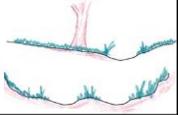
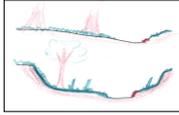
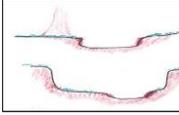
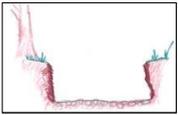
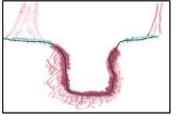
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		55 ft
Latitude	41.736162	Longitude	-78.407973	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs across access road. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 032; UNT to Robbins Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		0%	15%	15%	10%	60%			0%
	Score:	0	14	12	4	2			0
Total Sub-score:	0.00	2.10	1.80	0.40	1.20	0.00	0.28		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
		0%	15%	15%	10%	60%			0%
	Score:	0	14	12	4	2			0
Total Sub-score:	0.00	2.10	1.80	0.40	1.20	0.00	0.28		
CI = (Left Side CI + Right Side CI)/2									
							CI		
							0.28		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments: Stream across access road.							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High			Low			High			Low		High		Low	
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
Right Side	% Riparian Area:	0%	25%	25%	25%	25%	0%	0.40			
	Score:	0	14	12	4	2	0				
	Total Sub-score:	0.00	3.50	3.00	1.00	0.50	0.00				
Condition Category									0.40	CI = (Left Side CI + Right Side CI)/2	CI
Left Side	% Riparian Area:	0%	25%	25%	25%	25%	0%				
	Score:	0	14	12	4	2	0				
	Total Sub-score:	0.00	3.50	3.00	1.00	0.50	0.00	0.40			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	High					Low			High			Low											
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	1

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Stream runs under access road through two culverts.										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.						
						High			Low			High			Low		High		Low				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.33**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

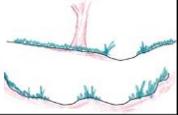
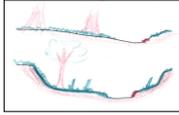
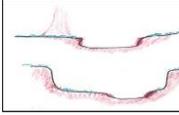
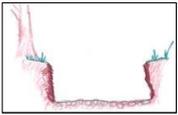
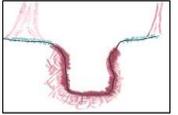
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		87 ft
Latitude	41.73597	Longitude	-78.406383	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Runs across access road. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.		
T. Malecki, M. Groomer		Stream 033; UNT to Robbins Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	0%	15%	15%	10%	60%	0%	Side Sub-Index	
Right Side	% Riparian Area:	0%	15%	15%	10%	60%	0%	0.28	
	Score:	0	14	12	4	2	0		
	Total Sub-score:	0.00	2.10	1.80	0.40	1.20	0.00		Side Sub-Index = SUM(%Areas*Scores)/20
	Condition Category	0%	15%	15%	10%	60%	0%	Side Sub-Index	
Left Side	% Riparian Area:	0%	15%	15%	10%	60%	0%	0.28	
	Score:	0	14	12	4	2	0		
	Total Sub-score:	0.00	2.10	1.80	0.40	1.20	0.00		CI = (Left Side CI + Right Side CI)/2
								0.28	CI
								0.28	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream across access road.					
		Optimal					Suboptimal			Marginal			Poor						
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low						
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1										

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	
Right Side	% Riparian Area:	0%	25%	25%	25%	25%	0%	0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	0	14	12	4	2	0			
	Total Sub-score:	0.00	3.50	3.00	1.00	0.50	0.00			
Left Side	% Riparian Area:	0%	25%	25%	25%	25%	0%	0.40	CI = (Left Side CI + Right Side CI)/2	
	Score:	0	14	12	4	2	0			
	Total Sub-score:	0.00	3.50	3.00	1.00	0.50	0.00			
								CI	0.40	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:	
		Optimal					Suboptimal			Marginal			Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.							
		CI = (Score)/20		CI											
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	1	0.05			

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream runs across access road.		
		Negligible					Minor			Moderate			Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
		CI = (Score)/20		CI												
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	10	0.50				

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

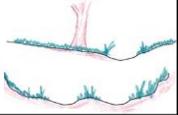
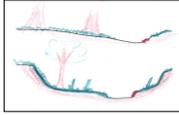
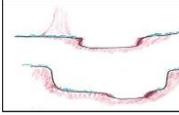
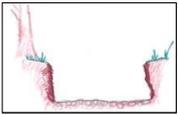
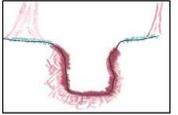
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		58 ft
Latitude	41.736509	Longitude	-78.404287	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Runs across access road. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.		
T. Malecki, M. Groomer		Stream 034; UNT to Robbins Brook				

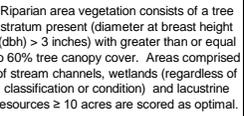
1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor			Severe				
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>				<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>			<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
Riparian Vegetation (Floodplain)											<p>Comments:</p>									
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>				<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>				<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>				<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>		<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>			
	High				Low				High				Low							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.28	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	0%	15%	15%	10%	60%	0%				
	0	14	12	4	2	0				
	0.00	2.10	1.80	0.40	1.20	0.00				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.28	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	0%	15%	15%	10%	60%	0%				
	0	14	12	4	2	0				
	0.00	2.10	1.80	0.40	1.20	0.00	0.28			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments: Stream across access road.							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High			Low		High		Low	High		Low				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	25%	25%	25%	25%	0%	0.40		
	Score:	0	14	12	4	2	0			
	Total Sub-score:	0.00	3.50	3.00	1.00	0.50	0.00			
Left Side	% Riparian Area:	0%	25%	25%	25%	25%	0%	0.40	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	14	12	4	2	0			0.40
	Total Sub-score:	0.00	3.50	3.00	1.00	0.50	0.00			0.40

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	CI = (Score)/20		CI																				
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	1

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Stream runs under access road through two culverts.										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
						High			Low		High		Low										
						SCORE	20	19	18	17	16	15	14	13	12			11	10	9	8	7	6

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

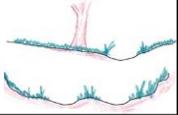
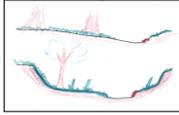
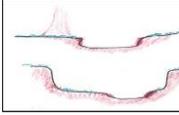
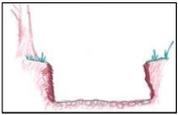
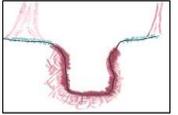
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		56 ft
Latitude	41.737025	Longitude	-78.402793	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs across access road. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 035; UNT to Robbins Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	0%	15%	15%	10%	60%			0%
	Score:	0	14	12	4	2			0
Total Sub-score:	0.00	2.10	1.80	0.40	1.20	0.00	0.28		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
	% Riparian Area:	0%	15%	15%	10%	60%			0%
	Score:	0	14	12	4	2			0
Total Sub-score:	0.00	2.10	1.80	0.40	1.20	0.00	0.28		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.28		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream across access road.															
Riparian ZOI		Optimal					Suboptimal					Marginal					Poor												
		High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1												

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

		Condition Category												Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20																		
Right Side		Optimal					Suboptimal					Marginal					Poor																
		% Riparian Area: 0%					25%					25%					25%					0%											
		Score: 0					14					12					4					2					0					0.40	
		Total Sub-score: 0.00					3.50					3.00					1.00					0.50					0.00						

		Condition Category												Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	CI																	
Left Side		Optimal					Suboptimal					Marginal					Poor																
		% Riparian Area: 0%					25%					25%					25%					0%											
		Score: 0					14					12					4					2					0					0.40	
		Total Sub-score: 0.00					3.50					3.00					1.00					0.50					0.00						0.40

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
Instream Habitat/ Available Cover		Optimal					Suboptimal					Marginal					Poor							
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.							
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE 1		0.05

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream runs under access road through two culverts.									
Channel Alteration		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 10		0.50			

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.33**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

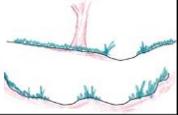
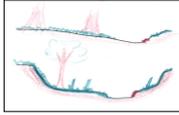
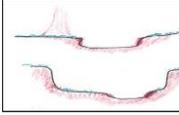
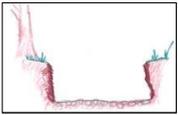
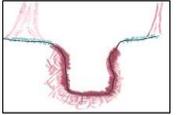
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		57 ft
Latitude	41.737597	Longitude	-78.400794	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs across access road. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 036; UNT to Robbins Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	0%	15%	15%	10%	60%			0%
	Score:	0	14	12	4	2			0
	Total Sub-score:	0.00	2.10	1.80	0.40	1.20	0.00		
	Condition Category						Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	
	% Riparian Area:	0%	15%	15%	10%	60%			0%
	Score:	0	14	12	4	2			0
	Total Sub-score:	0.00	2.10	1.80	0.40	1.20	0.00	0.28	
							0.28	0.28	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream across access road.																				
Riparian ZOI		Optimal					Suboptimal					Marginal					Poor																	
		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1																	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

		Condition Category												Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20					
Right Side		% Riparian Area:					Score:					Total Sub-score:								
				0%					14					3.00					0.40	
		0.00					3.50					3.00					1.00	0.50	0.00	

		Condition Category												Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	CI					
Left Side		% Riparian Area:					Score:					Total Sub-score:									
				0%					14					3.00					0.40		
		0.00					3.50					3.00					1.00	0.50	0.00	0.40	0.40

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
Instream Habitat/ Available Cover		Optimal					Suboptimal					Marginal					Poor							
				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE	1	0.05

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream runs under access road through two culverts.																	
Channel Alteration		Negligible					Minor					Moderate					Severe														
				Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE	10	0.50							

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.33**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

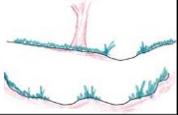
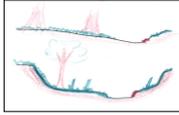
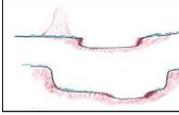
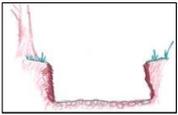
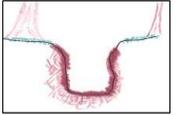
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/06/17	Designated: Existing:		649 ft
Latitude	41.752819	Longitude	-78.397447	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs across maintained pipeline ROW. Stream is surrounded by PEM and PSS wetlands. Average width of approximately 30 ft, average depth of 1.5 ft. Temporary impacts to 26.2 ft.	
T. Malecki, M. Groomer		Stream 037; UNT to Boyer Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	15 0.75

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>																			
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
	% Riparian Area:	0%	25%	30%	20%	25%		0%	0.40
Score:	0	11	9	8	4	0			
Total Sub-score:	0.00	2.75	2.70	1.60	1.00	0.00			
	Condition Category							Side Sub-Index	
	% Riparian Area:	0%	25%	30%	20%	25%		0%	0.40
Score:	0	11	9	8	4	0			
Total Sub-score:	0.00	2.75	2.70	1.60	1.00	0.00	0.40		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream crosses maintained pipeline ROW, and is surrounded by PEM and PSS wetlands. Agricultural pasture within 100 ft.							
		Optimal					Suboptimal			Marginal			Poor								
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	
Right Side	% Riparian Area:	0%	25%	30%	20%	30%	0%	0.41	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	0	11	9	8	4	0			
	Total Sub-score:	0.00	2.75	2.70	1.60	1.20	0.00			
Left Side	% Riparian Area:	0%	25%	30%	20%	30%	0%	0.41	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	11	9	8	4	0			0.41
	Total Sub-score:	0.00	2.75	2.70	1.60	1.20	0.00			0.41

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:						
		Optimal					Suboptimal			Marginal			Poor							
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			CI = (Score)/20		CI					
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	SCORE	13	0.65				
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream crosses maintained pipeline ROW.						
		Negligible					Minor			Moderate			Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			CI = (Score)/20		CI		
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	SCORE	17	0.85				
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

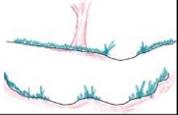
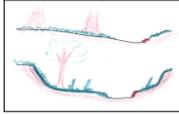
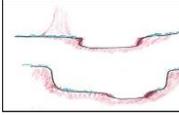
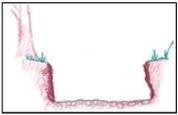
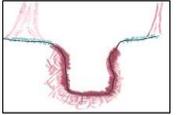
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/06/17	Designated: Existing:		218 ft
Latitude	41.754415	Longitude	-78.38979	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that crosses maintained ROW. Average width of approximately 4 ft, average depth of 0.5 ft. Temporary impacts to 5 ft.		
J. Miner, M. Groomer		Stream 038; UNT to Potato Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	12
	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
		20%	20%	25%	25%	10%		0%	0.48	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	14	12	9	7		4		
	Total Sub-score:	2.80	2.40	2.25	1.75	0.40	0.00			
	Condition Category							Side Sub-Index		
		20%	20%	25%	25%	10%		0%	0.48	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	14	12	9	7		4		
	Total Sub-score:	2.80	2.40	2.25	1.75	0.40	0.00	0.48		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:									
Optimal					Suboptimal			Marginal			Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
						High					Low			High			Low		High		Low	
						SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category								Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20																														
% Riparian Area:																																							
Right Side	Score:								0.47	0.47																													
	Total Sub-score:																																						
	<table style="width: 100%; border-collapse: collapse;"> <tr style="background-color: #e0f0ff;"> <th colspan="8" style="text-align: center;">Condition Category</th> </tr> <tr style="background-color: #e0f0ff;"> <th colspan="8" style="text-align: center;">% Riparian Area:</th> </tr> <tr> <td colspan="8" style="text-align: center;">Score:</td> </tr> <tr> <td colspan="8" style="text-align: center;">Total Sub-score:</td> </tr> </table>										Condition Category								% Riparian Area:								Score:								Total Sub-score:				
Condition Category																																							
% Riparian Area:																																							
Score:																																							
Total Sub-score:																																							
Left Side	Score:								0.47	CI = (Left Side CI + Right Side CI)/2	CI																												
	Total Sub-score:											0.47																											
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% Riparian Area:																																							
Score:																																							
Total Sub-score:																																							

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:													
Optimal					Suboptimal			Marginal			Poor															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.														
														High					Low			High			Low	
														SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Crosses maintained ROW and has two culverts.																
Negligible					Minor			Moderate			Severe																		
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.														
																	High					Low			High			Low	
																	SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

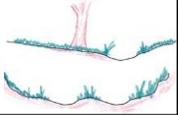
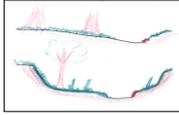
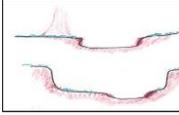
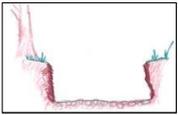
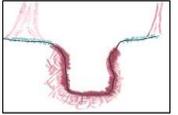
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/06/17	Designated: Existing:		1878 ft
Latitude	41.754396	Longitude	-78.389592	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW. Average width of approximately 4 ft, average depth of 0.5 ft. Temporary impacts to 4 ft.	
J. Miner, M. Groomer		Stream 039; UNT to Potato Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	12
	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
		20%	20%	25%	25%	10%		0%	0.48	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	14	12	9	7		4		
	Total Sub-score:	2.80	2.40	2.25	1.75	0.40	0.00			
	Condition Category							Side Sub-Index		
		20%	20%	25%	25%	10%		0%	0.48	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	14	12	9	7		4		
	Total Sub-score:	2.80	2.40	2.25	1.75	0.40	0.00	0.48		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:											
Riparian ZOI	Optimal	Suboptimal					Marginal					Poor													
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal:	Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal:	Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.						High Marginal:	Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal:	Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor:	Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor:	Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High	High					Low					High		Low		High		Low						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.46		
	Score:	14	12	9	7	4	0			
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00			

		Condition Category							Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	CI
Left Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.46			
	Score:	14	12	9	7	4	0				
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00		0.46	0.46	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
Instream Habitat/ Available Cover	Optimal	Suboptimal					Marginal					Poor												
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	High Suboptimal:	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Low Suboptimal:	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.						High Poor:	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.								
		High	High					Low					High		Low									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	8	CI	0.40

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Crosses maintained ROW and has two culverts.												
Channel Alteration	Negligible	Minor				Moderate				Severe																
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High:	Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low:	Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High:	Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low:	Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Severe:	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		High	High				Low				High				Low				High				Low			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	11	CI	0.55		

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 0.50

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

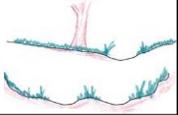
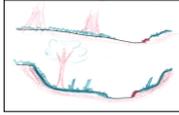
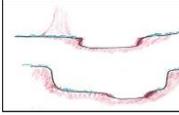
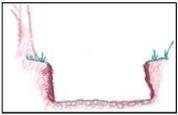
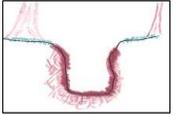
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		175 ft
Latitude	41.757159	Longitude	-78.375159	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream with average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream 040; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	9 0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	30%	20%	30%	20%	0%			0%
Right Side	Score:	14	12	9	7	0	0	0.54	Side Sub-Index = SUM(%Areas*Scores)/20
	Total Sub-score:	4.20	2.40	2.70	1.40	0.00	0.00		
	Condition Category								
Left Side	% Riparian Area:	30%	20%	30%	20%	0%	0%	0.54	CI = (Left Side CI + Right Side CI)/2
	Score:	14	12	9	7	0	0		
	Total Sub-score:	4.20	2.40	2.70	1.40	0.00	0.00		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:									
Optimal					Suboptimal			Marginal			Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
						High					Low			High			Low		High		Low	
						SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category								Side Sub-Index		
Right Side	% Riparian Area:		30%	20%	30%	20%	0%	0%	0.54	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:		14	12	9	7	0	0		
	Total Sub-score:		4.20	2.40	2.70	1.40	0.00	0.00		
Left Side	% Riparian Area:		30%	20%	30%	20%	0%	0%	0.54	CI = (Left Side CI + Right Side CI)/2
	Score:		14	12	9	7	0	0		
	Total Sub-score:		4.20	2.40	2.70	1.40	0.00	0.00		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:				
Optimal					Suboptimal			Marginal			Poor						
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
	High					Low			High			Low		CI = (Score)/20		CI	
	SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6		5 4 3 2 1		SCORE	3

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:								
Negligible					Minor			Moderate			Severe										
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				
						High					Low			High			Low		CI = (Score)/20		CI
						SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6		5 4 3 2 1		SCORE

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.49
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

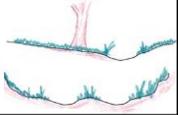
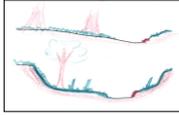
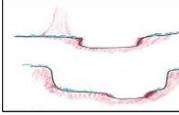
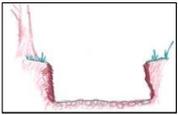
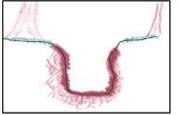
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		475 ft
Latitude	41.757352	Longitude	-78.375298	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Perennial stream that crosses maintained ROW, PEM and PFO wetlands. Average width of approximately 7 ft, average depth of 0.5 ft. Temporary impacts to 9.44 ft.	
J. Miner, M. Groomer		Stream 041; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	12
	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained	High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	20%	20%	20%	20%	20%	0%	Side Sub-Index
	Right Side	% Riparian Area: 20%	20%	20%	20%	20%	0%	0.46
	Score:	14	12	9	7	4	0	
Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00		
Side Sub-Index = SUM(%Areas*Scores)/20								
	Condition Category	20%	20%	20%	20%	20%	0%	0.46
	Left Side	% Riparian Area: 20%	20%	20%	20%	20%	0%	
	Score:	14	12	9	7	4	0	
Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00		
CI = (Left Side CI + Right Side CI)/2								CI
								0.46

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:												
		Optimal				Suboptimal				Marginal						Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
	SCORE	20 19 18 17 16	High				Low				High				Low				High				Low			
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor							
Right Side	Condition Category														
	% Riparian Area:	20%		20%		20%		20%			0%				
	Score:	14		12		9		7			4		0		
Total Sub-score:		2.80		2.40		1.80		1.40			0.80			0.00	
									0.46						
Left Side	Condition Category														
	% Riparian Area:	30%		20%		20%		20%			0%				
	Score:	14		12		9		7			4		0		
Total Sub-score:		4.20		2.40		1.80		1.40			0.80			0.00	
									0.53		CI = (Left Side CI + Right Side CI)/2		CI		
											0.50				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:				
		Optimal				Suboptimal				Marginal						Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.								
	SCORE	20 19 18 17 16	High				Low				High				Low			
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
									CI = (Score)/20		CI		SCORE		10		0.50	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:							
		Negligible				Minor				Moderate						Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
	SCORE	20 19 18 17 16	High				Low				High				Low						
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				
									CI = (Score)/20		CI		SCORE		16		0.80				

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.57
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

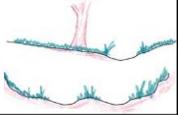
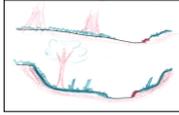
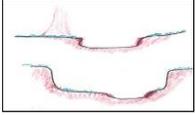
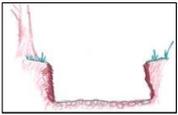
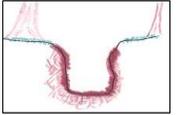
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		538 ft
Latitude	41.75721	Longitude	-78.372317	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs across maintained pipeline ROW and two PEM wetlands. Average width of approximately 15 ft, average depth of 1.5 ft. Temporary impacts to 16.71 ft.	
T. Malecki, M. Groomer		Stream 043; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	15
	0.75

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	0%	0%	30%	30%	40%	0%		
Right Side	% Riparian Area:	0%	0%	30%	30%	40%	0%	0.34	
	Score:	0	0	9	8	4	0		
	Total Sub-score:	0.00	0.00	2.70	2.40	1.60	0.00		
Left Side	% Riparian Area:	0%	0%	30%	30%	40%	0%	0.34	
	Score:	0	0	9	8	4	0		
	Total Sub-score:	0.00	0.00	2.70	2.40	1.60	0.00		
								CI = (Left Side CI + Right Side CI)/2	CI
								0.34	0.34

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream crosses maintained pipeline ROW and two PEM wetlands.			
		Optimal					Suboptimal			Marginal					Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low				
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1								

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	30%	30%	40%	0%	0.34	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	0	0	9	8	4	0			
	Total Sub-score:	0.00	0.00	2.70	2.40	1.60	0.00			
Left Side	% Riparian Area:	0%	0%	30%	30%	40%	0%	0.34	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	0	9	8	4	0			0.34
	Total Sub-score:	0.00	0.00	2.70	2.40	1.60	0.00			0.34

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:	
		Optimal					Suboptimal			Marginal				Poor	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	CI = (Score)/20	CI
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	12	0.60			

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream crosses maintained pipeline ROW.			
		Negligible					Minor			Moderate				Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	CI = (Score)/20	CI		
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	16	0.80					

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

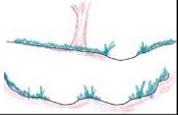
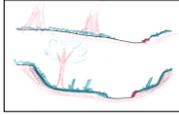
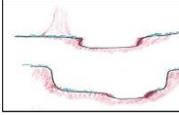
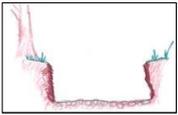
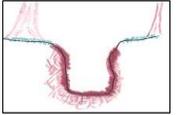
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		50 ft
Latitude	41.749045	Longitude	-78.37657	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW and access road. Drains PEM wetland. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream044; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	9
		0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		15%	20%	20%	15%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	2.40	1.80	1.05	0.80	0.20	0.42		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
		15%	20%	20%	15%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	2.40	1.80	1.05	0.80	0.20	0.42		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.42		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High		Low		High		Low		High		Low				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Right Side	Condition Category																				Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	15%	20%	20%	15%	20%	10%													0.42		
	Score:	14	12	9	7	4	2															
Total Sub-score:		2.10	2.40	1.80	1.05	0.80	0.20															
Left Side	Condition Category																				CI = (Left Side CI + Right Side CI)/2	CI
	% Riparian Area:	15%	20%	20%	15%	20%	10%													0.42		
	Score:	14	12	9	7	4	2															
Total Sub-score:		2.10	2.40	1.80	1.05	0.80	0.20															

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	High		Low		High		Low		High		Low		CI = (Score)/20		CI								
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	2

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
						High		Low		High		Low		High		Low		CI = (Score)/20		CI			
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

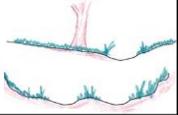
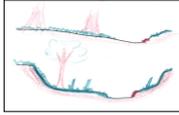
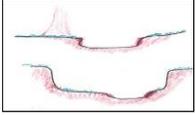
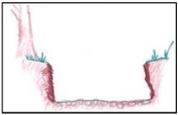
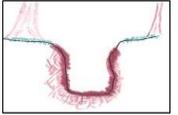
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		85 ft
Latitude	41.760339	Longitude	-78.366277	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 2.5 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream045; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	10%	20%	20%	10%	20%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	0.70	0.80	0.40	0.38		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
	% Riparian Area:	10%	20%	20%	10%	20%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	0.70	0.80	0.40	0.38		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.38		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	10%		20%		20%		10%		20%		0.38				
	Score:	14		12		9		7		4				2		
	Total Sub-score:	1.40		2.40		1.80		0.70		0.80				0.40		
Left Side	% Riparian Area:	15%		20%		20%		15%		10%		0.42	CI = (Left Side CI + Right Side CI)/2	CI		
	Score:	14		12		9		7		4					2	
	Total Sub-score:	2.10		2.40		1.80		1.05		0.80					0.20	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																			
		Optimal				Suboptimal				Marginal						Poor																																	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20				CI																															
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		2		0.10	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																																			
		Negligible				Minor				Moderate						Severe																																	
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				CI = (Score)/20				CI																							
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		12		0.60	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.37
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

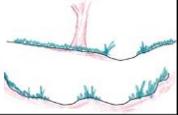
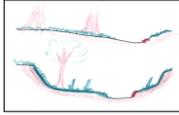
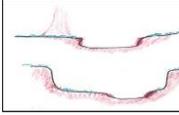
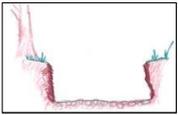
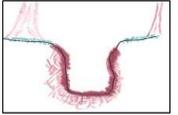
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		74 ft
Latitude	41.76109	Longitude	-78.364514	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 2.5 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream046; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	9 0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																					
	Optimal		Suboptimal		Marginal		Poor															
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:													
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
		15%	15%	20%	20%	15%		15%	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	14	12	9	7		4	
Total Sub-score:		2.10	1.80	1.80	1.40	0.60	0.30	0.40	
	Condition Category							Side Sub-Index	
		15%	15%	20%	20%	15%		15%	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	14	12	9	7		4	
Total Sub-score:		2.10	1.80	1.80	1.40	0.60	0.30	0.40	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:							
		Optimal				Suboptimal				Marginal				Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High				Low				High				Low				High				Low			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20			
		Optimal		Suboptimal		Marginal		Poor							
Right Side	% Riparian Area:	15%		15%		20%		20%		15%		0.40			
	Score:	14		12		9		7		4				0.40	
	Total Sub-score:	2.10		1.80		1.80		1.40		0.60					
Left Side	% Riparian Area:	15%		15%		20%		20%		15%		0.40	CI = (Left Side CI + Right Side CI)/2	CI	
	Score:	14		12		9		7		4				0.40	0.40
	Total Sub-score:	2.10		1.80		1.80		1.40		0.60					

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:					
		Optimal				Suboptimal				Marginal				Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
		High		Low		High		Low		High		Low		High		Low		CI = (Score)/20		CI			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:					
		Negligible				Minor				Moderate				Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High				Low				High				Low				CI = (Score)/20		CI			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		13	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

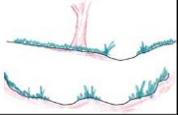
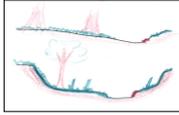
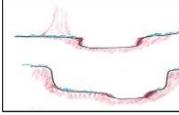
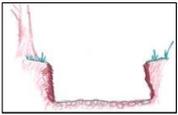
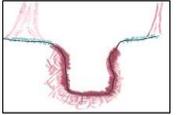
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		76 ft
Latitude	41.76106	Longitude	-78.358158	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 7.5 ft, average depth of 0.5 ft. Temporary impacts to 9 ft.		
J. Miner, M. Groomer		Stream047; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	8
		0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		15%	15%	15%	15%	20%			20%
	% Riparian Area:	15%	15%	15%	15%	20%			20%
Right Side	Score:	14	12	9	7	4	2		
	Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40		
	Side Sub-Index	0.38						Side Sub-Index = SUM(%Areas*Scores)/20	
Left Side	% Riparian Area:	15%	15%	15%	15%	20%	20%		
	Score:	14	12	9	7	4	2		
	Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40		
	Side Sub-Index	0.38						CI = (Left Side CI + Right Side CI)/2	CI
								0.38	0.38

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:									
Optimal					Suboptimal			Marginal			Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
						High					Low			High			Low		High		Low	
						SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6		5 4 3 2 1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20					
Right Side	% Riparian Area:	15%		15%		15%		15%			20%		20%		0.38
	Score:	14		12		9		7			4		2		
	Total Sub-score:	2.10		1.80		1.35		1.05		0.80		0.40			
Left Side	% Riparian Area:	15%		15%		15%		15%		20%		20%		0.38	
	Score:	14		12		9		7		4		2			
	Total Sub-score:	2.10		1.80		1.35		1.05		0.80		0.40			
													CI = (Left Side CI + Right Side CI)/2		CI
													0.38		0.38

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:				
Optimal					Suboptimal			Marginal			Poor						
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
	High					Low			High			Low		CI = (Score)/20		CI	
	SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6		5 4 3 2 1		SCORE	2

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:								
Negligible					Minor			Moderate			Severe										
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
						High					Low			High			Low		CI = (Score)/20		CI
						SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6		5 4 3 2 1		SCORE

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

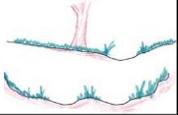
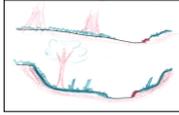
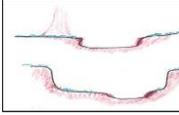
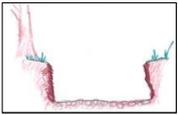
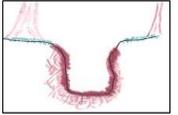
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		74 ft
Latitude	41.760931	Longitude	-78.357985	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 8 ft, average depth of 0.5 ft. Temporary impacts to 1 ft.		
J. Miner, M. Groomer		Stream048; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches are present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	9
		0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	15%	15%	15%	15%	20%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40	0.38		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
	% Riparian Area:	15%	15%	15%	15%	20%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40	0.38		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.38		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High			Low			High			Low		High		Low	
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category										Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20			
Right Side	% Riparian Area:	15%	15%	15%	15%	20%	20%	0.38							
	Score:	14	12	9	7	4	2								
	Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40								
Condition Category										0.38		CI = (Left Side CI + Right Side CI)/2		CI	
Left Side	% Riparian Area:	15%	15%	15%	15%	20%	20%	0.38						0.38	
	Score:	14	12	9	7	4	2								
	Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40								

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	High			Low			High			Low		High		Low									
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	2

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.						
						High			Low			High			Low				High		Low		
						SCORE	20	19	18	17	16	15	14	13	12	11			10	9	8	7	6

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

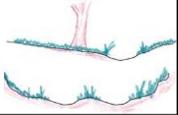
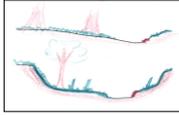
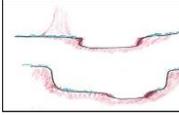
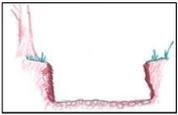
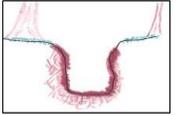
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		85 ft
Latitude	41.760418	Longitude	-78.354998	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream049; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	7
		0.35

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained	High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	15%	20%	20%	15%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	2.40	1.80	1.05	0.80	0.20	0.42		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
	% Riparian Area:	15%	20%	20%	15%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	2.40	1.80	1.05	0.80	0.20	0.42		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.42		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:													
		Optimal				Suboptimal				Marginal					Poor												
		Riparian ZOI area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1													

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category												Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20					
		Optimal				Suboptimal				Marginal						Poor				
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.						Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 2		CI

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal				Suboptimal				Marginal					Poor								
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 2		CI			

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
		Negligible				Minor				Moderate					Severe								
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 14		CI			

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

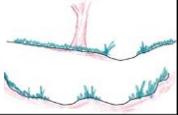
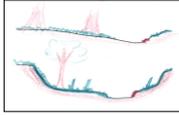
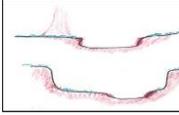
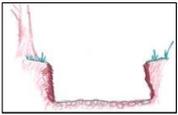
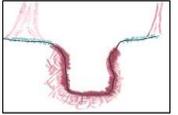
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		74 ft
Latitude	41.763218	Longitude	-78.350031	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream050; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
		15%	15%	15%	15%	20%	20%			0.38
	Score:	14	12	9	7	4	2			
Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40				
Right Side								0.38	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category									
		15%	15%	15%	15%	20%	20%			0.38
	Score:	14	12	9	7	4	2			
Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40				
Left Side								0.38	CI = (Left Side CI + Right Side CI)/2	
								0.38	CI	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	15%		15%		15%		20%		20%		0.38				
	Score:	14		12		9		7		4				2		
	Total Sub-score:	2.10		1.80		1.35		1.05		0.80				0.40		
Left Side	% Riparian Area:	15%		15%		15%		15%		20%		20%		0.38	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12		9		7		4		2				
	Total Sub-score:	2.10		1.80		1.35		1.05		0.80		0.40				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																			
		Optimal				Suboptimal				Marginal						Poor																																	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20				CI																															
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		1		0.05	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																																			
		Negligible				Minor				Moderate						Severe																																	
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				CI = (Score)/20				CI																							
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		14		0.70	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

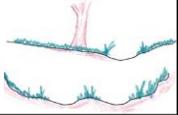
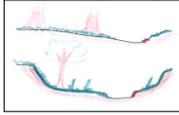
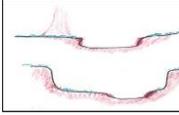
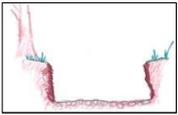
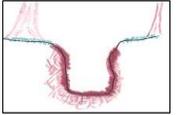
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		69 ft
Latitude	41.74882	Longitude	-78.328596	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream051; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	High	Low	High	Low	High	Low	High	Low												
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	15%	15%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	1.80	1.80	1.40	0.80	0.20	0.41	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category						Side Sub-Index		
	% Riparian Area:	15%	15%	20%	20%	20%		10%	
	Score:	14	12	9	7	4		2	
Total Sub-score:	2.10	1.80	1.80	1.40	0.80	0.20	0.41	CI = (Left Side CI + Right Side CI)/2	CI
							0.41	0.41	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:									
Optimal					Suboptimal			Marginal			Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
						High					Low			High			Low		High		Low	
						20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1					

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

								Side Sub-Index							
Right Side	Condition Category		15%		20%		20%		20%		10%		0.41	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:		14		9		7		4		2				
	Total Sub-score:		2.10		1.80		1.80		1.40		0.80				0.20
Left Side	Condition Category		15%		20%		20%		20%		10%		0.41	CI = (Left Side CI + Right Side CI)/2	CI
	Score:		14		9		7		4		2				
	Total Sub-score:		2.10		1.80		1.80		1.40		0.80				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:				
Optimal					Suboptimal			Marginal			Poor						
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
	High					Low			High			Low		CI = (Score)/20		CI	
	20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		SCORE 2		0.10	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:									
Negligible					Minor			Moderate			Severe											
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.						
						High					Low			High			Low		CI = (Score)/20		CI	
						20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		SCORE 14		0.70	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5** **0.40**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

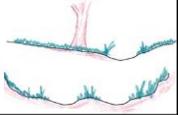
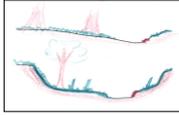
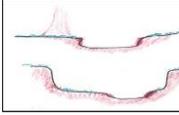
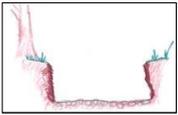
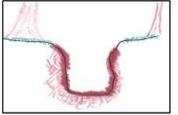
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		60 ft
Latitude	41.748023	Longitude	-78.327519	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 6 ft, average depth of 1 ft. Temporary impacts to 6.5 ft.		
J. Miner, M. Groomer		Stream052; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	10	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		15%	15%	15%	15%	20%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40	0.38		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
		15%	15%	15%	15%	20%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40	0.38		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.38		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:												
		Optimal				Suboptimal				Marginal					Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
	SCORE	20 19 18 17 16	High				Low				High				Low				High				Low			
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Comments:				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	15%		15%		15%		30%		10%		0.39	Side Sub-Index = SUM(%Areas*Scores)/20			
	Score:	14		12		9		7		4				2		
	Total Sub-score:	2.10		1.80		1.35		1.05		1.20				0.20		
Left Side	% Riparian Area:	15%		15%		20%		20%		10%		0.41	CI = (Left Side CI + Right Side CI)/2	CI		
	Score:	14		12		9		7		4					2	
	Total Sub-score:	2.10		1.80		1.80		1.40		0.80					0.20	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:							
		Optimal				Suboptimal				Marginal						Poor					
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI					
	SCORE	20 19 18 17 16	High				Low				High				Low				SCORE	2	0.10
			15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:						
		Negligible				Minor				Moderate						Severe				
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				CI = (Score)/20		CI
	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	High				Low				High				Low				SCORE	14	0.70
	SCORE	20 19 18 17 16	High				Low				High				Low				SCORE	14
		15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

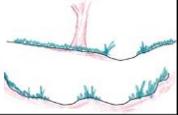
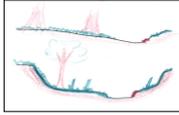
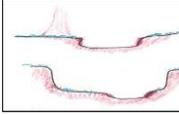
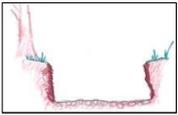
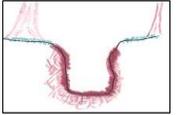
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		425 ft
Latitude	41.747934	Longitude	-78.325856	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW and access road. Drains PEM wetland. Average width of approximately 2.5 ft, average depth of 0.5 ft. Temporary impacts to 2.5 ft.		
J. Miner, M. Groomer		Stream053; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		15%	15%	15%	15%	20%			20%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40	0.38		
Right Side							0.38	Side Sub-Index = SUM(%Areas*Scores)/20	
Left Side							0.38		CI = (Left Side CI + Right Side CI)/2
SCORE	15%	15%	15%	15%	20%	20%	CI		
Total Sub-score:	2.10	1.80	1.35	1.05	0.80	0.40	0.38		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:							
		Optimal				Suboptimal				Marginal				Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High				Low				High				Low				High				Low			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20					
		Optimal		Suboptimal		Marginal		Poor									
Right Side	% Riparian Area:	15%		15%		20%		20%		10%		0.41					
	Score:	14		12		9		7		4				2			
	Total Sub-score:	2.10		1.80		1.80		1.40		0.80				0.20			
Left Side	% Riparian Area:	15%		15%		15%		15%		30%		10%		0.39	CI = (Left Side CI + Right Side CI)/2	CI	
	Score:	14		12		9		7		4		2					0.40
	Total Sub-score:	2.10		1.80		1.35		1.05		1.20		0.20					

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:					
		Optimal				Suboptimal				Marginal				Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
		CI = (Score)/20		CI																			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		1	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:					
		Negligible				Minor				Moderate				Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		CI = (Score)/20		CI																			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		13	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

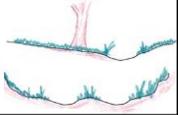
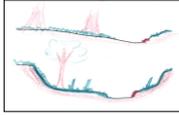
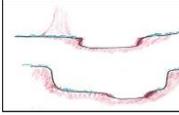
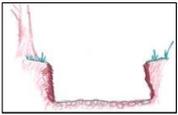
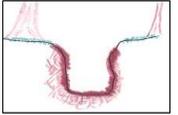
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/03/18	Designated: Existing:		300 ft
Latitude	41.763862	Longitude	-78.329347	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that crosses maintained ROW and drains into PEM wetland. Average width of approximately 15 ft, average depth of 0.5 ft. Temporary impacts to 8.5 ft.		
J. Miner, M. Groomer		Stream 054; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	12	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
		10%	30%	10%	30%	20%		0%	0.44	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	14	12	9	7		4		
		Total Sub-score:	1.40	3.60	0.90	2.10	0.80	0.00		
	Condition Category							Side Sub-Index		
		10%	30%	10%	30%	20%		0%	0.44	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	14	12	9	7		4		
		Total Sub-score:	1.40	3.60	0.90	2.10	0.80	0.00		
									0.44	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:															
		Optimal				Suboptimal				Marginal					Poor														
Riparian ZOI		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index				Side Sub-Index = SUM(%Areas*Scores)/20															
		Optimal				Suboptimal				Marginal					Poor														
Right Side		% Riparian Area: 10%				30%				10%					30%				20%				0%				0.44		
														SCORE															

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:							
		Optimal				Suboptimal				Marginal				Poor							
Instream Habitat/ Available Cover		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI	
																		SCORE		20 19 18 17 16	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Culverts											
		Negligible				Minor				Moderate				Severe											
Channel Alteration		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				CI = (Score)/20		CI	
																						SCORE		20 19 18 17 16	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5 0.53

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

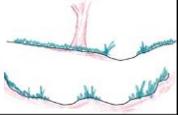
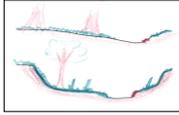
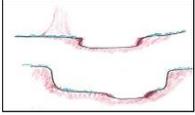
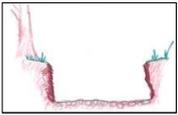
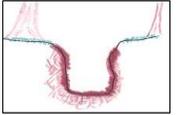
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		928 ft
Latitude	41.767016	Longitude	-78.314451	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs across maintained pipeline ROW and four PEM wetlands. Average width of approximately 12 ft, average depth of 1.5 ft. Temporary impacts to 20.18 ft.	
T. Malecki, M. Groomer		Stream 055; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	15
	0.75

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:	20%	20%	20%	20%	20%		0%	0.45	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	14	11	9	7	4		0		
Total Sub-score:	2.80	2.20	1.80	1.40	0.80	0.00				
	Condition Category							Side Sub-Index		
	% Riparian Area:	20%	20%	20%	20%	20%		0%	0.45	CI = (Left Side CI + Right Side CI)/2
	Score:	14	11	9	7	4		0		
Total Sub-score:	2.80	2.20	1.80	1.40	0.80	0.00	0.45			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream crosses maintained pipeline ROW and four PEM wetlands.						
Riparian ZOI	Optimal	Suboptimal					Marginal					Poor								
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal:	Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.					
		High	High					Low					High		Low					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

								Ensure the sums of % Riparian ZOI Blocks equal 100			
		Condition Category							Side Sub-Index		
Right Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.45		Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	14	11	9	7	4	0				
	Total Sub-score:	2.80	2.20	1.80	1.40	0.80	0.00				
Left Side	% Riparian Area:	20%	20%	20%	20%	20%	0%	0.45		CI = (Left Side CI + Right Side CI)/2	
	Score:	14	11	9	7	4	0				
	Total Sub-score:	2.80	2.20	1.80	1.40	0.80	0.00				
										CI	0.45

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
Instream Habitat/ Available Cover	Optimal	Suboptimal					Marginal					Poor												
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.												
		High	High					Low					High		Low									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	14	CI	0.70

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream crosses maintained pipeline ROW.										
Channel Alteration	Negligible	Minor					Moderate					Severe												
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	High					Low					High		Low									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	17	CI	0.85

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 0.64

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

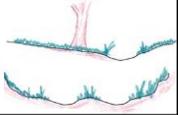
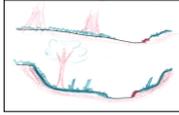
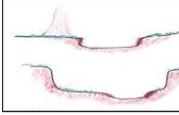
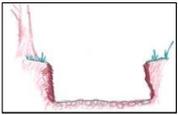
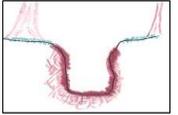
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		663 ft
Latitude	41.766722	Longitude	-78.31354	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs across maintained pipeline ROW and two PEM wetlands. Tributary to Stream 055. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 056; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	13
	0.65

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	0%	30%	20%	20%	30%	0%	Side Sub-Index	
Right Side	% Riparian Area:	0%	30%	20%	20%	30%	0%	0.40	
	Score:	0	12	9	7	4	0		
	Total Sub-score:	0.00	3.60	1.80	1.40	1.20	0.00		
Left Side	% Riparian Area:	0%	30%	20%	20%	30%	0%	0.40	
	Score:	0	12	9	7	4	0		
	Total Sub-score:	0.00	3.60	1.80	1.40	1.20	0.00		
								CI = (Left Side CI + Right Side CI)/2	CI
								0.40	0.40

Riverine Assessment Form 1

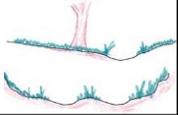
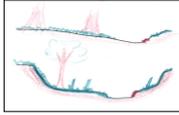
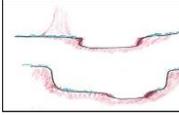
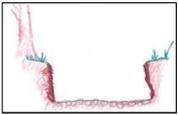
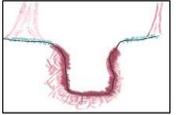
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For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		100 ft
Latitude	41.767394	Longitude	-78.31398	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Runs across access road and maintained pipeline ROW. Tributary to Stream 055. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 057; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	10
	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	0%	20%	20%	20%	20%	20%	Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	20%	20%	20%	20%	20%	0.34	
	Score:	0	12	9	7	4	2		
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.40		
	Condition Category	0%	20%	20%	20%	20%	20%	0.34	CI = (Left Side CI + Right Side CI)/2
Left Side	% Riparian Area:	0%	20%	20%	20%	20%	20%		
	Score:	0	12	9	7	4	2		
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.40	0.34	0.34

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream crosses maintained pipeline ROW and access road. Tributary to Stream 055.							
		Optimal					Suboptimal			Marginal			Poor								
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low						
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	20%	20%	20%	20%	20%	20%	0.34		
	Score:	0	12	9	7	4	2				
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.40				
Left Side	% Riparian Area:	0%	20%	20%	20%	20%	20%	20%	0.34	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	12	9	7	4	2				0.34
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.40				0.34

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:						
		Optimal					Suboptimal			Marginal			Poor							
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI				
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	SCORE	1	0.05		
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream crosses maintained pipeline ROW and access road through culverts.								
		Negligible					Minor			Moderate			Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				CI = (Score)/20		CI
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	SCORE	11	0.55				
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

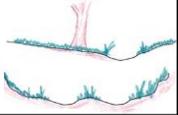
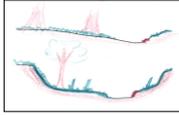
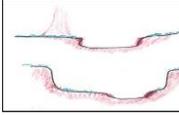
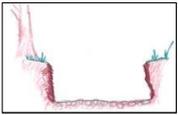
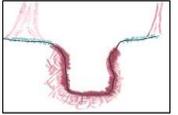
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Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		84 ft
Latitude	41.771402	Longitude	-78.310647	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream058; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	CI = (Left Side CI + Right Side CI)/2	CI
								0.40	0.40

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

									Ensure the sums of % Riparian ZOI Blocks equal 100										
		Condition Category														Side Sub-Index			
Right Side	% Riparian Area:	10%		20%		20%		20%		20%		10%		0.40		Side Sub-Index = SUM(%Areas*Scores)/20			
	Score:	14		12		9		7		4		2							
	Total Sub-score:	1.40		2.40		1.80		1.40		0.80		0.20							
Left Side	% Riparian Area:	10%		20%		20%		20%		20%		10%		0.40		CI = (Left Side CI + Right Side CI)/2		CI	
	Score:	14		12		9		7		4		2						0.40	
	Total Sub-score:	1.40		2.40		1.80		1.40		0.80		0.20						0.40	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																			
		Optimal				Suboptimal				Marginal						Poor																																	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20				CI																															
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		2		0.10	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				CI = (Score)/20		CI																							
		High				Low				High				Low				High				Low				SCORE		13		0.65																	
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		13	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

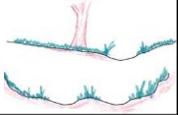
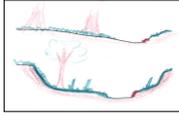
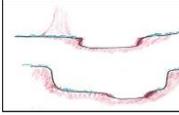
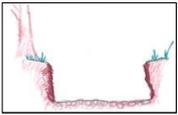
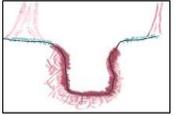
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		60 ft
Latitude	41.77688	Longitude	-78.30974	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream059; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained			High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.								
	High		Low		High		Low			High		Low								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category												
Right Side	% Riparian Area:						10%	20%	20%	20%	20%	10%	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:						14	12	9	7	4	2	
	Total Sub-score:						1.40	2.40	1.80	1.40	0.80	0.20	
	Condition Category												
Left Side	% Riparian Area:						10%	20%	20%	20%	20%	10%	CI = (Left Side CI + Right Side CI)/2
	Score:						14	12	9	7	4	2	
	Total Sub-score:						1.40	2.40	1.80	1.40	0.80	0.20	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

		Condition Category												Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20															
		Optimal				Suboptimal				Marginal								Poor													
Right Side	% Riparian Area:	10%				20%				20%				20%				10%				0.40									
	Score:	14				12				9				7				4								2					
	Total Sub-score:	1.40				2.40				1.80				1.40				0.80								0.20					
Left Side	% Riparian Area:	10%				20%				20%				20%				10%				0.40		CI = (Left Side CI + Right Side CI)/2		CI					
	Score:	14				12				9				7				4										2			
	Total Sub-score:	1.40				2.40				1.80				1.40				0.80										0.20			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal						Poor																															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20				CI																													
		High				Low				High										Low																											
		SCORE		20		19		18		17		16								15		14		13		12		11		10		9		8		7		6		5		4		3		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low																																	
		SCORE		20		19		18		17		16		15		14						13		12		11		10		9		8		7		6		5		4		3		2		1	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

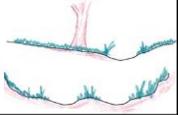
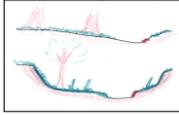
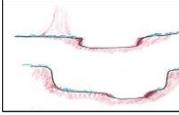
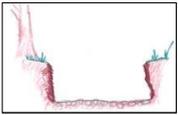
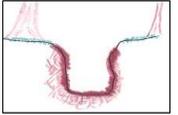
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		74 ft
Latitude	41.779992	Longitude	-78.307786	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Runs across access road. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.		
T. Malecki, M. Groomer		Stream 060; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	13
	0.65

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
		0%	25%	25%	0%	25%			25%
	Score:	0	12	9	0	4			2
Total Sub-score:	0.00	3.00	2.25	0.00	1.00	0.50	0.34		
	Condition Category						Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	
		0%	25%	25%	0%	25%			25%
	Score:	0	12	9	0	4			2
Total Sub-score:	0.00	3.00	2.25	0.00	1.00	0.50	0.34		
Right Side							0.34	CI	
Left Side							0.34	0.34	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments: Stream crosses access road.								
Optimal					Suboptimal			Marginal			Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High			Low			High			Low		High		Low		
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Right Side	Condition Category																					Side Sub-Index = SUM(%Areas*Scores)/20					
	% Riparian Area:	0%	25%	25%	0%	25%	25%	0%	25%	25%	0%	25%	25%	0%	25%	25%	0%	25%	25%	0%	25%		25%				
	Score:	0	12	9	0	4	2	0	4	2	0	4	2	0	4	2	0	4	2	0	4		2	0	4	2	
Total Sub-score:		0.00	3.00	2.25	0.00	1.00	0.50															0.34					
Left Side	Condition Category																						CI = (Left Side CI + Right Side CI)/2	CI			
	% Riparian Area:	0%	25%	25%	0%	25%	25%	0%	25%	25%	0%	25%	25%	0%	25%	25%	0%	25%	25%	0%	25%	25%			0%	25%	25%
	Score:	0	12	9	0	4	2	0	4	2	0	4	2	0	4	2	0	4	2	0	4	2			0	4	2
Total Sub-score:		0.00	3.00	2.25	0.00	1.00	0.50															0.34					

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:											
Optimal					Suboptimal			Marginal			Poor													
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.												
	High			Low			High			Low		High		Low										
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	2	CI

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Stream crosses access road through culverts.											
Negligible					Minor			Moderate			Severe													
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
	High			Low			High			Low		High		Low										
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	11	CI

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

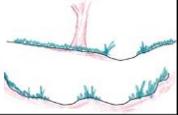
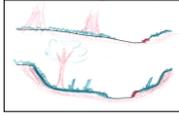
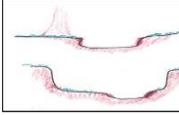
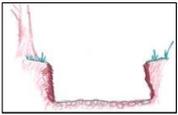
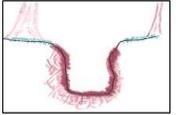
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		70 ft
Latitude	41.780928	Longitude	-78.307109	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream061; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	CI = (Left Side CI + Right Side CI)/2	CI
								0.40	0.40

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:							
		Optimal				Suboptimal				Marginal					Poor						
Riparian ZOI		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
														SCORE		20	19	18	17	16	15

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20		
		Optimal		Suboptimal		Marginal		Poor				
Right Side	% Riparian Area:	10%		20%		20%		20%		0.40		
	Score:	14		12		9		7				
	Total Sub-score:	1.40		2.40		1.80		1.40				
Left Side	% Riparian Area:	10%		20%		20%		20%		0.40	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12		9		7				
	Total Sub-score:	1.40		2.40		1.80		1.40				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:											
		Optimal				Suboptimal				Marginal					Poor										
Instream Habitat/ Available Cover		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																							
														SCORE		20	19	18	17	16	15	14	13	12	11

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:											
		Negligible				Minor				Moderate					Severe										
Channel Alteration		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																							
														SCORE		20	19	18	17	16	15	14	13	12	11

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 0.40

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

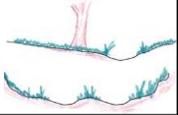
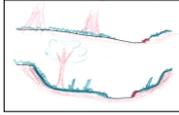
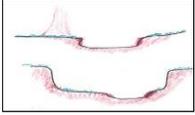
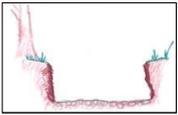
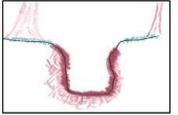
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		78 ft
Latitude	41.784053	Longitude	-78.307668	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Runs across access road. Average width of approximately 6 ft, average depth of 0.5 ft. Temporary impacts to 6.5 ft.		
T. Malecki, M. Groomer		Stream 062; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	15
	0.75

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	0%	25%	25%	0%	25%	25%		
	Right Side	% Riparian Area:	0%	25%	25%	0%	25%		25%
	Score:	0	12	9	0	4	2	0.34	
	Total Sub-score:	0.00	3.00	2.25	0.00	1.00	0.50		
	Condition Category	0%	25%	25%	0%	25%	25%		
	Left Side	% Riparian Area:	0%	25%	25%	0%	25%		25%
	Score:	0	12	9	0	4	2	0.34	
	Total Sub-score:	0.00	3.00	2.25	0.00	1.00	0.50	0.34	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments: Stream crosses access road.							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High			Low		High		Low	High		Low				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	25%	25%	0%	25%	25%	0.34		
	Score:	0	12	9	0	4	2			
	Total Sub-score:	0.00	3.00	2.25	0.00	1.00	0.50			
Left Side	% Riparian Area:	0%	25%	25%	0%	25%	25%	0.34	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	12	9	0	4	2			0.34
	Total Sub-score:	0.00	3.00	2.25	0.00	1.00	0.50			0.50

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	High					Low		High		Low	High		Low	CI = (Score)/20	CI								
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	5

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Stream crosses access road through culverts.										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
						High			Low		High		Low	High		Low	High		Low				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.45**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

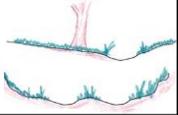
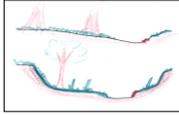
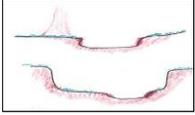
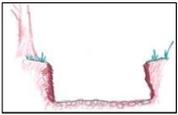
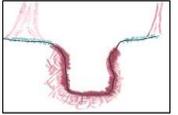
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		76 ft
Latitude	41.784091	Longitude	-78.307806	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream063; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Right Side	Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	Side Sub-Index = SUM(%Areas*Scores)/20	
Left Side	% Riparian Area:	10%	20%	20%	20%	20%	10%		
	Score:	14	12	9	7	4	2		
	Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	CI = (Left Side CI + Right Side CI)/2	
								CI	
								0.40	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
											High			Low			High		Low	
						SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6			5 4 3 2 1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Right Side								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20	
Condition Category											
% Riparian Area:		10%		20%		20%		20%			10%
Score:		14		12		9		7		4	
Total Sub-score:		1.40		2.40		1.80		1.40		0.80	
								0.40			
Left Side								Side Sub-Index		CI = (Left Side CI + Right Side CI)/2	
Condition Category											
% Riparian Area:		10%		20%		20%		20%			10%
Score:		14		12		9		7		4	
Total Sub-score:		1.40		2.40		1.80		1.40		0.80	
								0.40		0.40	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:		
Optimal					Suboptimal			Marginal			Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			
						High			Low			High		Low	
	SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6			5 4 3 2 1
										CI = (Score)/20		CI			
										SCORE		0.10			

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:							
Negligible					Minor			Moderate			Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
											High			Low			High		Low	
						SCORE					20 19 18 17 16			15 14 13 12 11			10 9 8 7 6			5 4 3 2 1
										CI = (Score)/20		CI								
										SCORE		0.65								

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

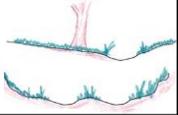
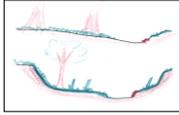
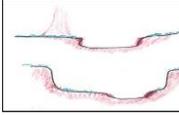
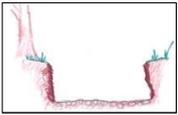
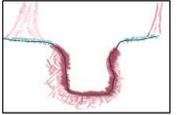
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		73 ft
Latitude	41.784189	Longitude	-78.308004	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream064; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal			Suboptimal			Marginal			Poor		Severe								
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>			<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal			Suboptimal		Marginal		Poor												
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained			High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.							
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	10%	20%	20%	20%	20%	10%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.80	0.20				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.40	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	10%	20%	20%	20%	20%	10%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.80	0.20	0.40			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	10%		10%		20%		20%		20%		0.35				
	Score:	14		12		9		7		4				2		
	Total Sub-score:	1.40		1.20		1.80		1.40		0.80				0.40		
Left Side	% Riparian Area:	10%		10%		20%		20%		20%		0.35	CI = (Left Side CI + Right Side CI)/2	CI		
	Score:	14		12		9		7		4					2	
	Total Sub-score:	1.40		1.20		1.80		1.40		0.80					0.40	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal						Poor																															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																					
		CI = (Score)/20												CI																																	
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low				High				Low																									
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		13	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

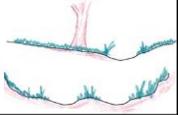
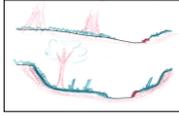
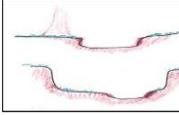
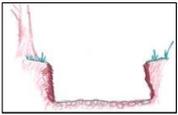
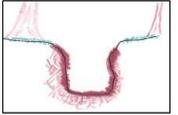
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/02/17	Designated: Existing:		474 ft
Latitude	41.78266	Longitude	-78.277292	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Runs across maintained pipeline ROW. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 066; UNT to Portage Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	9 0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																					
	Optimal		Suboptimal		Marginal		Poor															
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:													
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	30%	30%	20%	20%	0%			0%
	Score:	14	12	9	4	0			0
Right Side	Total Sub-score:	4.20	3.60	1.80	0.80	0.00	0.00	0.52	Side Sub-Index = SUM(%Areas*Scores)/20
	Condition Category						Side Sub-Index		
	% Riparian Area:	30%	30%	20%	20%	0%			0%
	Score:	14	12	9	4	0			0
Left Side	Total Sub-score:	4.20	3.60	1.80	0.80	0.00	0.00	0.52	CI = (Left Side CI + Right Side CI)/2
								CI	
								0.52	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream crosses maintained pipeline ROW.						
		Optimal					Suboptimal			Marginal					Poor					
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low							
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	30%	30%	20%	20%	0%	0%	0.52			
	Score:	14	12	9	4	0	0				
	Total Sub-score:	4.20	3.60	1.80	0.80	0.00	0.00				
		Condition Category									
Left Side	% Riparian Area:	30%	30%	20%	20%	0%	0%	0.52	CI = (Left Side CI + Right Side CI)/2	CI	
	Score:	14	12	9	4	0	0			0.52	
	Total Sub-score:	4.20	3.60	1.80	0.80	0.00	0.00			0.00	0.52

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal					Suboptimal			Marginal				Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	CI = (Score)/20	CI								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream crosses maintained pipeline ROW.									
		Negligible					Minor			Moderate				Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.									
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	CI = (Score)/20	CI								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

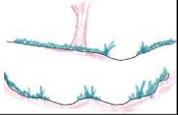
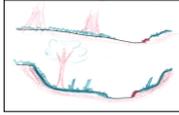
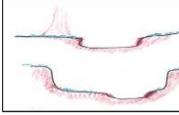
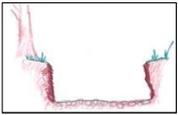
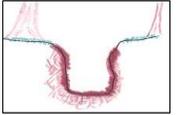
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		516 ft
Latitude	41.78862	Longitude	-78.270035	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Runs across railroad and road. Drains PEM wetland and connects to Ditch 011. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 067; UNT to Portage Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are heavily vegetated.

CI = (Score)/20	CI
SCORE	14
	0.70

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	10%	20%	20%	20%	0%			
Right Side	Score:	14	12	9	7	0	1	0.37	Side Sub-Index = SUM(%Areas*Scores)/20
	Total Sub-score:	1.40	2.40	1.80	1.40	0.00	0.30		
	Condition Category								
	% Riparian Area:	10%	20%	20%	20%	0%			
Left Side	Score:	14	12	9	7	0	1	0.37	CI = (Left Side CI + Right Side CI)/2
	Total Sub-score:	1.40	2.40	1.80	1.40	0.00	0.30		
								CI	0.37

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Stream crosses railroad and road. Drains PEM wetland and connects to ditch.																											
		Optimal				Suboptimal				Marginal					Poor																										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category												Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20													
		Optimal				Suboptimal				Marginal						Poor												
Right Side	% Riparian Area:	10%				20%				20%				0%				30%				0.37						
	Score:	14				12				9				7				0						1				
	Total Sub-score:	1.40				2.40				1.80				1.40				0.00						0.30				
Left Side	% Riparian Area:	10%				20%				20%				0%				30%				0.37	CI = (Left Side CI + Right Side CI)/2	CI				
	Score:	14				12				9				7				0							1			
	Total Sub-score:	1.40				2.40				1.80				1.40				0.00							0.30			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal				Poor																																	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20				CI																													
		High				Low				High										Low																											
		SCORE		20		19		18		17		16								15		14		13		12		11		10		9		8		7		6		5		4		3		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream crosses railroad and road through four culverts.																																	
		Negligible				Minor				Moderate				Severe																																	
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low																																	
		SCORE		20		19		18		17		16		15		14						13		12		11		10		9		8		7		6		5		4		3		2		1	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

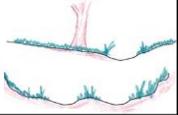
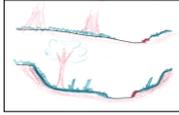
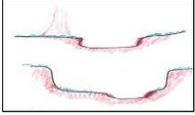
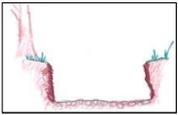
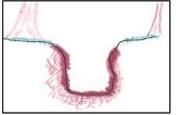
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		408 ft
Latitude	41.78974	Longitude	-78.267516	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 5 ft, average depth of 0.5 ft. Temporary impacts to 6.5 ft.	
T. Malecki, M. Groomer		Stream 068; UNT to Portage Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Right Side	Condition Category						Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	0%	30%	0%	20%	50%			0%
	Score:	0	12	0	7	4			0
Total Sub-score:		0.00	3.60	0.00	1.40	2.00	0.00	0.35	
Left Side	Condition Category						Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	
	% Riparian Area:	0%	30%	0%	20%	50%			0%
	Score:	0	12	0	7	4			0
Total Sub-score:		0.00	3.60	0.00	1.40	2.00	0.00	0.35	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category														Comments: Residential development within 70 ft. Mowed areas for residential and agricultural pasture. Tree canopy cover over 60% of stream but has maintained understory.											
		Optimal					Suboptimal					Marginal					Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low												
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	
Right Side	% Riparian Area:	0%	10%	0%	10%	50%	30%	0.21	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	0	12	0	7	4	1			
	Total Sub-score:	0.00	1.20	0.00	0.70	2.00	0.30			
Left Side	% Riparian Area:	0%	10%	0%	10%	50%	30%	0.21	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	12	0	7	4	1			0.21
	Total Sub-score:	0.00	1.20	0.00	0.70	2.00	0.30			0.21

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category														Comments:				
		Optimal					Suboptimal					Marginal						Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI		
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	SCORE	1	0.05		
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category														Comments:										
		Negligible					Minor				Moderate				Severe											
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					CI = (Score)/20		CI
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	SCORE	16	0.80				
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

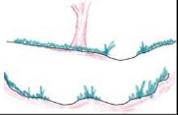
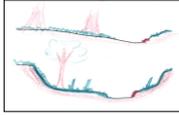
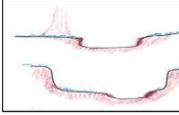
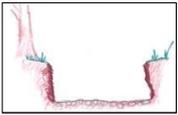
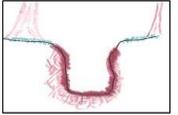
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		380 ft
Latitude	41.790907	Longitude	-78.265926	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW and PEM wetlands. Average width of approximately 6 ft, average depth of 0.5 ft. Temporary impacts to 6.5 ft.	
J. Miner, M. Groomer		Stream 070; UNT to Portage Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor			Severe				
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>			<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category												Comments:							
	Optimal				Suboptimal				Marginal					Poor						
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>																			
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>			<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>			<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>				<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>			<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>			
	High			Low			High			Low				High			Low			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Right Side	Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
	% Riparian Area:	15%	30%	15%	20%	20%	0%		
	Score:	14	12	9	7	4	0		
Total Sub-score:		2.10	3.60	1.35	1.40	0.80	0.00	0.46	
Left Side	Condition Category							Side Sub-Index	CI = (Left Side CI + Right Side CI)/2
	% Riparian Area:	15%	30%	15%	20%	20%	0%		
	Score:	14	12	9	7	4	0		
Total Sub-score:		2.10	3.60	1.35	1.40	0.80	0.00	0.46	0.46

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:													
		Optimal				Suboptimal				Marginal					Poor												
		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1													

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index				Side Sub-Index = SUM(%Areas*Scores)/20	
		% Riparian Area:		Score:		Total Sub-score:									
Right Side	Condition Category														
	% Riparian Area:	15%		30%		15%		20%		20%		0%		0.46	
	Score:	14		12		9		7		4		0			
Total Sub-score:	2.10		3.60		1.35		1.40		0.80		0.00				
Left Side	Condition Category														
	% Riparian Area:	15%		30%		15%		20%		20%		0%		0.46	
	Score:	14		12		9		7		4		0			
Total Sub-score:	2.10		3.60		1.35		1.40		0.80		0.00				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:						
		Optimal				Suboptimal				Marginal						Poor				
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.						Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		CI
														CI = (Score)/20		CI				
														3		0.15				

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		CI			
														CI = (Score)/20		CI							
														15		0.75							

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

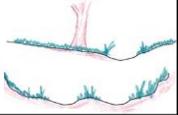
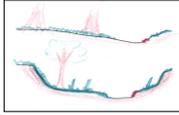
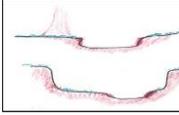
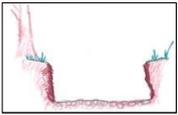
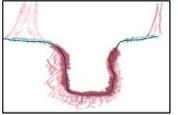
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		310 ft
Latitude	41.792402	Longitude	-78.263895	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that drains PEM wetland. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream 071; UNT to Allegheny River				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:	10%	40%	10%	40%	0%			0%	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	14	12	9	7	0			0	
Total Sub-score:	1.40	4.80	0.90	2.80	0.00	0.00	0.50			
	Condition Category									
	% Riparian Area:	10%	40%	10%	40%	0%			0%	CI = (Left Side CI + Right Side CI)/2
	Score:	14	12	9	7	0			0	
Total Sub-score:	1.40	4.80	0.90	2.80	0.00	0.00	0.50	0.50		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	10%		40%		10%		40%		0%		0%		0.50		
	Score:	14		12		9		7		0		0				
	Total Sub-score:	1.40		4.80		0.90		2.80		0.00		0.00				
Left Side	% Riparian Area:	10%		40%		10%		40%		0%		0%		0.50	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12		9		7		0		0				
	Total Sub-score:	1.40		4.80		0.90		2.80		0.00		0.00				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																															
		High		Low		High		Low		High		Low		High		Low																									
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																											
		Negligible				Minor				Moderate						Severe																									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																							
		High				Low				High				Low																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

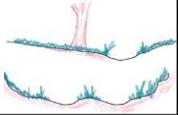
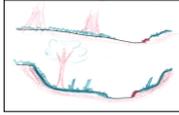
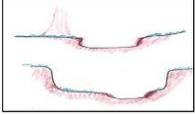
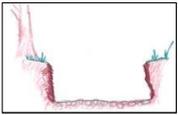
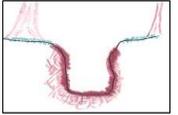
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		460 ft
Latitude	41.793521	Longitude	-78.262874	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream that crosses maintained ROW. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream 073; UNT to Allegheny River				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	High	Low	High	Low	High	Low	High	Low												
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	10%	10%	40%			0%
	Score:	14	12	9	7	4			0
Right Side	Total Sub-score:	1.40	2.40	0.90	0.70	1.60	0.00	0.35	Side Sub-Index = SUM(%Areas*Scores)/20
	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	10%	10%	40%			0%
	Score:	14	12	9	7	4			0
Left Side	Total Sub-score:	1.40	2.40	0.90	0.70	1.60	0.00	0.35	CI = (Left Side CI + Right Side CI)/2
								CI	0.35

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:																							
		Optimal				Suboptimal				Marginal				Poor																											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

										Ensure the sums of % Riparian ZOI Blocks equal 100											
Right Side		Condition Category		10%		20%		10%		10%		40%		0%		0.35		Side Sub-Index = SUM(%Areas*Scores)/20			
		Score:		14		12		9		7		4		0							
		Total Sub-score:		1.40		2.40		0.90		0.70		1.60		0.00							
Left Side		Condition Category		10%		20%		10%		10%		40%		0%		0.35		CI = (Left Side CI + Right Side CI)/2			
		Score:		14		12		9		7		4		0				CI			
		Total Sub-score:		1.40		2.40		0.90		0.70		1.60		0.00				0.35			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:																													
		Optimal				Suboptimal				Marginal				Poor																																	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																					
		High				Low				High				Low				CI = (Score)/20		CI																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		1	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:																													
		Negligible				Minor				Moderate				Severe																																	
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low				CI = (Score)/20		CI																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		16	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.										RCI = (Sum of all CI's)/5										0.39	
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

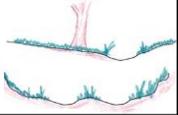
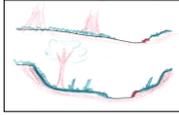
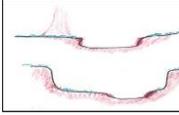
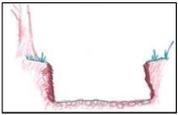
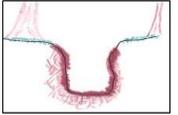
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		289 ft
Latitude	41.79402	Longitude	-78.261942	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream with average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream 074; UNT to Allegheny River				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	9 0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
	High		Low		High		Low			High		Low								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:		15%	30%	20%	30%		5%	0%	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:		14	12	9	7		4	0	
Total Sub-score:		2.10	3.60	1.80	2.10	0.20	0.00	0.49		
	Condition Category							Side Sub-Index		
	% Riparian Area:		15%	30%	20%	30%		5%	0%	CI = (Left Side CI + Right Side CI)/2
	Score:		14	12	9	7		4	0	
Total Sub-score:		2.10	3.60	1.80	2.10	0.20	0.00	0.49	0.49	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:													
		Optimal					Suboptimal					Marginal					Poor														
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
		High					Low					High					Low					High					Low				
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index				Side Sub-Index = SUM(%Areas*Scores)/20		
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	15%		30%		20%		30%		5%		0%		0.49		
	Score:	14		12		9		7		4		0				
	Total Sub-score:	2.10		3.60		1.80		2.10		0.20		0.00				
Left Side	% Riparian Area:	15%		30%		20%		30%		5%		0%		0.49	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12		9		7		4		0				0.49
	Total Sub-score:	2.10		3.60		1.80		2.10		0.20		0.00				0.49

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:							
		Optimal					Suboptimal					Marginal					Poor								
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					CI = (Score)/20		CI						
		High					Low					High					Low					SCORE		1	0.05
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	1	0.05

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:											
		Negligible					Minor					Moderate					Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					CI = (Score)/20		CI
		High					Low					High					Low					SCORE		16	0.80				
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	16	0.80				

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.46**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

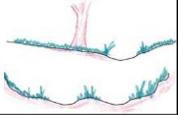
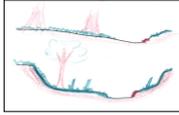
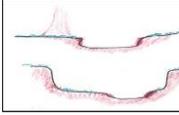
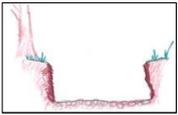
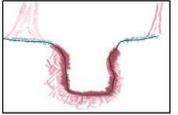
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/05/17	Designated: Existing:		268 ft
Latitude	41.794212	Longitude	-78.261777	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream with average width of approximately 2 ft, average depth of 0.5 ft. Temporary impacts to 2 ft.	
J. Miner, M. Groomer		Stream 075; UNT to Allegheny River				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
		20%	30%	20%	30%	0%			0%
	Score:	14	12	9	7	0			0
Total Sub-score:	2.80	3.60	1.80	2.10	0.00	0.00	0.52		
	Condition Category						Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	
		20%	30%	20%	30%	0%			0%
	Score:	14	12	9	7	0			0
Total Sub-score:	2.80	3.60	1.80	2.10	0.00	0.00	0.52		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	20%		30%		20%		30%		0%		0%		0.52		
	Score:	14		12		9		7		0		0				
	Total Sub-score:	2.80		3.60		1.80		2.10		0.00		0.00				
Left Side	% Riparian Area:	20%		30%		20%		30%		0%		0%		0.52	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12		9		7		0		0				
	Total Sub-score:	2.80		3.60		1.80		2.10		0.00		0.00				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal						Poor																															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																					
		High		Low		High		Low		High		Low		High		Low		CI = (Score)/20		CI																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		1	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low				High				Low				CI = (Score)/20		CI																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		16	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.47
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

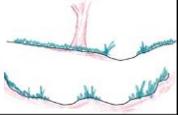
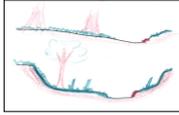
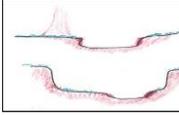
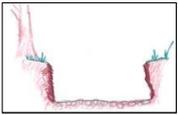
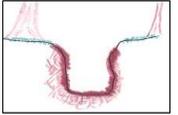
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/06/17	Designated: Existing:		415 ft
Latitude	41.795751	Longitude	-78.256722	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that is connected to PEM and PSS wetlands. Average width of approximately 15 ft, average depth of 1 ft. Temporary impacts to 17.8 ft.		
J. Miner, M. Groomer		Stream077; UNT to Allegheny River				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	13
		0.65

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		20%	20%	20%	20%	20%			0%
	Score:	14	12	9	7	4			0
Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	0.46		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
		20%	20%	20%	20%	20%			0%
	Score:	14	12	9	7	4			0
Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00	0.46		
CI = (Left Side CI + Right Side CI)/2									
CI									
0.46									

Riverine Assessment Form 1

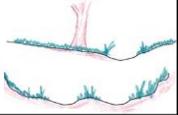
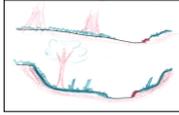
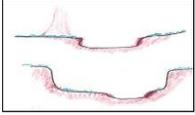
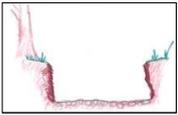
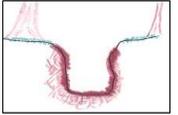
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		410 ft
Latitude	41.795362	Longitude	-78.249138	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that runs through agricultural pasture. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3.5 ft.		
J. Miner, M. Groomer		Stream078; UNT to Allegheny River				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	11
		0.55

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Condition Category	0%	0%	0%	80%	20%	0%	Side Sub-Index
Right Side	% Riparian Area:	0%	0%	0%	80%	20%	0%
	Score:	0	0	0	7	4	0
	Total Sub-score:	0.00	0.00	0.00	5.60	0.80	0.00
Side Sub-Index = SUM(%Areas*Scores)/20							
Condition Category	0%	0%	0%	80%	20%	0%	Side Sub-Index
Left Side	% Riparian Area:	0%	0%	0%	80%	20%	0%
	Score:	0	0	0	7	4	0
	Total Sub-score:	0.00	0.00	0.00	5.60	0.80	0.00
CI = (Left Side CI + Right Side CI)/2							CI
							0.32

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20		
		Optimal		Suboptimal		Marginal		Poor					
Right Side	% Riparian Area:	0%		0%		80%		20%			0%		
	Score:	0		0		7		4			0		
	Total Sub-score:	0.00		0.00		5.60		0.80			0.00		
									0.32				
Left Side	% Riparian Area:	0%		0%		80%		20%			0%		
	Score:	0		0		7		4			0		
	Total Sub-score:	0.00		0.00		5.60		0.80			0.00		
									0.32		CI = (Left Side CI + Right Side CI)/2		CI
											0.32		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																															
		High				Low				High				Low																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	
									CI = (Score)/20		SCORE		5		CI		0.25																								

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																											
		Negligible				Minor				Moderate						Severe																									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																							
		High				Low				High				Low																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	
									CI = (Score)/20		SCORE		14		CI		0.70																								

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

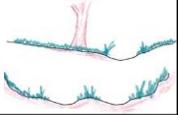
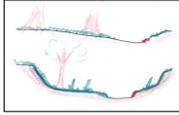
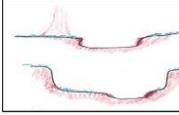
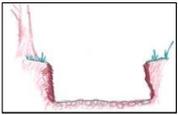
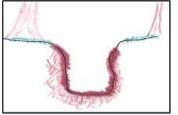
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		115 ft
Latitude	41.810517	Longitude	-78.238183	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream080; UNT to Allegheny River				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	CI = (Left Side CI + Right Side CI)/2	CI
								0.40	0.40

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:																							
		Optimal				Suboptimal				Marginal				Poor																											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	10%		10%		20%		20%		10%		0.34				
	Score:	14		12		9		7		4				2		
	Total Sub-score:	1.40		1.20		1.80		1.40		0.80				0.20		
Left Side	% Riparian Area:	10%		10%		20%		20%		10%		0.34	CI = (Left Side CI + Right Side CI)/2	CI		
	Score:	14		12		9		7		4					2	
	Total Sub-score:	1.40		1.20		1.80		1.40		0.80					0.20	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:																													
		Optimal				Suboptimal				Marginal				Poor																																	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																					
		CI = (Score)/20		CI																																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:																													
		Negligible				Minor				Moderate				Severe																																	
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		CI = (Score)/20		CI																																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		14	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

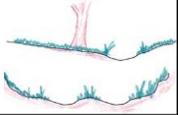
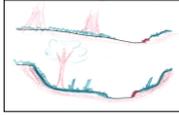
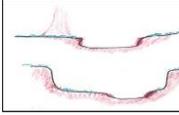
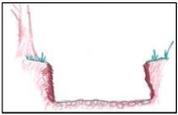
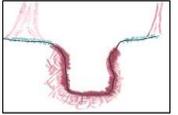
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		105 ft
Latitude	41.810254	Longitude	-78.233731	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 7.5 ft, average depth of 0.5 ft. Temporary impacts to 10 ft.		
J. Miner, M. Groomer		Stream081; UNT to Allegheny River				

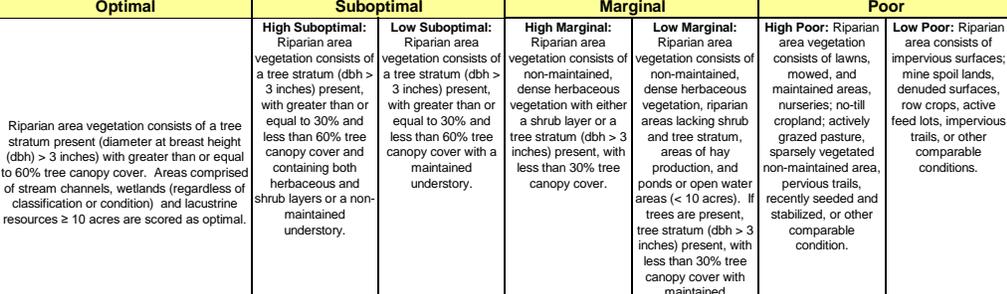
1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor			Severe				
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>				<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>			<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal				Suboptimal			Marginal				Poor								
Riparian Vegetation (Floodplain)																				
	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>																			
					<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>			<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>		<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index																						
								0.40	Side Sub-Index = SUM(%Areas*Scores)/20																					
Right Side	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">% Riparian Area:</td> <td style="text-align: center;">10%</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">10%</td> </tr> <tr> <td>Score:</td> <td style="text-align: center;">14</td> <td style="text-align: center;">12</td> <td style="text-align: center;">9</td> <td style="text-align: center;">7</td> <td style="text-align: center;">4</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Total Sub-score:</td> <td style="text-align: center;">1.40</td> <td style="text-align: center;">2.40</td> <td style="text-align: center;">1.80</td> <td style="text-align: center;">1.40</td> <td style="text-align: center;">0.80</td> <td style="text-align: center;">0.20</td> </tr> </table>						% Riparian Area:	10%	20%	20%	20%	20%	10%	Score:	14	12	9	7	4	2	Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	10%	20%	20%	20%	20%	10%																							
	Score:	14	12	9	7	4	2																							
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20																								
Left Side	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">% Riparian Area:</td> <td style="text-align: center;">10%</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">20%</td> <td style="text-align: center;">10%</td> </tr> <tr> <td>Score:</td> <td style="text-align: center;">14</td> <td style="text-align: center;">12</td> <td style="text-align: center;">9</td> <td style="text-align: center;">7</td> <td style="text-align: center;">4</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Total Sub-score:</td> <td style="text-align: center;">1.40</td> <td style="text-align: center;">2.40</td> <td style="text-align: center;">1.80</td> <td style="text-align: center;">1.40</td> <td style="text-align: center;">0.80</td> <td style="text-align: center;">0.20</td> </tr> </table>						% Riparian Area:	10%	20%	20%	20%	20%	10%	Score:	14	12	9	7	4	2	Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	CI = (Left Side CI + Right Side CI)/2	
	% Riparian Area:	10%	20%	20%	20%	20%	10%																							
	Score:	14	12	9	7	4	2																							
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20																								
						CI	0.40																							

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

										Ensure the sums of % Riparian ZOI Blocks equal 100											
Right Side		Condition Category																Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20	
		% Riparian Area:		10%		10%		20%		20%		20%		10%		0.34					
		Score:		14		12		9		7		4		2							
		Total Sub-score:		1.40		1.20		1.80		1.40		0.80		0.20							
Left Side		Condition Category																Side Sub-Index		CI = (Left Side CI + Right Side CI)/2	
		% Riparian Area:		10%		10%		20%		20%		20%		10%		0.34		CI			
		Score:		14		12		9		7		4		2				0.34			
		Total Sub-score:		1.40		1.20		1.80		1.40		0.80		0.20						0.34	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal						Poor																															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																					
		CI = (Score)/20												CI																																	
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low				CI = (Score)/20				CI																									
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		14	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

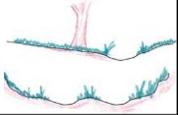
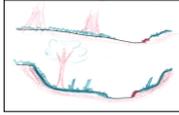
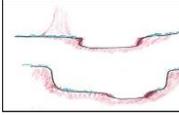
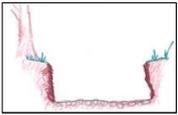
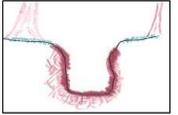
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		71 ft
Latitude	41.809615	Longitude	-78.221239	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream082; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal			Marginal		Poor												
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
			<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>			<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.35	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	10%	10%	20%	20%	20%	20%				
	14	12	9	7	4	2				
	1.40	1.20	1.80	1.40	0.80	0.40				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.35	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	10%	10%	20%	20%	20%	20%				
	14	12	9	7	4	2				
	1.40	1.20	1.80	1.40	0.80	0.40	0.35			

Riverine Assessment Form 1

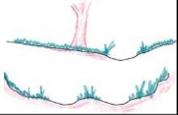
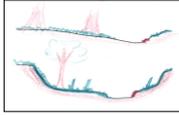
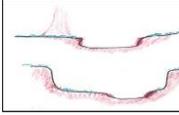
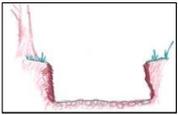
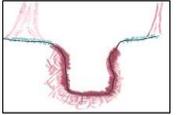
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		72 ft
Latitude	41.809982	Longitude	-78.220913	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream083; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
		10%	15%	20%	20%	20%		15%	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	14	12	9	7		4	
Total Sub-score:		1.40	1.80	1.80	1.40	0.80	0.30		
	Condition Category							Side Sub-Index	
		10%	15%	20%	20%	20%		15%	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	14	12	9	7		4	
Total Sub-score:		1.40	1.80	1.80	1.40	0.80	0.30	CI 0.38	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High			Low			High			Low		High		Low	
						SCORE 20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3		2 1	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20					
Right Side	% Riparian Area:	15%		15%		20%		20%			20%		10%		0.41
	Score:	14		12		9		7			4		2		
	Total Sub-score:	2.10		1.80		1.80		1.40		0.80		0.20			
Condition Category									Side Sub-Index	CI = (Left Side CI + Right Side CI)/2 CI 0.41					
Left Side	% Riparian Area:	15%		15%		20%		20%			20%		10%		0.41
	Score:	14		12		9		7			4		2		
	Total Sub-score:	2.10		1.80		1.80		1.40		0.80		0.20			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:		
Optimal					Suboptimal			Marginal			Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			
	High					Low			High			Low		CI = (Score)/20 CI	
	SCORE 20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		SCORE 2 0.10	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:							
Negligible					Minor			Moderate			Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
						High			Low			High			Low				CI = (Score)/20 CI	
						SCORE 20 19 18 17 16					15 14 13 12 11			10 9 8 7 6					5 4 3 2 1	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5** **0.40**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

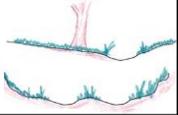
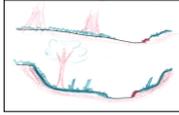
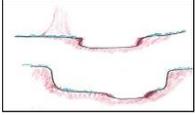
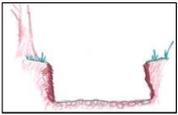
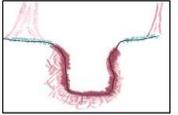
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		67 ft
Latitude	41.813511	Longitude	-78.218903	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream084; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		10%	15%	20%	20%	20%			15%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	1.80	1.80	1.40	0.80	0.30	0.38		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
		10%	15%	20%	20%	20%			15%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	1.80	1.80	1.40	0.80	0.30	0.38		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.38		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:									
		Optimal				Suboptimal				Marginal					Poor								
Riparian ZOI		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.																					
														High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
		Optimal		Suboptimal		Marginal		Poor				
Right Side	% Riparian Area:	15%		20%		20%		10%		0.41		
	Score:	14		9		7		4				
	Total Sub-score:	2.10		1.80		1.40		0.80				
Left Side	% Riparian Area:	15%		20%		20%		10%		0.41	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		9		7		4				
	Total Sub-score:	2.10		1.80		1.40		0.80				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:						
		Optimal				Suboptimal				Marginal					Poor					
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.																			
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.																			
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 1		0.05

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:						
		Negligible				Minor				Moderate					Severe					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.																			
	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.																			
	Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.																			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 14		0.70

RIVERINE CONDITION INDEX (RCI) RCI

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 0.39

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

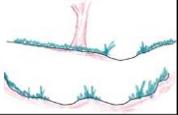
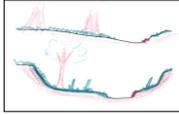
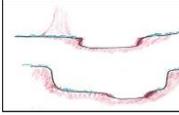
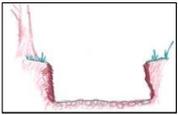
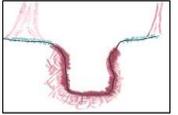
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		72 ft
Latitude	41.816612	Longitude	-78.218909	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream085; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
		10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category						Side Sub-Index		
		10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	CI = (Left Side CI + Right Side CI)/2	CI
								0.40	0.40

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:							
		Optimal				Suboptimal				Marginal					Poor						
Riparian ZOI		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal. High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory. High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover. Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition. Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
														SCORE		20	19	18	17	16	15

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20			
		Optimal		Suboptimal		Marginal		Poor					
Right Side	% Riparian Area:	15%		20%		20%		10%			0.41		
	Score:	14		9		7		2					
	Total Sub-score:	2.10		1.80		1.40		0.80					
Left Side	% Riparian Area:	15%		20%		20%		10%			0.41	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		9		7		2					
	Total Sub-score:	2.10		1.80		1.40		0.80					

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal				Suboptimal				Marginal					Poor								
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover. Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community. Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities. Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																						
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	1

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
		Negligible				Minor				Moderate					Severe								
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized. Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered. Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																						
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	14

RIVERINE CONDITION INDEX (RCI) RCI

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 0.39

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

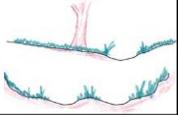
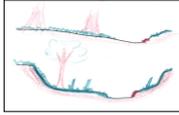
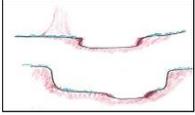
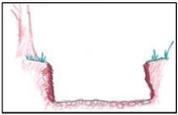
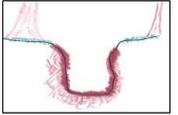
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		101 ft
Latitude	41.817434	Longitude	-78.208476		FGM Level 1 Channel Classification	
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream085A; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:								0.40	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:									
Total Sub-score:										
Right Side	10%	20%	20%	20%	20%	10%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.80	0.20				
	Condition Category									
	% Riparian Area:								0.40	CI = (Left Side CI + Right Side CI)/2
	Score:									
Total Sub-score:										
Left Side	10%	20%	20%	20%	20%	10%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.80	0.20	0.40			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:											
		Optimal				Suboptimal				Marginal						Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20	
		Optimal		Suboptimal		Marginal		Poor				
Right Side	Condition Category											
	% Riparian Area:	15%	15%	20%	20%	20%	10%	0.41				
	Score:	14	12	9	7	4	2					
Total Sub-score:	2.10	1.80	1.80	1.40	0.80	0.20						
Left Side	Condition Category											
	% Riparian Area:	15%	15%	20%	20%	20%	10%	0.41		CI = (Left Side CI + Right Side CI)/2		CI
	Score:	14	12	9	7	4	2					0.41
Total Sub-score:	2.10	1.80	1.80	1.40	0.80	0.20	0.41					

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal				Suboptimal				Marginal						Poor							
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = (Score)/20	CI
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	1

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
		Negligible				Minor				Moderate						Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = (Score)/20	CI
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	14

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

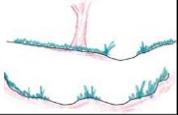
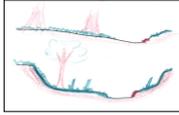
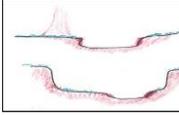
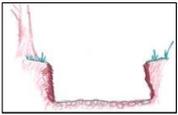
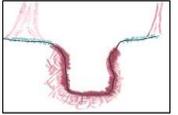
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		96 ft
Latitude	41.815817	Longitude	-78.209223	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream085B; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	CI = (Left Side CI + Right Side CI)/2	CI
								0.40	0.40

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																				
		Optimal					Suboptimal					Marginal					Poor																	
		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1																	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category												Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20														
		Optimal					Suboptimal					Marginal					Poor												
		% Riparian Area: 15%					15%					20%					20%					20%					10%		
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE	1						

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:										
		Optimal					Suboptimal					Marginal					Poor							
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.							
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					CI = (Score)/20		CI

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				CI = (Score)/20		CI			

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5 **0.39**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

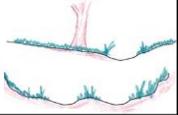
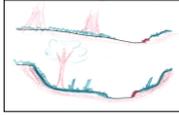
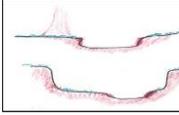
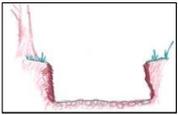
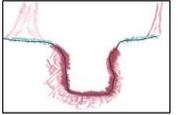
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		92 ft
Latitude	41.813936	Longitude	-78.208987	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream085C; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained			High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.								
	High		Low		High		Low			High		Low								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	10%	20%	20%	20%	20%	10%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.80	0.20				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.40	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	10%	20%	20%	20%	20%	10%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.80	0.20	0.40			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:															
Riparian ZOI		Optimal					Suboptimal					Marginal					Poor												
		High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
		High					Low					High					Low												
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1												

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

								Ensure the sums of % Riparian ZOI Blocks equal 100											
Right Side		Condition Category												Side Sub-Index = SUM(%Areas*Scores)/20					
		% Riparian Area:		15%		15%		20%		20%		20%				0.41			
		Score:		14		12		9		7		4						2	
		Total Sub-score:		2.10		1.80		1.80		1.40		0.80							
Left Side		Condition Category												CI = (Left Side CI + Right Side CI)/2					
		% Riparian Area:		15%		15%		20%		20%		20%				0.41			
		Score:		14		12		9		7		4						2	
		Total Sub-score:		2.10		1.80		1.80		1.40		0.80							
SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE		1		0.41					

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:													
Instream Habitat/ Available Cover		Optimal					Suboptimal					Marginal					Poor										
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE		1		0.05	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
Channel Alteration		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		14		0.70	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

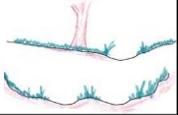
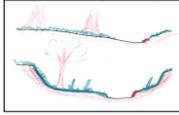
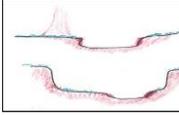
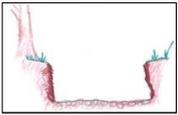
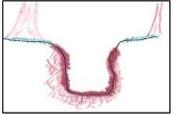
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		378 ft
Latitude	41.81031	Longitude	-78.205458	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 086; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments: Runs through maintained pipeline ROW and access road.</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Right Side	Condition Category						Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	0%	40%	0%	40%	10%			10%
	Score:	0	12	0	7	4			1
Total Sub-score:		0.00	4.80	0.00	2.80	0.40	0.10	0.41	
Left Side	Condition Category						Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	
	% Riparian Area:	0%	40%	0%	40%	10%			10%
	Score:	0	12	0	7	4			1
Total Sub-score:		0.00	4.80	0.00	2.80	0.40	0.10	0.41	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Runs through maintained pipeline ROW and access road.			
Riparian ZOI	Optimal	Suboptimal					Marginal					Poor					
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with	High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.										
		High	Low	High	Low	High	Low	High	Low								
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1													

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	40%	0%	40%	10%	10%			
	Score:	0	12	0	7	4	1	0.41		
	Total Sub-score:	0.00	4.80	0.00	2.80	0.40	0.10			
Left Side	% Riparian Area:	0%	40%	0%	40%	10%	10%	0.41	CI	
	Score:	0	12	0	7	4	1		0.41	
	Total Sub-score:	0.00	4.80	0.00	2.80	0.40	0.10	CI = (Left Side CI + Right Side CI)/2		
								0.41	0.41	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:			
Instream Habitat/ Available Cover	Optimal	Suboptimal					Marginal					Poor					
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
	High	Low	High	Low	High	Low	High	Low									
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	CI = (Score)/20		CI										
					SCORE 1		0.05										

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Two culverts on stream
Channel Alteration	Negligible	Minor				Moderate				Severe				
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
	High	Low	High	Low	High	Low	High	Low						
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1	CI = (Score)/20		CI							
					SCORE 12		0.60							

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

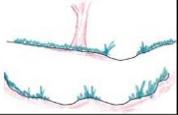
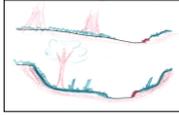
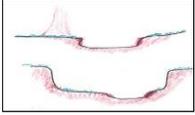
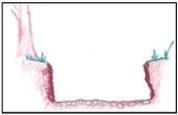
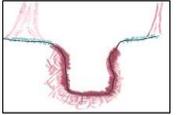
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		211 ft
Latitude	41.811018	Longitude	-78.205297	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Tributary of Stream 090. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 089; UNT to Sartwell Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments: Runs through maintained pipeline ROW</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Right Side	Condition Category						Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	0%	30%	0%	30%	40%			0%
	Score:	0	12	0	7	4			0
Total Sub-score:		0.00	3.60	0.00	2.10	1.60	0.00	0.37	
Left Side	Condition Category						Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	
	% Riparian Area:	0%	30%	0%	30%	40%			0%
	Score:	0	12	0	7	4			0
Total Sub-score:		0.00	3.60	0.00	2.10	1.60	0.00	0.37	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments: Runs through maintained pipeline ROW and access road.											
		Optimal					Suboptimal			Marginal					Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low										
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	25%	0%	25%	50%	0%	0.34			
	Score:	0	12	0	7	4	0				
	Total Sub-score:	0.00	3.00	0.00	1.75	2.00	0.00				
Left Side	% Riparian Area:	0%	25%	0%	25%	50%	0%	0.34	CI = (Left Side CI + Right Side CI)/2		CI
	Score:	0	12	0	7	4	0				0.34
	Total Sub-score:	0.00	3.00	0.00	1.75	2.00	0.00				0.34

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal					Suboptimal			Marginal				Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
		CI = (Score)/20		CI																			
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Runs through maintained pipeline ROW									
		Negligible					Minor			Moderate				Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

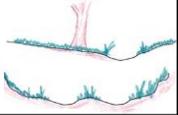
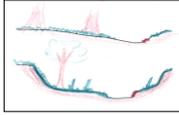
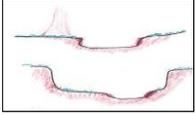
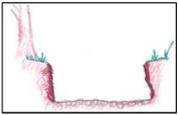
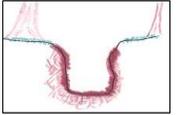
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		437 ft
Latitude	41.81097	Longitude	-78.204906	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 15 ft, average depth of 0.5 ft. Temporary impacts to 18.14 ft.	
T. Malecki, M. Groomer		Stream 090; UNT to Sartwell Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches are present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	14
		0.70

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
	High		Low		High		Low			High		Low								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	20%	30%	0%	30%	20%			0%
	Score:	14	12	0	7	4			0
Right Side	Total Sub-score:	2.80	3.60	0.00	2.10	0.80	0.00	0.47	Side Sub-Index = SUM(%Areas*Scores)/20
	Condition Category								
	% Riparian Area:	20%	30%	0%	30%	20%			
	Score:	14	12	0	7	4			0
Left Side	Total Sub-score:	2.80	3.60	0.00	2.10	0.80	0.00	0.47	CI = (Left Side CI + Right Side CI)/2
								CI	0.47

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20							
		Optimal		Suboptimal		Marginal		Poor										
Right Side	% Riparian Area:	20%		30%		0%		30%			20%		0%		0.47			
	Score:	14		12		0		7			4		0					
	Total Sub-score:	2.80		3.60		0.00		2.10			0.80		0.00					
Left Side	% Riparian Area:	20%		30%		0%		30%			20%		0%		0.47	CI = (Left Side CI + Right Side CI)/2	CI	
	Score:	14		12		0		7			4		0					0.47
	Total Sub-score:	2.80		3.60		0.00		2.10			0.80		0.00					

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																			
		Optimal				Suboptimal				Marginal						Poor																																	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		8		0.40	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Runs through maintained pipeline ROW																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low				High				Low				CI = (Score)/20		CI																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2		1		SCORE		18	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

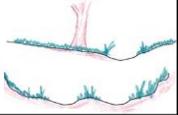
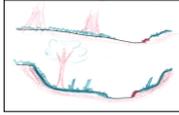
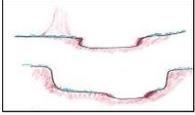
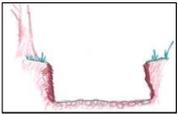
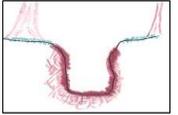
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		81 ft
Latitude	41.811189	Longitude	-78.2052	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Tributary of Stream 090 and drains into PEM wetland. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 091; UNT to Sartwell Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	12	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:	20%	30%	0%	30%	20%			0%	0.47
	Score:	14	12	0	7	4			0	
Total Sub-score:	2.80	3.60	0.00	2.10	0.80	0.00	Side Sub-Index = SUM(%Areas*Scores)/20			
	Condition Category									
	% Riparian Area:	20%	30%	0%	30%	20%				0%
	Score:	14	12	0	7	4	0			
Total Sub-score:	2.80	3.60	0.00	2.10	0.80	0.00	CI = (Left Side CI + Right Side CI)/2			
								CI		
								0.47		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low				High				Low																			
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20							
		Optimal		Suboptimal		Marginal		Poor										
Right Side	% Riparian Area:	20%		30%		0%		30%			20%		0%		0.47			
	Score:	14		12		0		7			4		0					
	Total Sub-score:	2.80		3.60		0.00		2.10			0.80		0.00					
Left Side	% Riparian Area:	20%		30%		0%		30%			20%		0%		0.47	CI = (Left Side CI + Right Side CI)/2	CI	
	Score:	14		12		0		7			4		0					0.47
	Total Sub-score:	2.80		3.60		0.00		2.10			0.80		0.00					

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																																	
		Optimal				Suboptimal				Marginal						Poor																															
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20				CI																													
		High				Low				High										Low																											
		SCORE		20		19		18		17		16								15		14		13		12		11		10		9		8		7		6		5		4		3		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Runs through maintained pipeline ROW																																	
		Negligible				Minor				Moderate						Severe																															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																													
		High				Low				High				Low																																	
		SCORE		20		19		18		17		16		15		14						13		12		11		10		9		8		7		6		5		4		3		2		1	

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5** **0.53**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

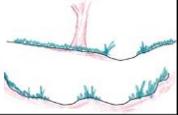
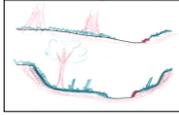
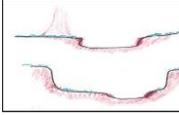
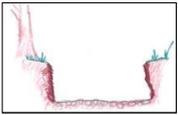
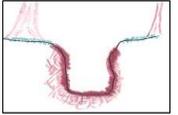
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		1325 ft
Latitude	41.818143	Longitude	-78.194359	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Connected to two PEM wetlands. Average width of approximately 15 ft, average depth of 1 ft. Temporary impacts to 37.74 ft.	
T. Malecki, M. Groomer		Stream 093; UNT to Sartwell Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	16
		0.80

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		0%	15%	15%	50%	20%			0%
	Score:	0	12	9	7	4			0
Total Sub-score:	0.00	1.80	1.35	3.50	0.80	0.00	0.37		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
		0%	15%	15%	50%	20%			0%
	Score:	0	12	9	7	4			0
Total Sub-score:	0.00	1.80	1.35	3.50	0.80	0.00	0.37		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.37		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Riparian ZOI	Optimal					Suboptimal					Marginal			Poor						
	Riparian ZOI area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory. Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
High					Low					High			Low		High		Low			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20						
Right Side	% Riparian Area:	0%		15%		15%		20%			50%		0%		0.33	
	Score:	0		12		9		7			4		0			
	Total Sub-score:	0.00		1.80		1.35		1.40		2.00		0.00				
Condition Category										Cl = (Left Side Cl + Right Side Cl)/2	Cl					
Left Side	% Riparian Area:	0%		15%		15%		20%				50%		0%		0.33
	Score:	0		12		9		7				4		0		
	Total Sub-score:	0.00		1.80		1.35		1.40		2.00		0.00				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:											
Instream Habitat/ Available Cover	Optimal					Suboptimal					Marginal			Poor										
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	7	Cl	0.35

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Three culverts on stream											
Channel Alteration	Negligible				Minor				Moderate					Severe										
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present. Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered. Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	13	Cl	0.65

RIVERINE CONDITION INDEX (RCI) RCI

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

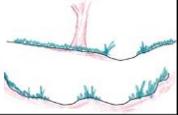
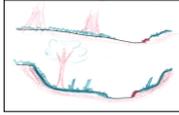
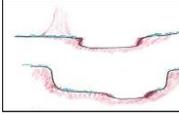
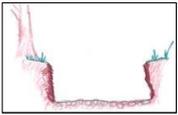
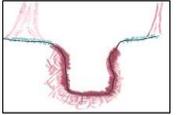
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		755 ft
Latitude	41.82	Longitude	-78.192737	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Connected to PEM wetland. Average width of approximately 15 ft, average depth of 0.5 ft. Temporary impacts to 27.98 ft.		
T. Malecki, M. Groomer		Stream 094; UNT to Sartwell Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	10
		0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:		0%	0%	0%	20%			80%	0%
	Score:		0	0	0	7			4	0
Right Side	Total Sub-score:		0.00	0.00	0.00	1.40	3.20	0.00	0.23	Side Sub-Index = SUM(%Areas*Scores)/20
	Condition Category									
	% Riparian Area:		0%	0%	0%	20%			80%	
	Score:		0	0	0	7			4	0
Left Side	Total Sub-score:		0.00	0.00	0.00	1.40	3.20	0.00	0.23	CI = (Left Side CI + Right Side CI)/2
									CI	0.23

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:								
Optimal					Suboptimal					Marginal				Poor							
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High	Low	High	Low	High	Low	High	Low	High	Low						
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	0%	0%	20%	80%	0%	0.23			
	Score:	0	12	9	7	4	0				
	Total Sub-score:	0.00	0.00	0.00	1.40	3.20	0.00				
Left Side	% Riparian Area:	0%	0%	0%	20%	80%	0%	0.23		Cl = (Left Side Cl + Right Side Cl)/2	Cl
	Score:	0	12	9	7	4	0				0.23
	Total Sub-score:	0.00	0.00	0.00	1.40	3.20	0.00			0.00	0.23

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal					Marginal					Poor								
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.									
	High					Low					High			Low									
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	3

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments: Two culverts on stream and runs through agricultural pasture.										
Negligible					Minor					Moderate					Severe								
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
						High	Low	High	Low	High	Low												
						SCORE	20	19	18	17	16	15	14	13	12	11	10			9	8	7	6

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5 **0.32**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

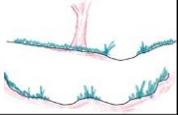
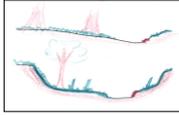
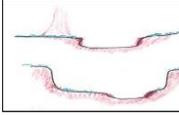
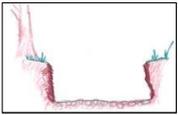
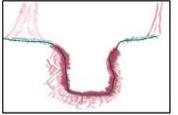
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/11/17	Designated: Existing:		459 ft
Latitude	41.823967	Longitude	-78.184655	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 20 ft, average depth of 0.5 ft. Temporary impacts to 33 ft.	
T. Malecki, M. Groomer		Stream 096; UNT to Sartwell Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor			Severe				
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>				<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>			<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	15
		0.75

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category												Comments:							
	Optimal				Suboptimal				Marginal					Poor						
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>																			
	High				Low				High					Low						
	SCORE	20	19	18	17	16	15	14	13	12	11	10		9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Right Side	Condition Category	0%	0%	0%	50%	50%	0%	0.28	Side Sub-Index = SUM(%Areas*Scores)/20
	% Riparian Area:	0%	0%	0%	50%	50%	0%		
	Score:	0	0	0	7	4	0		
Total Sub-score:		0.00	0.00	0.00	3.50	2.00	0.00		
Left Side	Condition Category	0%	0%	0%	10%	90%	0%	0.22	CI = (Left Side CI + Right Side CI)/2
	% Riparian Area:	0%	0%	0%	10%	90%	0%		
	Score:	0	0	0	7	4	0		
Total Sub-score:		0.00	0.00	0.00	0.70	3.60	0.00		0.25

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:						
		Optimal					Suboptimal			Marginal					Poor					
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low							
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	
Right Side	% Riparian Area:	0%	0%	0%	30%	70%	0%	0.25	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	0	12	9	7	4	0			
	Total Sub-score:	0.00	0.00	0.00	2.10	2.80	0.00			
Left Side	% Riparian Area:	0%	0%	0%	10%	90%	0%	0.22	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	12	9	7	4	0			0.23
	Total Sub-score:	0.00	0.00	0.00	0.70	3.60	0.00			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal					Suboptimal			Marginal				Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
		CI = (Score)/20	CI																				
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Runs through agricultural pasture.									
		Negligible					Minor			Moderate						Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.									
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low										
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.44
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

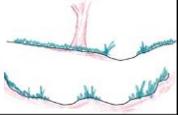
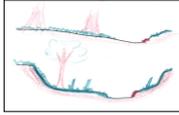
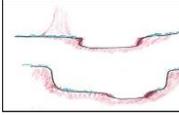
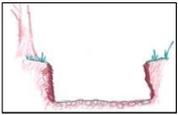
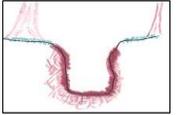
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/11/17	Designated: Existing:		405 ft
Latitude	41.825039	Longitude	-78.182939	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 5 ft, average depth of 0.3 ft. Temporary impacts to 6 ft.	
T. Malecki, M. Groomer		Stream 098; UNT to Sartwell Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained	High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Right Side	Condition Category	0%	0%	0%	50%	50%	0%	Side Sub-Index		
	% Riparian Area:	0	0	0	7	4	0			
	Score:	0.00	0.00	0.00	3.50	2.00	0.00			0.28
Total Sub-score:	0.00	0.00	0.00	3.50	2.00	0.00				
Condition Category	0%	0%	0%	50%	50%	0%				
Left Side	% Riparian Area:	0	0	0	7	4	0	0.28		
	Score:	0.00	0.00	0.00	3.50	2.00	0.00			CI = (Left Side CI + Right Side CI)/2
	Total Sub-score:	0.00	0.00	0.00	3.50	2.00	0.00			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:											
		Optimal					Suboptimal			Marginal					Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High	Low		High		Low		High		Low		High		Low										
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20		
Right Side	% Riparian Area:	0%		0%		0%		40%		60%		0%	
	Score:	0		12		9		7		4		0	
	Total Sub-score:	0.00		0.00		0.00		2.80		2.40		0.00	
									0.26				
											0.26		
											CI = (Left Side CI + Right Side CI)/2		CI
											0.26		0.26

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
		Optimal					Suboptimal			Marginal				Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
		CI = (Score)/20					CI																
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Surrounded by agricultural pasture.									
		Negligible					Minor			Moderate				Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High					Low		High		Low		High		Low								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

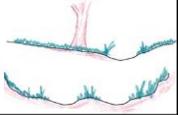
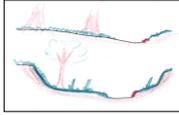
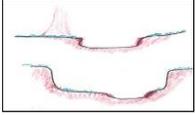
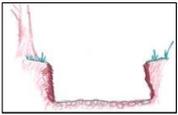
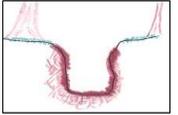
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/11/17	Designated: Existing:		405 ft
Latitude	41.837293	Longitude	-78.1495	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Perennial stream that crosses maintained ROW. Average width of approximately 20 ft, average depth of 1 ft. Temporary impacts to 21.5 ft.	
J. Miner, M. Groomer		Stream099; UNT to Fishing Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	16 0.80

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	15%	30%	15%	20%	20%			0%
Right Side	Score:	14	12	9	7	4	0	0.46	Side Sub-Index = SUM(%Areas*Scores)/20
	Total Sub-score:	2.10	3.60	1.35	1.40	0.80	0.00		
	Condition Category								
Left Side	% Riparian Area:	15%	30%	15%	20%	20%	0%	0.46	CI = (Left Side CI + Right Side CI)/2
	Score:	14	12	9	7	4	0		
	Total Sub-score:	2.10	3.60	1.35	1.40	0.80	0.00		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.																			
		High				Low				High				Low																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

								Ensure the sums of % Riparian ZOI Blocks equal 100												
Right Side		Condition Category													Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20			
		% Riparian Area:	15%		30%		15%		20%		20%		0%		0.46					
		Score:	14		12		9		7		4		0							
		Total Sub-score:	2.10		3.60		1.35		1.40		0.80		0.00							
Left Side		Condition Category													0.46		CI = (Left Side CI + Right Side CI)/2		CI	
		% Riparian Area:	15%		30%		15%		20%		20%		0%						0.46	
		Score:	14		12		9		7		4		0						0.46	
		Total Sub-score:	2.10		3.60		1.35		1.40		0.80		0.00						0.46	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:																											
		Optimal				Suboptimal				Marginal						Poor																									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																															
		High				Low				High				Low																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:																											
		Negligible				Minor				Moderate						Severe																									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.																							
		High				Low				High				Low																											
		SCORE		20		19		18		17		16		15		14		13		12		11		10		9		8		7		6		5		4		3		2	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

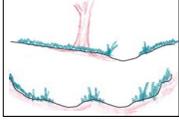
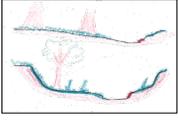
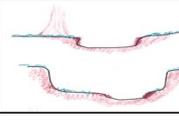
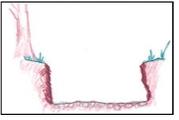
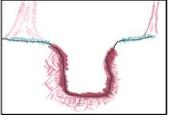
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/03/17	Designated:	Existing:	247 ft
Latitude	41.845102	Longitude	-78.044432	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW. Average width of approximately 4 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
T. Malecki, M. Groomer		Stream102; UNT to Whitney Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor				Severe			
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>				<p>Channel Geometry: These channels are slightly incised or overwidened and contain a few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>				<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																						
	Optimal				Suboptimal				Marginal				Poor										
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.																<p>Comments:</p>						
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, or other comparable condition.				Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	20%	25%	20%	25%	10%	0%		
	Right Side	% Riparian Area:	20%	25%	20%	25%	10%	0%	0.49
	Score:	14	12	9	7	4	0		
	Total Sub-score:	2.80	3.00	1.80	1.75	0.40	0.00		
	Condition Category	20%	25%	20%	25%	10%	0%		
	Left Side	% Riparian Area:	20%	25%	20%	25%	10%	0%	0.49
	Score:	14	12	9	7	4	0		0.49
	Total Sub-score:	2.80	3.00	1.80	1.75	0.40	0.00		0.49

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category								Comments:			
		Optimal		Suboptimal		Marginal		Poor					
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, and areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries, no-kill cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	High	Low				
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1				

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category								Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	20%	25%	20%	25%	10%	0%	0.49	
	Score:	14	12	9	7	4	0		
	Total Sub-score:	2.80	3.00	1.80	1.75	0.40	0.00		
Condition Category								0.49	CI = (Left Side CI + Right Side CI)/2
Left Side	% Riparian Area:	20%	25%	20%	25%	10%	0%		
	Score:	14	12	9	7	4	0		0.49
Total Sub-score:	2.80	3.00	1.80	1.75	0.40	0.00	0.00	0.49	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category								Comments:
		Optimal		Suboptimal		Marginal		Poor		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.		Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				
		High	Low	High	Low	High	Low			
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3 2 1	SCORE	1

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category								Comments:	
		Negligible		Minor		Moderate		Severe			
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.		Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.		Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	
		High	Low	High	Low	High	Low				
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3 2 1	SCORE	16	0.80

RIVERINE CONDITION INDEX (RCI)								RCI	
NOTE: The CIs and RCI should be rounded to 2 decimal places.								RCI = (Sum of all CIs)/5	0.46

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

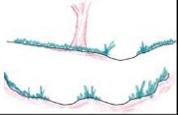
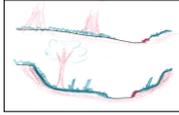
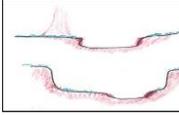
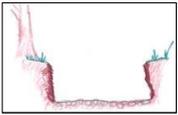
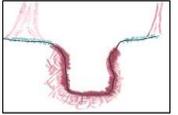
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/03/17	Designated: Existing:		390 ft
Latitude	41.849635	Longitude	-78.0293	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream that crosses maintained ROW. Average width of approximately 4 ft, average depth of 0.5 ft. Temporary impacts to 4 ft.	
J. Miner, M. Groomer		Stream103; UNT to Whitney Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
		20%	25%	20%	25%	10%		0%	0.49	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	14	12	9	7		4		
		Total Sub-score:	2.80	3.00	1.80	1.75	0.40	0.00		
	Condition Category							Side Sub-Index		
		20%	25%	20%	25%	10%		0%	0.49	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	14	12	9	7		4		
		Total Sub-score:	2.80	3.00	1.80	1.75	0.40	0.00		
								0.49	0.49	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																				
		Optimal					Suboptimal					Marginal					Poor																	
		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1																	

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index				Side Sub-Index = SUM(%Areas*Scores)/20			
		% Riparian Area:								0.49							
		Score:															
SCORE		20 19 18 17 16 15 14 13 12 11								10 9 8 7 6				5 4 3 2 1			
Right Side	Condition Category																
	% Riparian Area:	20%		25%		20%		25%		10%		0%					
	Score:	14		12		9		7		4		0					
Total Sub-score:		2.80		3.00		1.80		1.75		0.40		0.00					
Left Side	Condition Category																
	% Riparian Area:	20%		25%		20%		25%		10%		0%					
	Score:	14		12		9		7		4		0					
Total Sub-score:		2.80		3.00		1.80		1.75		0.40		0.00					
										CI = (Left Side CI + Right Side CI)/2		0.49		CI			

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:													
		Optimal					Suboptimal					Marginal					Poor										
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE		1		0.05	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		16		0.80	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.46
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

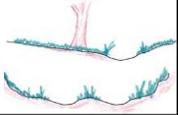
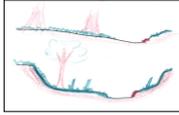
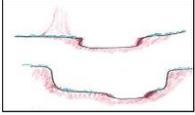
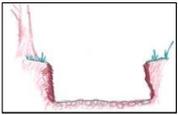
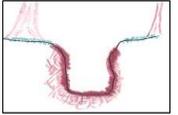
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		240 ft
Latitude	41.762724	Longitude	-78.474626	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream109; UNT to Donely Fork				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																					
	Optimal		Suboptimal		Marginal		Poor															
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:													
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	Right Side	% Riparian Area:	10%	10%	10%	20%		40%	10%	Side Sub-Index = SUM(%Areas*Scores)/20
		Score:	14	12	9	7		4	2	
Total Sub-score:	1.40	1.20	0.90	1.40	1.60	0.20	0.34			
	Condition Category							Side Sub-Index		
	Left Side	% Riparian Area:	15%	15%	15%	15%		30%	10%	CI = (Left Side CI + Right Side CI)/2
		Score:	14	12	9	7		4	2	
Total Sub-score:	2.10	1.80	1.35	1.05	1.20	0.20	0.39	0.36		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:													
		Optimal					Suboptimal					Marginal					Poor														
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
		High					Low					High					Low					High					Low				
		SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1												

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	10%		10%		10%		40%		20%		0.31				
	Score:	14		12		9		7		4				2		
	Total Sub-score:	1.40		1.20		0.90		0.70		1.60				0.40		
Left Side	% Riparian Area:	15%		15%		15%		30%		10%		0.39	CI = (Left Side CI + Right Side CI)/2	CI		
	Score:	14		12		9		7		4				2		0.35
	Total Sub-score:	2.10		1.80		1.35		1.05		1.20				0.20		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:									
		Optimal					Suboptimal					Marginal					Poor										
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.															
		CI = (Score)/20		CI																							
		SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE		1	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:											
		Negligible				Minor				Moderate				Severe															
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.											
		High				Low				High				Low				High				Low				CI = (Score)/20		CI	
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		11		0.55					

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5** **0.35**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

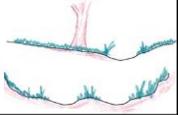
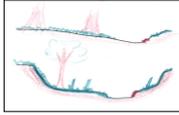
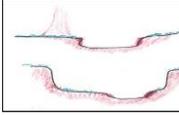
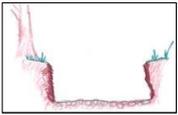
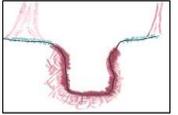
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		70 ft
Latitude	41.761648	Longitude	-78.473964	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream110; UNT to Donely Fork				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
		15%	15%	15%	15%	30%		10%	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	14	12	9	7		4	
	Total Sub-score:	2.10	1.80	1.35	1.05	1.20	0.20		
	Condition Category							Side Sub-Index	
		15%	15%	15%	15%	30%		10%	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	14	12	9	7		4	
	Total Sub-score:	2.10	1.80	1.35	1.05	1.20	0.20	0.39	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:													
		Optimal					Suboptimal					Marginal					Poor														
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
		High					Low					High					Low					High					Low				
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20	
Right Side	% Riparian Area:	15%	15%	15%	15%	30%	10%			0.39			
	Score:	14	12	9	7	4	2						
	Total Sub-score:	2.10	1.80	1.35	1.05	1.20	0.20						
		Condition Category											
Left Side	% Riparian Area:	15%	15%	15%	15%	30%	10%			0.39	CI = (Left Side CI + Right Side CI)/2		CI
	Score:	14	12	9	7	4	2						0.39
	Total Sub-score:	2.10	1.80	1.35	1.05	1.20	0.20						0.39

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:							
		Optimal					Suboptimal					Marginal					Poor								
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					CI = (Score)/20		CI						
		High					Low					High					Low					SCORE		2	0.10
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:											
		Negligible					Minor					Moderate					Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					CI = (Score)/20		CI
		High					Low					High					Low					SCORE		11	0.55				
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

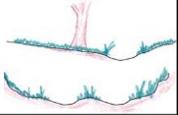
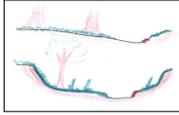
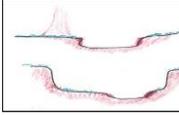
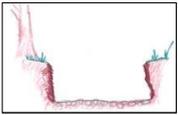
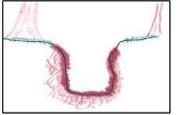
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		98 ft
Latitude	41.755586	Longitude	-78.472362	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream111; UNT to Donely Fork				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
Right Side	% Riparian Area:	15%	15%	15%	15%	25%	15%		
	Score:	14	12	9	7	4	2		
	Total Sub-score:	2.10	1.80	1.35	1.05	1.00	0.30	0.38	
Left Side	% Riparian Area:	15%	15%	15%	15%	25%	15%		
Score:	14	12	9	7	4	2	0.38		
Total Sub-score:	2.10	1.80	1.35	1.05	1.00	0.30	0.38	CI = (Left Side CI + Right Side CI)/2	CI
								0.38	0.38

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:								
Optimal					Suboptimal			Marginal			Poor										
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
						High					Low			High			Low				
						20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1				

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20		
Right Side	Condition Category										0.38	
	% Riparian Area:	15%	15%	15%	15%	25%	15%					
	Score:	14	12	9	7	4	2					
		Total Sub-score:	2.10	1.80	1.35	1.05	1.00	0.30				
Left Side	Condition Category									0.38	CI = (Left Side CI + Right Side CI)/2	CI
	% Riparian Area:	15%	15%	15%	15%	25%	15%					
	Score:	14	12	9	7	4	2					
		Total Sub-score:	2.10	1.80	1.35	1.05	1.00	0.30			0.38	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:	
Optimal					Suboptimal			Marginal			Poor			
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		
	High					Low			High			Low		
	20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		
SCORE										SCORE		2	CI	0.10

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:					
Negligible					Minor			Moderate			Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	
						High					Low			High			Low	
						20 19 18 17 16					15 14 13 12 11			10 9 8 7 6			5 4 3 2 1	
SCORE										SCORE		11	CI	0.55				

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.37
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

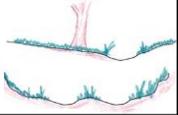
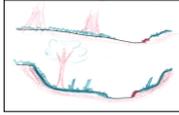
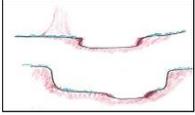
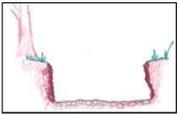
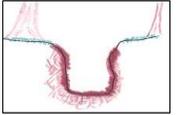
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		70 ft
Latitude	41.75715	Longitude	-78.470529	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 1.5 ft, average depth of 0.5 ft. Temporary impacts to 1 ft.		
J. Miner, M. Groomer		Stream112; UNT to Donely Fork				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category										
	% Riparian Area:		15%	15%	15%	15%			25%	15%	
	Score:		14	12	9	7			4	2	
Right Side	Total Sub-score:		2.10	1.80	1.35	1.05	1.00	0.30	0.38	Side Sub-Index = SUM(%Areas*Scores)/20	
Condition Category		15%	15%	15%	15%	25%	15%	0.38	CI = (Left Side CI + Right Side CI)/2		CI
Score:		14	12	9	7	4	2				
Total Sub-score:		2.10	1.80	1.35	1.05	1.00	0.30			0.38	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High			Low		High		Low	High		Low				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Right Side	Condition Category																					Side Sub-Index = SUM(%Areas*Scores)/20		
	% Riparian Area:	15%	15%	15%	15%	25%	15%																0.38	
	Score:	14	12	9	7	4	2																	
Total Sub-score:		2.10	1.80	1.35	1.05	1.00	0.30																	
Left Side	Condition Category																						CI = (Left Side CI + Right Side CI)/2	CI
	% Riparian Area:	15%	15%	15%	15%	25%	15%															0.38		
	Score:	14	12	9	7	4	2																	
Total Sub-score:		2.10	1.80	1.35	1.05	1.00	0.30																	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:											
Optimal					Suboptimal			Marginal			Poor													
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.												
	High			Low		High		Low	High		Low	High		Low										
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	2	CI

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:											
Negligible					Minor			Moderate			Severe													
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
						High			Low		High		Low	High		Low	High		Low					
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.37
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

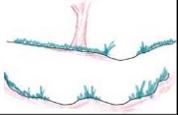
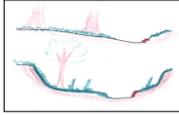
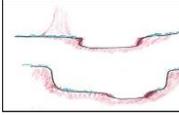
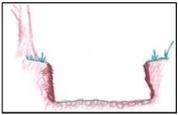
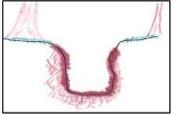
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		80 ft
Latitude	41.757783	Longitude	-78.465148	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Drains PEM wetland. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3.5 ft.		
J. Miner, M. Groomer		Stream113; UNT to Donely Fork				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained	High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	15%	15%	15%	15%	25%			15%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	1.80	1.35	1.05	1.00	0.30	0.38		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
	% Riparian Area:	15%	15%	15%	15%	25%			15%
	Score:	14	12	9	7	4			2
Total Sub-score:	2.10	1.80	1.35	1.05	1.00	0.30	0.38		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.38		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High			Low			High		Low		High		Low		
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Right Side	Condition Category								0.38	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	15%	15%	15%	15%	25%	15%				
	Score:	14	12	9	7	4	2				
Total Sub-score:		2.10	1.80	1.35	1.05	1.00	0.30				
Left Side	Condition Category								0.38	CI = (Left Side CI + Right Side CI)/2	CI
	% Riparian Area:	15%	15%	15%	15%	25%	15%	0.38			0.38
	Score:	14	12	9	7	4	2				
Total Sub-score:		2.10	1.80	1.35	1.05	1.00	0.30				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	High			Low			High		Low		High		Low										
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	2

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
						High			Low			High		Low		High		Low					
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.37
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

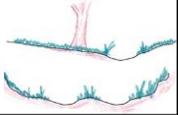
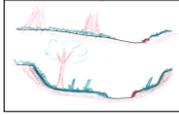
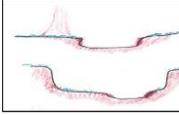
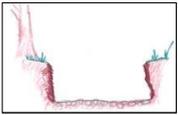
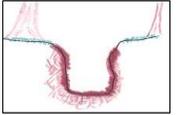
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/09/17	Designated: Existing:		68 ft
Latitude	41.744571	Longitude	-78.439766	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3.5 ft.		
J. Miner, M. Groomer		Stream 114: UNT to Donely Fork				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained	High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Right Side	Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	Side Sub-Index = SUM(%Areas*Scores)/20
	Condition Category						Side Sub-Index		
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Left Side	Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	CI = (Left Side CI + Right Side CI)/2
								CI	0.40

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:													
		Optimal					Suboptimal					Marginal					Poor														
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
		High					Low					High					Low					High					Low				
		SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1												

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category																Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20															
		Optimal					Suboptimal					Marginal					Poor																		
Right Side	% Riparian Area:	10%					15%					20%					20%					15%					0.38								
	Score:	14					12					9					7					4							2						
	Total Sub-score:	1.40					1.80					1.80					1.40					0.80							0.30						
Left Side	% Riparian Area:	10%					15%					15%					30%					15%					0.36	CI = (Left Side CI + Right Side CI)/2	CI						
	Score:	14					12					9					7					4								2					
	Total Sub-score:	1.40					1.80					1.35					1.05					1.20								0.30					0.37

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:																				
		Optimal					Suboptimal					Marginal					Poor																					
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					CI = (Score)/20					CI																
		SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE					2					0.10				

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:																				
		Negligible					Minor					Moderate					Severe																					
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.					Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					CI = (Score)/20					CI						
		SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					SCORE					11					0.55				

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

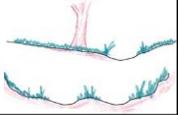
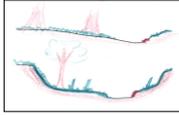
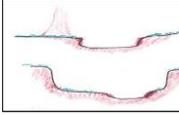
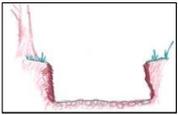
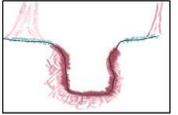
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		07/31/18	Designated: Existing:		368 ft
Latitude	41.845538	Longitude	-78.052814	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream115; Whitney Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.								<p>Comments:</p>											
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained	High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:	10%	20%	35%	15%	20%	0%			0.44
	Score:	14	12	9	7	4	0			
Total Sub-score:	1.40	2.40	3.15	1.05	0.80	0.00	Side Sub-Index = SUM(%Areas*Scores)/20			
	Condition Category									
	% Riparian Area:	10%	20%	35%	15%	20%				0%
	Score:	14	12	9	7	4	0			
Total Sub-score:	1.40	2.40	3.15	1.05	0.80	0.00	CI = (Left Side CI + Right Side CI)/2			
								CI		
								0.44		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:							
		Optimal				Suboptimal				Marginal				Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High				Low				High				Low				High				Low			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	10%		20%		35%		15%		20%		0%		0.44		
	Score:	14		12		9		7		4		0				
	Total Sub-score:	1.40		2.40		3.15		1.05		0.80		0.00				
Left Side	% Riparian Area:	10%		10%		35%		15%		30%		0%		0.40	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12		9		7		4		0				
	Total Sub-score:	1.40		1.20		3.15		1.05		1.20		0.00				
SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE		1		0.05		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:	
		Optimal				Suboptimal				Marginal				Poor					
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.									
		CI = (Score)/20		CI															
		SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE		1		0.05			

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:			
		Negligible				Minor				Moderate				Severe							
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		CI = (Score)/20		CI																	
		SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE		15		0.75					

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

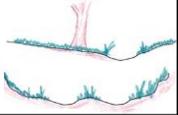
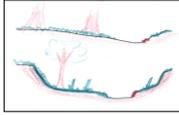
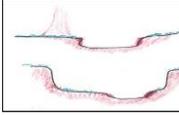
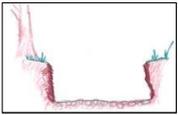
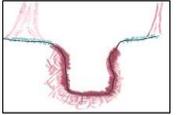
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/01/18	Designated: Existing:		610 ft
Latitude	41.845379	Longitude	-78.064144	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that crosses agricultural area and PEM wetlands. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream 116; East Branch Fishing Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	16
		0.80

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
		10%	20%	15%	35%	20%			0%
	Score:	14	12	9	7	4			0
Total Sub-score:	1.40	2.40	1.35	2.45	0.80	0.00	0.42		
Side Sub-Index = SUM(%Areas*Scores)/20									
	Condition Category								
		10%	20%	15%	35%	20%			0%
	Score:	14	12	9	7	4			0
Total Sub-score:	1.40	2.40	1.35	2.45	0.80	0.00	0.42		
CI = (Left Side CI + Right Side CI)/2							CI		
							0.42		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:										
		Optimal					Suboptimal				Marginal				Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High					Low				High			Low			High				Low			
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index				Side Sub-Index = SUM(%Areas*Scores)/20						
		Optimal		Suboptimal				Marginal							Poor					
Right Side	% Riparian Area:	10%		15%				25%		25%		10%				0.37				
	Score:	14		12				9		7		4		1						
	Total Sub-score:	1.40		1.80				1.35		1.75		1.00		0.10						
Left Side	% Riparian Area:	10%		20%				15%		30%		25%		0%				0.41	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12				9		7		4		0						
	Total Sub-score:	1.40		2.40				1.35		2.10		1.00		0.00						

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:											
		Optimal					Suboptimal				Marginal					Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.				CI = (Score)/20		CI								
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	9	0.45

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:											
		Negligible					Minor				Moderate					Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.				CI = (Score)/20		CI		
		SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	12	0.60

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.53
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

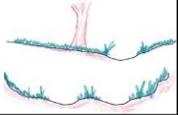
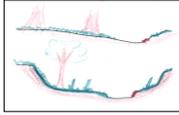
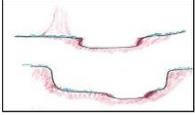
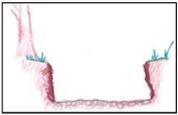
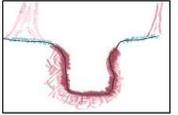
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/02/18	Designated: Existing:		93 ft
Latitude	41.767372	Longitude	-78.308341	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Perennial stream that crosses maintained ROW and access road. Average width of approximately 6 ft, average depth of 1 ft. Temporary impacts to 6.5 ft.		
J. Miner, M. Groomer		Stream118; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	12	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	10%	20%	20%	20%	20%			10%
	Score:	14	12	9	7	4			2
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category								
	% Riparian Area:	10%	20%	20%	20%	20%			
	Score:	14	12	9	7	4		2	
Total Sub-score:	1.40	2.40	1.80	1.40	0.80	0.20	0.40	CI = (Left Side CI + Right Side CI)/2	CI
								0.40	0.40

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:																						
Riparian ZOI		Optimal					Suboptimal					Marginal					Poor																			
		High					Low					High					Low																			
		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with					High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1																			

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20			
Right Side		% Riparian Area:							0.40					
		Score:												
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.							Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 50% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.		Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.			
SCORE		20 19 18 17 16							15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:											
Instream Habitat/ Available Cover		Optimal					Suboptimal					Marginal					Poor								
		High					Low					High					Low								
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 50% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8 7 6					5 4 3 2 1					CI = (Score)/20		CI	
														SCORE		10		0.50							

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:											
Channel Alteration		Negligible				Minor				Moderate						Severe									
		High				Low				High						Low									
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				CI = (Score)/20		CI					
														SCORE		15		0.75							

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

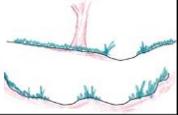
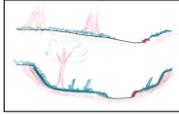
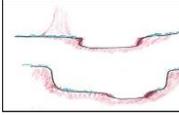
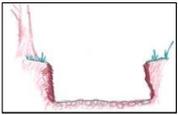
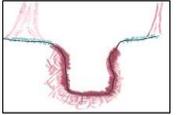
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/02/18	Designated: Existing:		278 ft
Latitude	41.767371	Longitude	-78.315035	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that drains to PEM wetland. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 5 ft.		
J. Miner, M. Groomer		Stream 122; UNT to Skinner Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	14
	0.70

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category									
	% Riparian Area:	25%	25%	25%	25%	0%			0%	
Right Side	Score:	14	12	9	7	0	0	0.53	Side Sub-Index = SUM(%Areas*Scores)/20	
	Total Sub-score:	3.50	3.00	2.25	1.75	0.00	0.00			
	Condition Category									
	% Riparian Area:	25%	25%	25%	25%	0%			0%	
Left Side	Score:	14	12	9	7	0	0	0.53	CI = (Left Side CI + Right Side CI)/2	
	Total Sub-score:	3.50	3.00	2.25	1.75	0.00	0.00			CI
										0.53

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High			Low			High		Low		High		Low		
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

								Side Sub-Index				
Right Side	Condition Category											
	% Riparian Area:	25%	25%	25%	25%	0%	0%	0.53				
	Score:	14	12	9	7	0	0					
Total Sub-score:	3.50	3.00	2.25	1.75	0.00	0.00						
Left Side	Condition Category											
	% Riparian Area:	25%	25%	25%	25%	0%	0%	0.53				
	Score:	14	12	9	7	0	0					
Total Sub-score:	3.50	3.00	2.25	1.75	0.00	0.00						

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:								
Optimal					Suboptimal			Marginal			Poor										
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.									
	High					Low			High		Low		SCORE		2						
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:								
Negligible					Minor			Moderate			Severe										
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
						High			Low			High		Low		SCORE		18			
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CIs)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

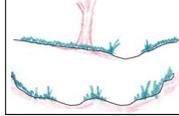
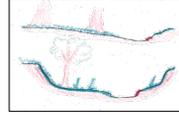
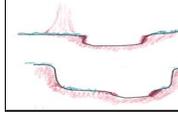
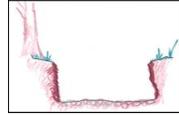
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/07/2018	Designated: Existing:		866 ft
Latitude	41.241198	Longitude	-78.418198	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information			Notes: Perennial stream with average width of approximately 50 ft, average depth of 3 ft. Temporary impacts to 1 ft.	
J. Miner, M. Groomer		Medix Run				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain a few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	18
	0.90

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																				
	Optimal		Suboptimal			Marginal			Poor												
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>		<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>			<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>			<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.</p>		<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>					
			SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index										
	% Riparian Area:	20%	25%	25%	20%	10%		0%		% Riparian Area:	20%	25%	25%	20%	10%	0%		
Right Side	Score:	14	12	9	7	4	0	0.49		Side Sub-Index = SUM(%Areas*Scores)/20	Total Sub-score:	2.80	3.00	2.25	1.40	0.40	0.00	
	Condition Category																	
	Left Side	Score:	14	12	9	7	4		0		0.49	CI = (Left Side CI + Right Side CI)/2	Total Sub-score:	2.80	3.00	2.25	1.40	0.40
Condition Category																		
CI																		
0.49																		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category										Comments:											
		Optimal			Suboptimal			Marginal			Poor												
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, and areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries, no-kill cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.						
		High			Low			High			Low			High		Low							
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

							Ensure the sums of % Riparian ZOI Blocks equal 100																		
Condition Category												Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20											
Right Side	% Riparian Area:		15%	15%	20%	25%	25%	0%				0.42													
	Score:		14	12	9	7	4	0																	
	Total Sub-score:		2.10	1.80	1.80	1.75	1.00	0.00																	
Condition Category												Side Sub-Index		CI = (Left Side CI + Right Side CI)/2											
Left Side	% Riparian Area:		20%	20%	20%	15%	25%	0%				0.45													
	Score:		14	12	9	7	4	0																	
	Total Sub-score:		2.80	2.40	1.80	1.05	1.00	0.00																	
SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	18	CI	0.44

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category										Comments:													
		Optimal			Suboptimal			Marginal			Poor														
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																	
		High			Low			High			Low			CI = (Score)/20		CI									
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	18

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category										Comments:													
		Negligible			Minor			Moderate			Severe														
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.											
		High			Low			High			Low			CI = (Score)/20		CI									
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	18

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.

$$RCI = (\text{Sum of all CIs})/5$$

RCI

0.73

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

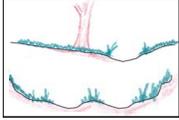
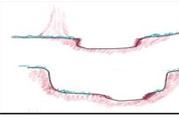
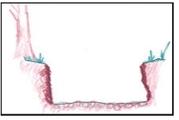
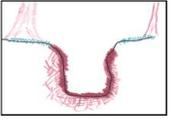
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/07/2018	Designated: Existing:		106 ft
Latitude	41.241126	Longitude	-78.418537	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Intermittent stream with average width of approximately 4 ft, average depth of 1 ft. Temporary impacts to 4 ft.	
J. Miner, M. Groomer		Stream 144; UNT to Medix Run				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 2) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain a few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	13
	0.65

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor											
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>										Comments:									
	SCORE	20	19	18	17	16	15	14	13	12		11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index			
	% Riparian Area:	20%	20%	20%	20%	20%		0%	0%	0%	0%
Right Side	Score:	14	12	9	7	4	0	0.46			
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00				
	Condition Category										
Left Side	Score:	14	12	9	7	4	0	0.46			
	Total Sub-score:	2.80	2.40	1.80	1.40	0.80	0.00				
	Condition Category										
CI = (Left Side CI + Right Side CI)/2										CI	
										0.46	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category								Comments:											
		Optimal		Suboptimal		Marginal		Poor													
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.									
		High		Low		High		Low		High		Low									
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category						Side Sub-Index		Comments:						
		Optimal		Suboptimal		Marginal						Poor				
Right Side	% Riparian Area:	15%		15%		20%		25%		25%		0%		0.42	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:	14		12		9		7		4		0				
	Total Sub-score:	2.10		1.80		1.80		1.75		1.00		0.00				
Left Side	% Riparian Area:	15%		15%		20%		25%		25%		0%		0.42	CI = (Left Side CI + Right Side CI)/2	
	Score:	14		12		9		7		4		0				CI
	Total Sub-score:	2.10		1.80		1.80		1.75		1.00		0.00				

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category								Comments:																
		Optimal		Suboptimal		Marginal		Poor																		
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.		Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.		CI = (Score)/20		CI																
	SCORE		20	19	18	17	16					15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	SCORE		18		0.90																					

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category								Comments:														
		Negligible		Minor		Moderate		Severe																
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.		Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.		Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.														
		High		Low		High		Low		CI = (Score)/20		CI												
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

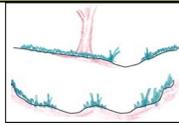
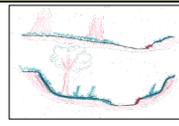
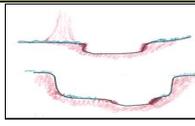
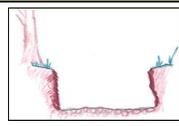
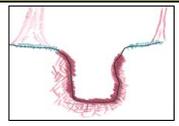
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/08/2018	Designated:	Existing:	780 ft
Latitude	41.232909	Longitude	-78.475256	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream with average width of approximately 50 ft, average depth of 3 ft. Temporary impacts to 21 ft.		
J. Miner, M. Groomer		Medix Run				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

		Condition Category											
		Optimal		Suboptimal			Marginal			Poor		Severe	
Channel / Floodplain													
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain a few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>			
SCORE	20 19 18 17	16 15 14 13	12 11 10 9	8 7 6 5	4 3 2 1								

Comments: Banks are vegetated.

CI = (Score)/20	CI
SCORE	16 0.80

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

		Condition Category										Comments:				
		Optimal		Suboptimal			Marginal			Poor						
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>			<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>			<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.</p>		<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>	
	SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1											

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below.

Ensure the sum of the % Riparian Area Blocks equal 100

		Condition Category						Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	20%	25%	25%	20%	10%	0%	0.49		
	Score:	14	12	9	7	4	0			
	Total Sub-score:	2.80	3.00	2.25	1.40	0.40	0.00			
		Condition Category						Side Sub-Index		CI = (Left Side CI + Right Side CI)/2
Left Side	% Riparian Area:	20%	25%	25%	20%	10%	0%	0.49		
	Score:	14	12	9	7	4	0			
	Total Sub-score:	2.80	3.00	2.25	1.40	0.40	0.00			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category										Comments:											
		Optimal			Suboptimal			Marginal			Poor												
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.						
		High			Low			High			Low			High		Low							
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Comments:				
Right Side	% Riparian Area:	15%		15%		20%		25%		25%		0%		0.42	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	14		12		9		7		4		0			
	Total Sub-score:	2.10		1.80		1.80		1.75		1.00		0.00			
Left Side	% Riparian Area:	20%		20%		20%		15%		25%		0%		0.45	CI = (Left Side CI + Right Side CI)/2
	Score:	14		12		9		7		4		0			
	Total Sub-score:	2.80		2.40		1.80		1.05		1.00		0.00			
														0.44	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category										Comments:												
		Optimal			Suboptimal			Marginal			Poor													
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																
	CI = (Score)/20														CI									
	SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	18

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category										Comments:												
		Negligible			Minor			Moderate			Severe													
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.										
		High			Low			High			Low			CI = (Score)/20		CI								
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

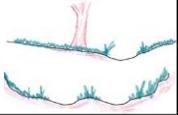
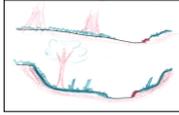
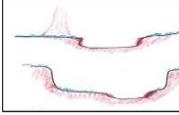
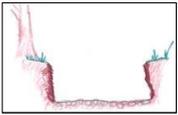
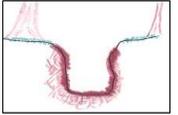
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/01/18	Designated: Existing:		72 ft
Latitude	41.846223	Longitude	-78.084138	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Runs across access road and is connected to PEM wetland. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.		
T. Malecki, M. Groomer		Stream 150; UNT to Fishing Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor			Severe				
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>				<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>			<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	10	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal				Suboptimal				Marginal			Poor								
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>										<p>Comments:</p>									
	High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.		High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained		High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.								
	SCORE	20	19	18	17	16	15	14	13	12		11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.24	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	0%	0%	20%	20%	20%	40%				
	0	0	9	7	4	2				
	0.00	0.00	1.80	1.40	0.80	0.80				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.24	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	0%	0%	20%	20%	20%	40%				
	0	0	9	7	4	2				
	0.00	0.00	1.80	1.40	0.80	0.80	0.24			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category														Comments:						
		Optimal					Suboptimal					Marginal					Poor					
		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	
High							Low					High		Low		High		Low				
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8		7 6		5 4 3		2 1				

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index							
											Right Side	% Riparian Area:			0%	
Score:	0		0		9		7		4			2				
Total Sub-score:	0.00		0.00		1.80		1.40		0.80			0.80				
Left Side	% Riparian Area:	0%		0%		20%		20%		20%		40%		0.24	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0		0		9		7		4		2				0.24
	Total Sub-score:	0.00		0.00		1.80		1.40		0.80		0.80				0.24

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category														Comments:							
		Optimal					Suboptimal					Marginal						Poor					
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.						Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
High							Low					High		Low		High		Low		CI = (Score)/20		CI	
SCORE		20 19 18 17 16					15 14 13 12 11					10 9 8		7 6		5 4 3		2 1		SCORE		1 0.05	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category														Comments: Runs through access road and three culverts					
		Negligible				Minor				Moderate				Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.	
High						Low				High		Low		High		Low		CI = (Score)/20			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8		7 6		5 4 3		2 1		SCORE		10 0.50	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.31**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

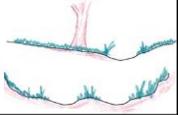
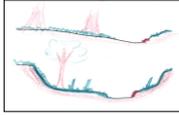
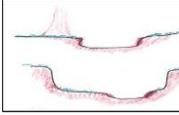
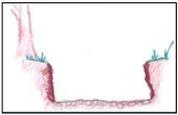
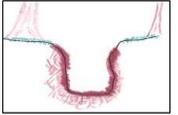
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/01/18	Designated: Existing:		774 ft
Latitude	41.839163	Longitude	-78.096575	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 151; UNT to East Branch Fishing Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	10	0.50

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								Comments:											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
	High	Low	High	Low	High	Low	High	Low												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
		0%	25%	25%	25%	25%		0%	Side Sub-Index = SUM(%Areas*Scores)/20
	Right Side	Score:	0	12	9	7		4	
Total Sub-score:		0.00	3.00	2.25	1.75	1.00	0.00	0.40	
	Condition Category							Side Sub-Index	
		0%	25%	25%	25%	25%		0%	CI = (Left Side CI + Right Side CI)/2
	Left Side	Score:	0	12	9	7		4	
Total Sub-score:		0.00	3.00	2.25	1.75	1.00	0.00	0.40	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:
Riparian ZOI	Optimal	Suboptimal					Marginal					Poor		
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with	High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.							
		High	Low	High	Low	High	Low	High	Low					
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1							

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	Condition Category	% Riparian Area:	0%	25%	25%	25%	25%	0%		
	Score:	0	12	9	7	4	0	0.40		
	Total Sub-score:	0.00	3.00	2.25	1.75	1.00	0.00			
Left Side	Condition Category	% Riparian Area:	0%	25%	25%	25%	25%	0%	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	12	9	7	4	0	0.40	0.40	
	Total Sub-score:	0.00	3.00	2.25	1.75	1.00	0.00		0.40	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:
Instream Habitat/ Available Cover	Optimal	Suboptimal					Marginal					Poor		
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
	High	Low	High	Low	High	Low	High	Low	High	Low				
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	3	0.15				

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Runs through maintained pipeline ROW
Channel Alteration	Negligible	Minor				Moderate				Severe				
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
		High	Low	High	Low	High	Low	High	Low					
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	16	0.80				

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.45**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

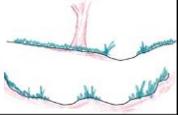
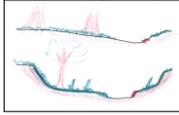
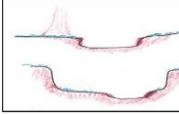
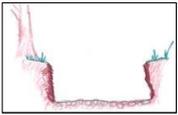
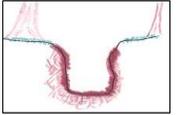
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/02/18	Designated: Existing:		74 ft
Latitude	41.839336	Longitude	-78.108711	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 1 ft, average depth of 0.3 ft. Temporary impacts to 1.5 ft.	
T. Malecki, M. Groomer		Stream 153; UNT to Fishing Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they are less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal			Marginal		Poor												
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
			<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>			<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index			
	% Riparian Area:								0.33	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:									
Total Sub-score:										
Right Side	0%	20%	20%	20%	20%	20%				
	0	12	9	7	4	1				
	0.00	2.40	1.80	1.40	0.80	0.20				
	Condition Category						Side Sub-Index			
	% Riparian Area:								0.33	CI = (Left Side CI + Right Side CI)/2
	Score:									
Total Sub-score:										
Left Side	0%	20%	20%	20%	20%	20%				
	0	12	9	7	4	1				
	0.00	2.40	1.80	1.40	0.80	0.20	0.33			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:			
		Optimal					Suboptimal			Marginal					Poor		
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
		High	Low	High	Low	High	Low	High	Low	High	Low						
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1								

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	20%	20%	20%	20%	20%	0.33	0.33		
	Score:	0	12	9	7	4	1				
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.20				
Left Side	% Riparian Area:	0%	20%	20%	20%	20%	20%	0.33	0.33	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	12	9	7	4	1				0.33
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.20				0.20

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:	
		Optimal					Suboptimal			Marginal				Poor	
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	CI = (Score)/20	CI
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	3	0.15			

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Runs across access road and has three culverts.			
		Negligible					Minor			Moderate						Severe	
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.			
		High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	CI = (Score)/20	CI		
		SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	10	0.50					

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5** **0.35**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

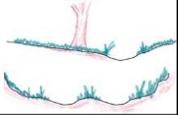
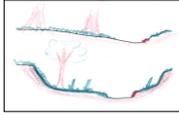
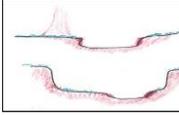
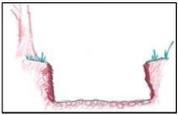
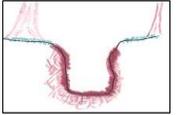
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/02/18	Designated: Existing:		61 ft
Latitude	41.839671	Longitude	-78.107817	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 1 ft, average depth of 0.3 ft. Temporary impacts to 1 ft.	
T. Malecki, M. Groomer		Stream 154; UNT to Fishing Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index	
		0%	20%	20%	20%	20%			
	% Riparian Area:	0	12	9	7	4		1	0.33
Score:	0	12	9	7	4	1			
Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.20			
	Condition Category							Side Sub-Index	
		0%	20%	20%	20%	20%			
	% Riparian Area:	0	12	9	7	4		1	0.33
Score:	0	12	9	7	4	1			
Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.20	0.33		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:									
Riparian ZOI		Optimal				Suboptimal				Marginal					Poor								
		High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
		High				Low				High				Low									
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

								Ensure the sums of % Riparian ZOI Blocks equal 100											
Right Side		Condition Category												Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20			
		% Riparian Area:		0%		20%		20%		20%		20%		0.33					
		Score:		0		12		9		7		4						1	
		Total Sub-score:		0.00		2.40		1.80		1.40		0.80						0.20	
Left Side		Condition Category												0.33		CI = (Left Side CI + Right Side CI)/2 CI 0.33			
		% Riparian Area:		0%		20%		20%		20%		20%							
		Score:		0		12		9		7		4						1	
		Total Sub-score:		0.00		2.40		1.80		1.40		0.80						0.20	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:									
Instream Habitat/ Available Cover		Optimal				Suboptimal				Marginal						Poor							
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.						Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.							
		High				Low				High				Low				CI = (Score)/20		CI			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		3		0.15	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Runs across access road and has three culverts.									
Channel Alteration		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			
		High				Low				High				Low				CI = (Score)/20		CI			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		10		0.50	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

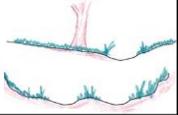
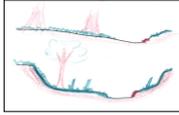
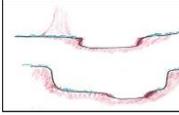
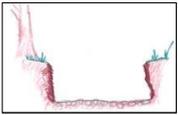
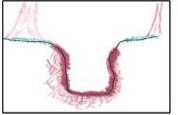
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/02/18	Designated: Existing:		90 ft
Latitude	41.837491	Longitude	-78.120161	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 12 ft, average depth of 1 ft. Temporary impacts to 13.5 ft.	
T. Malecki, M. Groomer		Stream 155; UNT to Fishing Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	
	SCORE	15
		CI
		0.75

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category	0%	20%	20%	20%	20%	20%	Side Sub-Index
Right Side	% Riparian Area:	0%	20%	20%	20%	20%	20%	0.33
	Score:	0	12	9	7	4	1	
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.20	
	Condition Category							
Left Side	% Riparian Area:	0%	20%	20%	20%	20%	20%	0.33
	Score:	0	12	9	7	4	1	
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80	0.20	
								CI = (Left Side CI + Right Side CI)/2
								CI
								0.33

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category												Comments:									
Optimal			Suboptimal			Marginal			Poor												
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.			High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
				High			Low			High			Low			High			Low		
				SCORE			20 19 18 17 16			15 14 13 12 11			10 9 8 7 6			5 4 3 2 1					

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below.

							Ensure the sums of % Riparian ZOI Blocks equal 100					
Right Side	Condition Category						Side Sub-Index					
	% Riparian Area:	0%	20%	20%	20%	20%	0.33					
	Score:	0	12	9	7	4						1
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80						0.20
Side Sub-Index = SUM(%Areas*Scores)/20												
Left Side	Condition Category						Side Sub-Index					
	% Riparian Area:	0%	20%	20%	20%	20%	0.33					
	Score:	0	12	9	7	4						1
	Total Sub-score:	0.00	2.40	1.80	1.40	0.80						0.20
CI = (Left Side CI + Right Side CI)/2										CI		
										0.33		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category												Comments:						
Optimal			Suboptimal			Marginal			Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.								
	High			Low			High			Low			CI = (Score)/20		CI			
	SCORE			20 19 18 17 16			15 14 13 12 11			10 9 8 7 6			5 4 3 2 1			SCORE		12

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category												Comments: Runs across access road and has two culverts.						
Negligible			Minor			Moderate			Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.			Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
				High			Low			High			Low			CI = (Score)/20		CI
				SCORE			20 19 18 17 16			15 14 13 12 11			10 9 8 7 6			5 4 3 2 1		

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

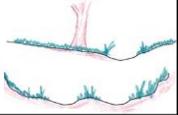
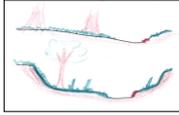
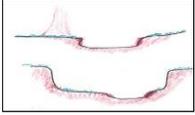
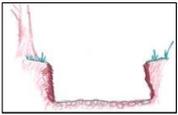
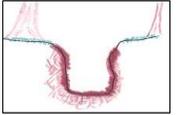
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/02/18	Designated: Existing:		404 ft
Latitude	41.835606	Longitude	-78.128169	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information			Notes: Connected to a PSS and PEM wetland. Average width of approximately 30 ft, average depth of 2 ft. Temporary impacts to 37.38 ft.	
T. Malecki, M. Groomer		Stream 156; Fishing Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal				Suboptimal				Marginal		Poor		Severe							
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>				<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>				<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	17
		0.85

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																															
	Optimal				Suboptimal					Marginal				Poor																		
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>				<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>				<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>				<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>				<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>				<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>			
									High				Low				High				Low				High				Low			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.46	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	0%	35%	35%	20%	10%	0%				
	0	12	9	7	4	0				
	0.00	4.20	3.15	1.40	0.40	0.00				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.46	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	0%	35%	35%	20%	10%	0%				
	0	12	9	7	4	0				
	0.00	4.20	3.15	1.40	0.40	0.00	0.46			

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3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:
Riparian ZOI	Optimal	Suboptimal					Marginal					Poor		
	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.	High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.	Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with	High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.							
		High	Low	High	Low	High	Low	High	Low					
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1							

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	25%	25%	25%	25%	0%			
	Score:	0	12	9	7	4	0	0.40		
	Total Sub-score:	0.00	3.00	2.25	1.75	1.00	0.00			

		Condition Category							Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	CI
Left Side	% Riparian Area:	0%	25%	25%	25%	25%	0%	0.40			
	Score:	0	12	9	7	4	0	0.40	0.40		
	Total Sub-score:	0.00	3.00	2.25	1.75	1.00	0.00		0.40		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:
Instream Habitat/ Available Cover	Optimal	Suboptimal					Marginal					Poor		
	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
	High	Low	High	Low	High	Low	High	Low						
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	14	0.70				

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Runs through agricultural pasture and has two culverts.
Channel Alteration	Negligible	Minor				Moderate				Severe				
	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.	Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.	Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.								
		High	Low	High	Low	High	Low	High	Low					
SCORE	20 19 18 17 16	15 14 13	12 11	10 9 8	7 6	5 4 3	2 1	SCORE	14	0.70				

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places.	RCI = (Sum of all CI's)/5	0.62
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If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

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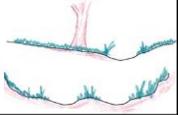
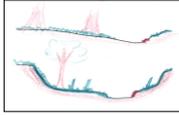
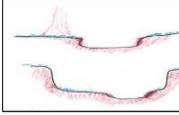
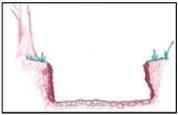
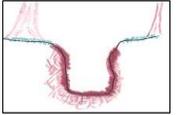
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/03/18	Designated: Existing:		242 ft
Latitude	41.754201	Longitude	-78.387652	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Tributary to Stream 158. Average width of approximately 3 ft, average depth of 0.3 ft. Temporary impacts to 30 ft.		
T. Malecki, M. Groomer		Stream 159; UNT to Potato Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	9	0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category										
	% Riparian Area:		30%	30%	30%	10%			0%	0%	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:		14	12	9	7			0	0	
Total Sub-score:		4.20	3.60	2.70	0.70	0.00	0.00	0.56			
	Condition Category										
	% Riparian Area:		30%	30%	30%	10%			0%	0%	CI = (Left Side CI + Right Side CI)/2
	Score:		14	12	9	7			0	0	
Total Sub-score:		4.20	3.60	2.70	0.70	0.00	0.00	0.56	0.56		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:													
		Optimal				Suboptimal				Marginal					Poor												
		Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.
High						Low				High				Low				High				Low					
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1													

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index				Side Sub-Index = SUM(%Areas*Scores)/20		
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	30%		30%		10%		0%		0.56				0.56		
	Score:	14		12		9		7								
	Total Sub-score:	4.20		3.60		2.70		0.70								0.00
Left Side	% Riparian Area:	30%		30%		10%		0%		0.56				CI = (Left Side CI + Right Side CI)/2		CI
	Score:	14		12		9		7								
	Total Sub-score:	4.20		3.60		2.70		0.70								

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:							
		Optimal				Suboptimal				Marginal						Poor					
		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.						Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.					
SCORE						High				Low				High				Low			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		2	0.10

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:									
		Negligible				Minor				Moderate						Severe							
		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.						Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			
High						Low				High				Low				SCORE		CI = (Score)/20	CI		
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		19	0.95		

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

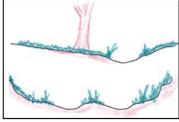
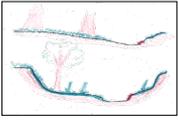
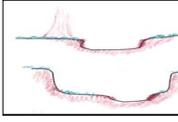
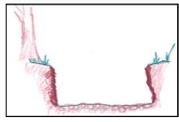
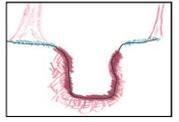
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/07/18	Designated: Existing:		315 ft
Latitude	41.21991	Longitude	-78.558361	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Connected to ditch and drains PSS wetland. Average width of approximately 3.5 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
T. Malecki, M. Groomer		Stream 179; UNT to Bennett Branch Sinnemahoning Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

		Condition Category														
		Optimal			Suboptimal			Marginal			Poor			Severe		
Channel / Floodplain																
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 3) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 4) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain a few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>			<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>					
SCORE	20 19 18 17	16 15 14 13			12 11 10 9			8 7 6 5			4 3 2 1					

Comments:

	CI = (Score)/20	
SCORE	12	0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

		Condition Category										Comments:							
		Optimal			Suboptimal			Marginal			Poor								
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>			<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>			<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>			<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>			<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>		
	SCORE	20 19 18 17 16	15 14 13 12 11			10 9 8 7 6			5 4 3 2 1										

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	Optimal	Suboptimal	Marginal	Poor	Score	Area			
Right Side	% Riparian Area:	5%	15%	20%	40%	10%	10%	0.50	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16	14	12	9	7	4		
	Total Sub-score:	0.80	2.10	2.40	3.60	0.70	0.40		
Left Side	% Riparian Area:	5%	15%	20%	40%	10%	10%	0.50	CI = (Left Side CI + Right Side CI)/2
	Score:	16	14	12	9	7	4		
	Total Sub-score:	0.80	2.10	2.40	3.60	0.70	0.40		

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category										Comments:											
		Optimal			Suboptimal			Marginal			Poor												
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained.			High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.						
		High			Low			High			Low			High		Low							
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category						Side Sub-Index							
Right Side	% Riparian Area:	5%		15%		20%		25%		20%		15%		0.48	Side Sub-Index = SUM(%Areas*Scores)/20
	Score:	16		14		12		9		7		4			
	Total Sub-score:	0.80		2.10		2.40		2.25		1.40		0.60			
		Condition Category													
Left Side	% Riparian Area:	5%		15%		20%		25%		20%		15%		0.48	CI = (Left Side CI + Right Side CI)/2
	Score:	16		14		12		9		7		4			
	Total Sub-score:	0.80		2.10		2.40		2.25		1.40		0.60			
														0.48	

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category										Comments:												
		Optimal			Suboptimal			Marginal			Poor													
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.																
		High			Low			High			Low			CI = (Score)/20										
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category										Comments:												
		Negligible			Minor			Moderate			Severe													
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.			Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.										
		High			Low			High			Low			CI = (Score)/20										
		SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

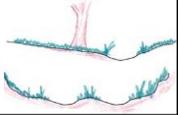
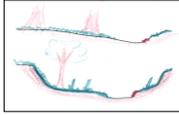
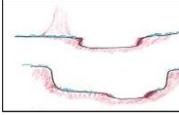
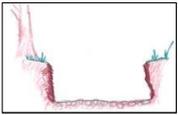
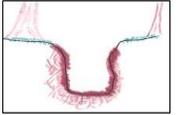
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/07/18	Designated: Existing:		140 ft
Latitude	41.219481	Longitude	-78.556276	FGM Level 1 Channel Classification		C
Evaluator(s)		Stream Name and Information		Notes: Average width of approximately 60 ft, average depth of 3 ft. Temporary impacts to 65.15 ft.		
T. Malecki, M. Groomer		Stream 180; Bennett Branch Sinnemahoning Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal			Marginal			Poor		Severe									
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	12
		0.60

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

Right Side	Condition Category						Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20	
	% Riparian Area:	0%	20%	20%	40%	10%			10%
	Score:	0	14	12	9	7			4
	Total Sub-score:	0.00	2.80	2.40	3.60	0.70	0.40		
Left Side	Condition Category						Side Sub-Index	CI = (Left Side CI + Right Side CI)/2	
	% Riparian Area:	0%	20%	20%	40%	10%			10%
	Score:	0	14	12	9	7			4
	Total Sub-score:	0.00	2.80	2.40	3.60	0.70	0.40	0.50	
							0.50	0.50	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:											
		Optimal				Suboptimal				Marginal						Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High				Low				High				Low				High				Low			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category							Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20			
		Optimal		Suboptimal		Marginal		Poor						
Right Side	% Riparian Area:	0%		25%		25%		15%			0.51			
	Score:	0		14		12		9 7 4						
	Total Sub-score:	0.00		3.50		3.00		2.25 1.05 0.40						
Left Side	% Riparian Area:	0%		10%		10%		10%			0.35		CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0		14		12		9 7 4						
	Total Sub-score:	0.00		1.40		1.20		0.90 1.40 2.00						

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:						
		Optimal				Suboptimal				Marginal						Poor				
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.										
		CI = (Score)/20												CI						
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 11

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments: Stream crosses maintained ROW, has bridge over it, and culverts on it.											
		Negligible				Minor				Moderate						Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
		High				Low				High				Low				High				Low			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 11		0.55			

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

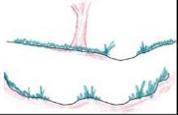
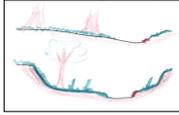
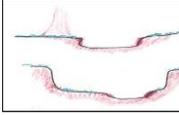
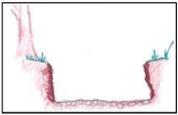
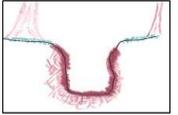
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		08/07/18	Designated: Existing:		190 ft
Latitude	41.219159	Longitude	-78.552352	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
T. Malecki, M. Groomer		Stream 181; UNT to Bennett Branch				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>											
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
	SCORE	9 0.45

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category								
	% Riparian Area:	0%	10%	20%	40%	20%			10%
	Score:	0	14	12	9	7			4
Right Side	Total Sub-score:	0.00	1.40	2.40	3.60	1.40	0.40	0.46	Side Sub-Index = SUM(%Areas*Scores)/20
	Condition Category								
	% Riparian Area:	0%	10%	20%	40%	20%			
	Score:	0	14	12	9	7			4
Left Side	Total Sub-score:	0.00	1.40	2.40	3.60	1.40	0.40	0.46	CI = (Left Side CI + Right Side CI)/2
									CI
									0.46

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High			Low			High			Low		High		Low	
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20
Right Side	% Riparian Area:	0%	10%	20%	40%	20%	10%	0.46		
	Score:	0	14	12	9	7	4			
	Total Sub-score:	0.00	1.40	2.40	3.60	1.40	0.40			
Left Side	% Riparian Area:	0%	10%	20%	40%	20%	10%	0.46	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	0	14	12	9	7	4			0.46
	Total Sub-score:	0.00	1.40	2.40	3.60	1.40	0.40			0.46

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	High			Low			High			Low		CI = (Score)/20		CI									
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	3

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
						High			Low			High			Low		CI = (Score)/20		CI				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4

RIVERINE CONDITION INDEX (RCI) **RCI**

NOTE: The CIs and RCI should be rounded to 2 decimal places. **RCI = (Sum of all CI's)/5**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

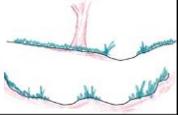
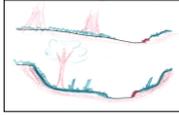
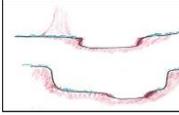
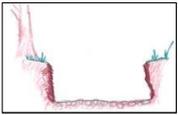
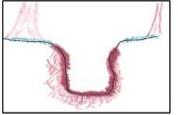
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		128 ft
Latitude	41.809476	Longitude	-78.425959	FGM Level 1 Channel Classification		B
Evaluator(s)		Stream Name and Information		Notes: Intermittent stream that crosses maintained ROW and access road. Average width of approximately 6 ft, average depth of 0.5 ft. Temporary impacts to 7 ft.		
J. Miner, M. Groomer		Stream195; UNT to Potato Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor		Severe											
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if transient channel sediment deposition is present, it covers less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>	<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>	<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>	<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>	<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>	<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>	<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>	<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>	<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category						Side Sub-Index		
	% Riparian Area:	0%	15%	5%	30%	30%			20%
	Score:	0	12	9	7	4			2
Total Sub-score:	0.00	1.80	0.45	2.10	1.20	0.40	0.30	Side Sub-Index = SUM(%Areas*Scores)/20	
	Condition Category						Side Sub-Index		
	% Riparian Area:	0%	15%	5%	30%	30%		20%	
	Score:	0	12	9	7	4		2	
Total Sub-score:	0.00	1.80	0.45	2.10	1.20	0.40	0.30	CI = (Left Side CI + Right Side CI)/2	CI
								0.30	0.30

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

Condition Category													Comments:							
Optimal					Suboptimal			Marginal			Poor									
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.		Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with		High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High			Low			High			Low		High		Low	
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

Condition Category									Side Sub-Index	Side Sub-Index = SUM(%Areas*Scores)/20														
Right Side	% Riparian Area:	0%	10%	5%	10%	40%	35%	0.23																
	Score:	0	12	9	7	4	2																	
	Total Sub-score:	0.00	1.20	0.45	0.70	1.60	0.70																	
Condition Category									Side Sub-Index	Cl = (Left Side Cl + Right Side Cl)/2														
Left Side	% Riparian Area:	0%	10%	5%	10%	40%	35%	0.23																
	Score:	0	12	9	7	4	2																	
	Total Sub-score:	0.00	1.20	0.45	0.70	1.60	0.70																	
SCORE		20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	2	0.23

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

Condition Category													Comments:										
Optimal					Suboptimal			Marginal			Poor												
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.			Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.											
	High					Low			High			Low											
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	SCORE	2

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

Condition Category													Comments:										
Negligible					Minor			Moderate			Severe												
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.					Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.			Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.		Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.							
						High			Low			High			Low		High		Low				
						SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CIs)/5

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

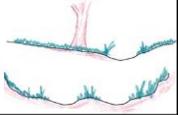
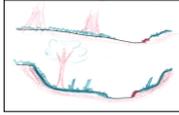
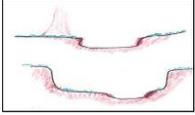
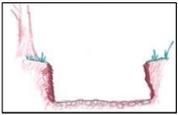
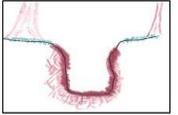
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		09/30/17	Designated: Existing:		55 ft
Latitude	41.818605	Longitude	-78.212524	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information			Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.	
J. Miner, M. Groomer		Stream196; UNT to Coleman Creek				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	
	SCORE	8
		CI
		0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p>								<p>Comments:</p>											
	<p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p>		<p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p>		<p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p>		<p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p>			<p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p>		<p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category										
	% Riparian Area:		10%	15%	15%	20%			20%	20%	
	Score:		14	12	9	7			4	2	
Right Side	Total Sub-score:		1.40	1.80	1.35	1.40	0.80	0.40	0.36	Side Sub-Index = SUM(%Areas*Scores)/20	
Condition Category								0.36	CI = (Left Side CI + Right Side CI)/2		CI
% Riparian Area:		10%	15%	15%	20%	20%	20%				
Score:		14	12	9	7	4	2				
Left Side	Total Sub-score:		1.40	1.80	1.35	1.40	0.80	0.40	0.36	0.36	

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category																Comments:							
		Optimal				Suboptimal				Marginal				Poor											
Riparian ZOI	Riparian ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
		High				Low				High				Low				High				Low			
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1									

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20				
		Optimal		Suboptimal		Marginal		Poor								
Right Side	% Riparian Area:	10%		10%		20%		20%		30%		10%		0.36		
	Score:	14		12		9		7		4		2				
	Total Sub-score:	1.40		1.20		1.80		1.40		1.20		0.20				
Left Side	% Riparian Area:	10%		10%		20%		20%		30%		10%		0.36	CI = (Left Side CI + Right Side CI)/2	CI
	Score:	14		12		9		7		4		2				
	Total Sub-score:	1.40		1.20		1.80		1.40		1.20		0.20				
SCORE		20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		SCORE		1		0.05		

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category																Comments:					
		Optimal				Suboptimal				Marginal				Poor									
Instream Habitat/ Available Cover	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.	Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.													
		High		Low		High		Low		High		Low		High		Low		SCORE		1		0.05	
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		1	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category																Comments:					
		Negligible				Minor				Moderate				Severe									
Channel Alteration	Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.	Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.					
		High				Low				High				Low				SCORE		13		0.65	
		SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE		13	

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 **0.36**

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Riverine Assessment Form 1

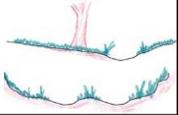
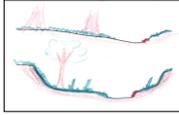
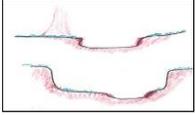
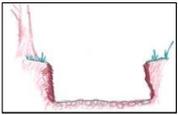
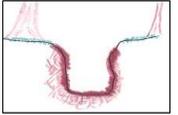
Pennsylvania Riverine Condition Level 2 Rapid Assessment Protocol (Document No. 310-2137-003)

Pennsylvania Department of Environmental Protection

For use in intermittent or perennial watercourses with drainage areas ≤ 2,000 square mile drainage areas.

Project #	Project Name	Locality	Date	Ch 93 Classification	AA Id	Length
	FM100 Modernization Project		10/07/17	Designated: Existing:		114 ft
Latitude	41.753734	Longitude	-78.364582	FGM Level 1 Channel Classification		A
Evaluator(s)		Stream Name and Information		Notes: Ephemeral stream that crosses maintained ROW and access road. Average width of approximately 3 ft, average depth of 0.5 ft. Temporary impacts to 3 ft.		
J. Miner, M. Groomer		Stream198; UNT to Walcott Brook				

1. CHANNEL/FLOODPLAIN: Assess the cross-section of the stream and prevailing conditions along the AA.

	Condition Category																			
	Optimal		Suboptimal		Marginal			Poor		Severe										
Channel / Floodplain																				
	<p>Channel Geometry: These channels show very little incision or widening and little or no evidence of active erosion. Anastomosing channels may be present.</p> <p>Channel Stability: Visual indicators include: 1) the banks are not eroding along greater than 5% of the reach; 2) natural vegetative or rock stability features are present along greater than 80% of the banks; 3) stable point bars and bankfull benches may be present; 4) mid-channel bars and transverse bars are rare and if present, they cover less than or equal to 10% of the stream bottom; 5) baseflow is connected to the rooting depths of vegetation in the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows have frequent access to the active floodplain and fully developed point bars or bankfull benches that are accessed at most flows greater than baseflow.</p>		<p>Channel Geometry: These channels are slightly incised or overwidened and contain few areas of active erosion.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding along less than 25% of the reach; 2) depositional features such as point bars and bankfull benches are present and stable during high flows and occur along greater than 50% of the reach; 3) natural bank protection like vegetation or rock is providing stability along greater than 50% of the reach; 4) baseflow is connected to vegetated point bars and bankfull benches.</p> <p>Active Floodplain Connection: The bankfull stream flows frequently access bankfull benches, or point bars along portions of the reach and may frequently inundate the active floodplain.</p>		<p>Channel Geometry: These channels are over-widened or incised, but to a lesser degree than the Severe and Poor channel conditions.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 25% and less than or equal to 50% of the reach; 2) depositional features like point bars or bankfull benches occur along greater than 25% and less than or equal to 50% of the reach; 3) the stream banks may consist of some vertical or undercut banks or nick points associated with head cuts;</p> <p>Active Floodplain Connection: The bankfull stream flows have infrequent connection to the active floodplain.</p>			<p>Channel Geometry: These channels are over-widened or incised and eroding vertically and/or laterally.</p> <p>Channel Stability: Visual indicators include: 1) the banks are eroding or severely undercut along greater than 50% of the reach; 2) active or recent bank sloughing is present along greater than 50% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion along the reach; 4) depositional features, such as point bars and bank full benches, are absent from the reach or newly developing along less than 25% of the reach; 5) bank full benches and point bars frequently scour during high flows; 6) baseflow is disconnected from plant rooting depths and the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are not connected to the active floodplain.</p>		<p>Channel Geometry: These channels are deeply incised and actively eroding vertically and/or laterally. Over widened channels may contain sections of unstable braided channels from aggradation.</p> <p>Channel Stability: Visual indicators include: 1) the banks are actively eroding or being undercut along greater than 80% of the reach; 2) active or recent bank sloughing is occurring along greater than 80% of the reach; 3) natural bank protection like vegetation is not preventing bank erosion or sloughing; 4) depositional features such as point bars and bankfull benches are absent; 5) flood flows are disconnected from the active floodplain.</p> <p>Active Floodplain Connection: The bankfull stream flows are never connected to the active floodplain.</p>										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments:

	CI = (Score)/20	CI
SCORE	8	0.40

2. RIPARIAN VEGETATION: Assess the floodplain along the entire AA (Visual estimates of areal coverage from aerial photos with field verification acceptable).

	Condition Category																			
	Optimal		Suboptimal		Marginal		Poor													
Riparian Vegetation (Floodplain)	<p>Riparian area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.</p> <p>High Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.</p> <p>Low Suboptimal: Riparian area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.</p> <p>High Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.</p> <p>Low Marginal: Riparian area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained</p> <p>High Poor: Riparian area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.</p> <p>Low Poor: Riparian area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.</p>								Comments:											
	SCORE	20	19	18	17	16	15	14		13	12	11	10	9	8	7	6	5	4	3

1. Identify Condition Category areas along the floodplain using the descriptors above.

2. Estimate the % area within each condition category.

3. Enter the % Riparian Area in in decimal form (0.00) and Score for each category in the blocks below. Ensure the sum of the % Riparian Area Blocks equal 100

	Condition Category							Side Sub-Index		
	% Riparian Area:							0.40	Side Sub-Index = SUM(%Areas*Scores)/20	
	Score:									
Total Sub-score:										
Right Side	10%	20%	20%	20%	15%	15%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.60	0.30				
	Condition Category							Side Sub-Index		
	% Riparian Area:							0.40	CI = (Left Side CI + Right Side CI)/2	
	Score:									
Total Sub-score:										
Left Side	10%	20%	20%	20%	15%	15%				
	14	12	9	7	4	2				
	1.40	2.40	1.80	1.40	0.60	0.30	0.40			

Riverine Assessment Form 1 - Page 2

3. RIPARIAN ZONE OF INFLUENCE: Assess land cover along both sides, 100 feet from edge of floodplain into the upland along the entire AA. (rough measurements of length & width may be acceptable)

		Condition Category												Comments:															
		Optimal				Suboptimal				Marginal					Poor														
Riparian ZOI		Riparian ZOI area vegetation consists of a tree stratum (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: Riparian ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: Riparian ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with				High Poor: Riparian ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: Riparian ZOI area consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
						High				Low				High				Low				High				Low			
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1															

1. Identify Condition Category areas along the floodplain using the descriptors above.
2. Estimate the % area within each condition category.
3. Enter the % Riparian Area in decimal form (0.00) and Score for each category in the blocks below. Ensure the sums of % Riparian ZOI Blocks equal 100

		Condition Category								Side Sub-Index		Side Sub-Index = SUM(%Areas*Scores)/20													
		Optimal				Suboptimal				Marginal				Poor											
Right Side		% Riparian Area: 10%				20%				20%				15%				0.40							
																						Score: 14			
Total Sub-score:		1.40				2.40				1.80				1.40				0.60							

		Condition Category								Side Sub-Index		CI = (Left Side CI + Right Side CI)/2	CI																
		Optimal				Suboptimal				Marginal				Poor															
Left Side		% Riparian Area: 10%				20%				20%				15%				0.40											
																						Score: 14				12			
Total Sub-score:		1.40				2.40				1.80				1.40				0.60											

4. INSTREAM HABITAT: Varied substrate sizes, water velocity and depths, woody and leafy debris, stable substrate, low embeddedness, shade, undercut banks, root mats, SAV, macrophytes, emergent vegetation, riffle-pool complexes, stable features.

		Condition Category												Comments:							
		Optimal				Suboptimal				Marginal					Poor						
Instream Habitat/ Available Cover		Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 50% of the reach. Substrate is favorable for colonization by a diverse and abundant epifaunal community, and there are many suitable areas for epifaunal colonization and/or fish cover.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 30% and less than 50% of the reach. Conditions are mostly desirable and are generally suitable for full colonization by a moderately diverse and abundant epifaunal community.				Physical Elements that enhance a stream's ability to support aquatic organisms are present in greater than or equal to 10% and less than 30% of the reach. Conditions are generally suitable for partial colonization by epifaunal and/or fish communities.					Physical Elements that enhance a stream's ability to support aquatic organisms are present in less than 10% of the reach. Conditions are generally unsuitable for colonization by epifaunal and/or fish communities. The reach.						
														High					Low		
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 2		CI 0.10	

5. CHANNEL ALTERATION: Stream crossings, riprap, concrete, gabions, or concrete blocks, straightening of channel/channelization, embankments, spoil piles, constrictions, etc.

		Condition Category												Comments:											
		Negligible				Minor				Moderate					Severe										
Channel Alteration		Channel alterations listed above are absent in the SAR. The stream has unaltered pattern or has normalized.				Minor High: Less than or equal to 20% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.				Minor Low: Greater than 20% and less than or equal to 40% of the stream reach is disrupted by any of the channel alterations listed above. Alteration or channelization present, usually adjacent to structures, (such as bridge abutments or culverts); evidence of past alteration, (i.e., channelization) may be present, but stream pattern and stability have recovered; recent alteration is not present.					Moderate High: Greater than 40% and less than or equal to 60% of reach is disrupted by any of the channel alterations listed above. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Moderate Low: Greater than 60% and less than or equal to 80% of reach is disrupted by any of the channel alterations listed in the parameter guidelines. If the stream has been channelized, normal stable stream meander pattern has not recovered.				Greater than 80% of reach is disrupted by any of the channel alterations listed above. Greater than 80% of banks shored with gabion, riprap, or concrete.		
						High				Low				High				Low							
SCORE		20 19 18 17 16				15 14 13 12 11				10 9 8 7 6				5 4 3 2 1				SCORE 13		CI 0.65					

RIVERINE CONDITION INDEX (RCI)

NOTE: The CIs and RCI should be rounded to 2 decimal places. RCI = (Sum of all CI's)/5 0.39

If a CI is not applicable (e.g. due to use on intermittent watercourse or >100 sq. mile drainage area) in order to utilize the auto calculator feature the user will need to modify the RCI formula or enter the maximum score for that CI to achieve a CI of 1.0 which will offset the divisor difference.

General Comments:

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/10/17	0.10	Pond 06	0.10
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.724942	-78.456237	WD090TMM, Pond/PUB wetland	
General Comments: Pond/PUB wetland located in man-made quarry pit (0.10 acres in ECL). Impacts occur only to the wetland area in the Project area. AA includes entire 0.10 acre of pond/PUB wetland. Wetland delineated as 0.089 acres and impacts are 0.089 acres (impact size and AA size rounded up for form).					

1. Wetland Zone of Influence Condition Index																					
Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																				
	Optimal			Suboptimal			Marginal			Poor											
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.			High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)			Total Score:								
2. Estimate the % area within each condition category. Calculators are provided for you below.																					
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																					
Scoring:	Condition Category:												Total Score:								
	% ZOI Area:			0%			10%			30%				50%							
	Score:			15			12			7				4							
	Total Sub-score:			0.00			1.20			0.70				1.20							
0.18																					

Comments: Area includes forest with maintained understory, roads, industrial areas, and cleared land.

2. Roadbed Presence Index																								
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																							
	Optimal			Suboptimal			Marginal			Poor														
	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
0.70																								

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																							
	Optimal			Suboptimal			Marginal			Poor														
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary			Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
0.70																								

Comments: Existing roads present.

3. Vegetation Condition Index																					
a. Invasive Species Presence	Condition Category																				
	Optimal			Suboptimal			Marginal			Poor											
	High Optimal: No invasives present.			Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.			Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.			Low Marginal: >30% but less than 50% of the total AA contains invasive species.			Poor: > 50% of the total AA contains invasive species.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
0.70																					

b. Vegetation	Condition Category											
	Optimal			Suboptimal			Marginal			Poor		
0.70												

Comments: No Invasive Species identified in wetland AA.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.	High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.	High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	CI = Total Score/40
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	
Comments: Cleared areas and industrial areas that are mowed and maintained.								
							a. Invasive Sub-Score: 20	Total Score
							b. Vegetation Sub-Score: 11	31
								0.78

4. Hydrologic Modification Index

Condition Category									CI = Total Score/20												
	Optimal			Suboptimal			Marginal			Poor											
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.			Low Optimal: One hydrologic stressor present within the AA boundary.			High Suboptimal: Two hydrologic stressors present within the AA boundary.			Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.			Low Marginal: Five hydrologic stressors present within the AA boundary.			Greater than five hydrologic stressors present within the AA boundary.		
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1														
Comments: Maintenance on industrial areas and runoff from roads.											Score:	11	0.55								

5. Sediment Stressor Index

Condition Category														CI = Total Score/20									
	Optimal			Suboptimal			Marginal			Poor													
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.			Low Optimal: One sediment stressor present within the AA boundary.			High Suboptimal: Two sediment stressors present within the AA boundary.			Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.			Low Marginal: Five sediment stressors present within the AA boundary.			Greater than five sediment stressors present within the AA boundary.				
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1																
Comments: One stressor identified due to ROW maintenance.											Score:	16	0.80										

6. Water Quality Stressor Index

Condition Category														
	Optimal			Suboptimal			Marginal			Poor				
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.			One eutrophication stressors present within the AA boundary.			Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.				
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1							
Comments: No stressors identified.														

Condition Category														CI = Total Score/40
	Optimal			Suboptimal			Marginal			Poor				
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.			One contaminant / toxicity stressors present within the AA boundary.			Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1							
Comments: No stressors identified.											a. Eutrophication Score	20	Total Score:	
											b. Contaminant Score	20	40	
												1.00		

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.67
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/10/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD090TMM	Pond 06	41.724942	-78.456237	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.	1	1	1	100-300 ft.	1	1	1
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		3		100-300 ft.		3	

Road Comments:

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/10/17		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:		3		
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:	X			
Total Number:		3		
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:		1		
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:		0		
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:		0		
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/04/17	0.71	W004, W004B	1.00	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
T. Malecki, M. Groomer		41.703887	-78.496159	WD058ATMM, PEM wetland		

General Comments: PEM wetland located on hilltop depression. Multiple access roads cross the wetland channelizing it with culverts. PEM wetland adjacent to access roads, crosses well pad, and extends into maintained pipeline ROW (0.71 acres in ECL). PEM wetland upslope of existing ROW (4.32 acres delineated). PEM and PFO wetlands beyond existing ROW, downslope of Project (5.16 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area. AA includes 0.71 acres of PEM and 0.29 acres of PEM upslope of Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, previous trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)																				
Condition Category:																				
Scoring:	% ZOI Area:	0%	0%	60%	0%	40%	0%	Total Score:												
	Score:	0	0	12	0	4	0													
	Total Sub-score:	0.00	0.00	7.20	0.00	1.60	0.00													
0.44																				

Comments: Area includes maintained pipeline ROW with access roads and gas well pad. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20													
	Optimal				Suboptimal				Marginal				Poor															
(within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Gravel access road to gas well pad.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20													
	Optimal				Suboptimal				Marginal				Poor															
(within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Condition Score										Weighting					Sub-Scores									
a. Roadbed 0-100:										14					* (0.67)					9				
b. Roadbed 100-300:										14					* (0.33)					5				
Total Score:										14					0.70									

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Gravel access road to gas well pad.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	32	0.80
	b. Vegetation Sub-Score:	12			

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use. Ditch and culverts on access roads near gas well pad.

	Score:	12		0.60
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Two stressors identified due to ROW maintenance, ATV use, and cleared area for gas well pad.

	Score:	14		0.70
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	40	1.00
	b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.71

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier	Date	Name(s) of Evaluator(s)
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NFG FM100 Project

10/04/17

T. Malecki, M. Groomer

Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
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WD058ATMM

W004, W0

41.703887

-78.496159

Pipeline access roads and gas well pad

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.	1	1	1	100-300 ft.	1	1	1
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	3			100-300 ft.	3		

Road Comments: Dirt access road/atv trail used for pipeline inspection and maintenance. Gravel access road to gas well pad.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/04/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods	X			
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X			
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			3	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)	X			
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	X			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:				X
Total Number:			2	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/4/17	0.40	W005	1.00

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
J. Miner, C. Maier	41.706119	-78.490757	WD056JLM, PEM and PFO wetlands

General Comments: PEM wetland in maintained pipeline ROW (0.55 acres in ECL). PFO wetland beyond existing ROW, downslope of Project (1.90 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.55 acres of PEM and 0.45 acres of PFO downslope of Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, previous trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

	Condition Category:															Total Score = SUM(%Areas*Scores)
Scoring:	% ZOI Area:	0%	0%	80%	0%	20%	0%	Total Score:				0.56				
	Score:	0	0	13	0	4	0									
	Total Sub-score:	0.00	0.00	10.40	0.00	0.80	0.00						11.20			

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

				Condition Score				Weighting				Sub-Scores		0.85	
				a. Roadbed 0-100:				17				* (0.67)			11
				b. Roadbed 100-300:				17				* (0.33)			6
								Total Score:				17			

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																						
a. Invasive Species Presence	Condition Category																					
	Optimal					Suboptimal					Marginal			Poor								
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.			> 50% of the total AA contains invasive species.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: No Invasive Species identified in wetland AA.

4. Hydrologic Modification Index																						
b. Vegetation Stressor Presence	Condition Category													CI = Total Score/40								
	Optimal					Suboptimal					Marginal				Poor							
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.			High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.			Greater than five vegetation stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.80	
Comments: Maintained pipeline ROW and maintenance road/ATV trail.														a. Invasive Sub-Score: 20		Total Score						
														b. Vegetation Sub-Score: 12		32						

5. Sediment Stressor Index																						
Hydrologic Modification Stressor Presence	Condition Category													CI = Total Score/20								
	Optimal					Suboptimal					Marginal				Poor							
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.			Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85	
Comments: Within ROW alteration caused by pipeline maintenance and ATV use.														Score: 17								

6. Water Quality Stressor Index																						
Sediment Stressor Presence	Condition Category													CI = Total Score/20								
	Optimal					Suboptimal					Marginal				Poor							
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.			Greater than five sediment stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85	
Comments: One stressor identified due to ROW maintenance and ATV use.														Score: 17								

7. Eutrophication Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category													CI = Total Score/40						
	Optimal					Suboptimal					Marginal				Poor					
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

8. Contaminant / Toxicity Stressor Index																					
b. Contaminant / Toxicity Stressor Presence	Condition Category													CI = Total Score/40							
	Optimal					Suboptimal					Marginal				Poor						
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1.00
Comments: No stressors identified.														a. Eutrophication Score: 20		Total Score:					
														b. Contaminant Score: 20		40					

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.82
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/4/17	J. Miner, C. Maier
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD056JLM	W005	41.706119	-78.490757	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/4/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/9/17	0.17	W006	0.37	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.707962	-78.487241	WD082JLM, PEM and PFO wetlands		

General Comments: Wetland begins within ROW and extends to the south. No wetlands to the north of the ROW. Disturbed by pipeline construction and maintenance. PEM wetland in maintained pipeline ROW (0.17 acres in ECL), PFO wetland beyond existing ROW, downslope of Project (0.12 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.25 acres of PEM and 0.12 acres of PFO downslope of Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor											
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)							0.56		
Scoring:	Condition Category:							Total Score:	
	% ZOI Area:	0%	0%	80%	0%	20%			0%
	Score:	0	0	13	0	4			0
	Total Sub-score:	0.00	0.00	10.40	0.00	0.80	0.00	11.20	

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
(within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
(within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												
Condition Score																0.85																
Weighting																																
Sub-Scores																																
a. Roadbed 0-100:																17	* (0.67)	11														
b. Roadbed 100-300:																17	* (0.33)	6														
Total Score:																17																

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal					Suboptimal					Marginal			Poor						
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category													CI = Total Score/40						
	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.			High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: Maintained pipeline ROW and maintenance road/ATV trail.														a. Invasive Sub-Score: 20	Total Score:	0.80				
														b. Vegetation Sub-Score: 12	32					

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category													CI = Total Score/20						
	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: Within ROW alteration caused by pipeline maintenance and ATV use.														Score:	17	0.85				

5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category													CI = Total Score/20						
	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: One stressor identified due to ROW maintenance and ATV use.														Score:	17	0.85				

6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category													CI = Total Score/20						
	Optimal					Suboptimal					Marginal				Poor					
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.		Three eutrophication stressors present within the AA boundary.			Four eutrophication stressors present within the AA boundary.		Five eutrophication stressors present within the AA boundary.		Greater than five eutrophication stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.																1.00				

b. Contaminant / Toxicity Stressor Presence	Condition Category													CI = Total Score/40						
	Optimal					Suboptimal					Marginal				Poor					
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.		Three contaminant / toxicity stressors present within the AA boundary.			Four contaminant / toxicity stressors present within the AA boundary.		Five contaminant / toxicity stressors present within the AA boundary.		Greater than five contaminant / toxicity stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.														a. Eutrophication Score: 20	Total Score:	1.00				
														b. Contaminant Score: 20	40					

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.82
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/9/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD082JLM	W006	41.707962	-78.487241	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/9/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

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Pennsylvania Department of Environmental Protection

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Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/9/17	1.02	W007, W007A, W007B	1.02	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.709785	-78.483244	WD083JLM, PEM and PFO wetlands		

General Comments: Wetland includes approximately 15-20 percent upland. Hummocky ground where the larger hummocks are upland, primarily around bases of maple trees, wetland in depressions between hummocks. Wetland drains to stream. PEM and PFO wetlands in maintained pipeline ROW (1.02 acres in ECL). PEM and PFO wetland beyond existing ROW, upslope and downslope of Project (2.35 acres delineated) beyond ECL. Impacts occur only to the PEM and PFO wetland area in the disturbed ROW. AA includes 0.82 acres of PEM (W007) and 0.20 acres of PFO (W007A and W007B) within the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)		0.49					
Condition Category:																					Total Score:
% ZOI Area:		0%		0%		60%		10%		30%		0%									
Score:		0		0		13		7		4		0									
Total Sub-score:		0.00		0.00		7.80		0.70		1.20		0.00								9.70	

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20								
	Optimal				Suboptimal				Marginal				Poor										
No roadbeds present within 100 feet of the AA boundary	High Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.														Total Score = SUM(%Areas*Scores)		0.85							
														Condition Score		Weighting		Sub-Scores					
														a. Roadbed 0-100:		17		*(0.67)		11			
														b. Roadbed 100-300:		17		*(0.33)		6			
														Total Score:		17		17					

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																												
a. Invasive Species Presence	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				> 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category												CI = Total Score/40															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	20	Total Score	0.80
b. Vegetation Sub-Score:	12	32	

4. Hydrologic Modification Index																												
Hydrologic Modification Stressor Presence	Condition Category												CI = Total Score/20															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

Score:	17		0.85
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5. Sediment Stressor Index																												
Sediment Stressor Presence	Condition Category												CI = Total Score/20															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17		0.85
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category												CI = Total Score/40							
	Optimal				Suboptimal				Marginal					Poor						
	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category												CI = Total Score/40							
	Optimal				Suboptimal				Marginal					Poor						
	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	1.00
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.		Overall Condition Index:	0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/9/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD083JLM	W007, W007A, W007B	41.709785	-78.483244	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/9/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/9/17	0.10	W008	0.28	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.710627	-78.481262	RW080JLM, PEM wetland		

General Comments: PEM wetland in maintained pipeline ROW (0.10 acres in ECL). Wetland continues beyond existing ROW, downslope of Project (0.18 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes entire 0.28 acres of PEM delineated within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)						
Scoring:	Condition Category:																		Total Score:	
	% ZOI Area:		0%		0%		65%		5%		30%		0%				10.00			
	Score:		0		0		13		7		4		0							
Total Sub-score:		0.00		0.00		8.45		0.35		1.20		0.00				0.50				

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, and stream. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
No roadbeds present within 100 feet of the AA boundary	High Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.		Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
Roadbeds present within 100 - 300 feet of the AA boundary	High Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.		Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																					
														Condition Score		Weighting		Sub-Scores			
														a. Roadbed 0-100:		17		* (0.67)		11	
														b. Roadbed 100-300:		17		* (0.33)		6	
														Total Score:		17		0.85			

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																												
a. Invasive Species Presence	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				> 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category												CI = Total Score/40															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.80							

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	20	Total Score	32	
b. Vegetation Sub-Score:	12		32	

4. Hydrologic Modification Index																												
Hydrologic Modification Stressor Presence	Condition Category												CI = Total Score/20															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85							

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

Score:	17
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5. Sediment Stressor Index																												
Sediment Stressor Presence	Condition Category												CI = Total Score/20															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85							

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category												CI = Total Score/40							
	Optimal				Suboptimal				Marginal					Poor						
	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category												CI = Total Score/40							
	Optimal				Suboptimal				Marginal					Poor						
	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	40	
b. Contaminant Score	20		40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/9/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
RW080JLM	W008	41.710627	-78.481262	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/9/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? YES NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/9/17	1.28	W009, W009A, W009B, Pond 03	1.28

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
J. Miner, C. Maier, M. Groomer	41.71172	41.710627	RW081JLM, PEM and PFO wetlands

General Comments: Perennial stream runs through wetlands and connects to two ponds. Wetlands drain to stream. Wetlands and pond in maintained pipeline ROW (1.28 acres in ECL). PEM and PFO wetland beyond existing ROW, upslope and downslope of Project (2.52 acres delineated) beyond ECL. Impacts occur only to the PEM and PFO wetland area in the disturbed ROW. AA includes 1.09 acres of PEM (W009), 0.17 acres of PFO (W009A and W009B), and 0.02 acres of Pond 03 within the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)								0.49	
Scoring:	Condition Category:								Total Score:
	% ZOI Area:	0%	0%	60%	10%	30%	0%		
	Score:	0	0	13	7	4	0		
	Total Sub-score:	0.00	0.00	7.80	0.70	1.20	0.00	9.70	

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, and streams. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but to 4 but less than or equal to 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												

Condition Score								Weighting		Sub-Scores		0.85				
								a. Roadbed 0-100:		17			* (0.67)		11	
								b. Roadbed 100-300:		17			* (0.33)		6	
								Total Score:					17			

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

3. Vegetation Condition Index

a. Invasive	Condition Category															
	Optimal				Suboptimal				Marginal				Poor			

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Species Presence	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.	High Suboptimal: >5% but less than 10% of the total AA contains invasive species.	Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.	High Marginal: >20% but less than 30% of the total AA contains invasive species.	Low Marginal: >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1			

Comments: No Invasive Species identified in wetland AA.

Condition Category										CI = Total Score/40	
b. Vegetation Stressor Presence	Optimal		Suboptimal			Marginal			Poor		
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.	High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.	High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1							
Comments: Maintained pipeline ROW and maintenance road/ATV trail.										0.80	
										0.80	
										0.80	

4. Hydrologic Modification Index

Condition Category										CI = Total Score/20	
Hydrologic Modification Stressor Presence	Optimal		Suboptimal			Marginal			Poor		
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.	High Suboptimal: Two hydrologic stressors present within the AA boundary.	Low Suboptimal: Three hydrologic stressors present within the AA boundary.	High Marginal: Four hydrologic stressors present within the AA boundary.	Low Marginal: Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1							
Comments: Within ROW alteration caused by pipeline maintenance and ATV use.										0.85	
										0.85	
										0.85	

5. Sediment Stressor Index

Condition Category										CI = Total Score/20	
Sediment Stressor Presence	Optimal		Suboptimal			Marginal			Poor		
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.	High Suboptimal: Two sediment stressors present within the AA boundary.	Low Suboptimal: Three sediment stressors present within the AA boundary.	High Marginal: Four sediment stressors present within the AA boundary.	Low Marginal: Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1							
Comments: One stressor identified due to ROW maintenance and ATV use.										0.85	
										0.85	
										0.85	

6. Water Quality Stressor Index

Condition Category										CI = Total Score/40	
a. Eutrophication Stressor Presence	Optimal		Suboptimal			Marginal			Poor		
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.	Four eutrophication stressors present within the AA boundary.	Five eutrophication stressors present within the AA boundary.	Greater than five eutrophication stressors present within the AA boundary.				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1							

Comments: No stressors identified.

Condition Category										CI = Total Score/40	
b. Contaminant / Toxicity Stressor Presence	Optimal		Suboptimal			Marginal			Poor		
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.	Four contaminant / toxicity stressors present within the AA boundary.	Five contaminant / toxicity stressors present within the AA boundary.	Greater than five contaminant / toxicity stressors present within the AA boundary.				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1							
Comments: No stressors identified.										1.00	
										1.00	
										1.00	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index:

0.81

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/9/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
RW081JLM	W009, W009A, W009B, Pond 03	41.71172	41.710627	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/9/17		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:		3		
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)			X	
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:		1		
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:		1		
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:		0		
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:		0		
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/09/17	1.44	W010, W010A, W010B	1.44

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.713516	-78.476277	WD089TMM, PEM and PFO wetlands

General Comments: PEM wetland located on hillside and extends into valley bottom draining into stream. PEM wetland adjacent to forest and occurs within maintained pipeline ROW (1.22 acres in ECL). PEM wetland continues downslope of existing ROW (0.91 acres delineated). PFO wetlands beyond existing ROW, upslope of Project (3.39 acres delineated) beyond ECL. Impacts mainly occur to the PEM wetland area, but also include a small portion of the PFO wetland area. AA includes 1.22 acres of PEM (W010) and 0.22 acres of PFO (W010A and W010B) upslope of Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, previous trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)																						
Scoring:	Condition Category:																			Total Score:		
	% ZOI Area:	0%	0%	80%	0%	20%	0%															0
	Score:	0	0	12	0	4	0															10.40
	Total Sub-score:	0.00	0.00	9.60	0.00	0.80	0.00															0.52

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20									
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20									
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Condition Score										Weighting		Sub-Scores					
										a. Roadbed 0-100:		17		* (0.67)		11	
										b. Roadbed 100-300:		17		* (0.33)		6	
										Total Score:		17		0.85			

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	
	b. Vegetation Sub-Score:	12	32	0.80

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

	Score:	17		0.85
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17		0.85
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	
	b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:		0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/09/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD089TMM	W010, W010A, W010B	41.713516	-78.476277	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/09/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/09/17	0.03	W011	0.06
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.714529	-78.474155	RW087ATMM, PEM wetland	

General Comments: PEM wetland located on hillside below intermittent stream, adjacent to forest, and occurs within maintained pipeline ROW (0.02 acres in ECL). PEM wetland continues downslope of Project (0.03 acres delineated) beyond ECL. AA includes entire 0.06 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, previous trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)								
Scoring:	Condition Category:														Total Score:							
	% ZOI Area:				0%				70%				0%			9.60						
	Score:				0				12				0									
Total Sub-score:				0.00				8.40				0.00		0.48								

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
	High Optimal: No roadbeds present within 100 feet of the AA boundary		Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																						
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary		Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.		High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																						
														Condition Score		Weighting		Sub-Scores				
														a. Roadbed 0-100:		17		* (0.67)		11		
														b. Roadbed 100-300:		17		* (0.33)		6		
														Total Score:		17		0.85				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	32	0.80
	b. Vegetation Sub-Score:	12			

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use. Two culverts in wetland on intermittent stream.

	Score:	14	0.70
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17	0.85
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	40	1.00
	b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

	Overall Condition Index:	0.78
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)				
NFG FM100 Project			10/09/17	T. Malecki, M. Groomer				
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:				
RW087ATMM	W011	41.714529	-78.474155	Pipeline access road/ATV trail				
<p>Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.</p>								
Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		
<p>Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.</p>								

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/09/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	2		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

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Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/08/17	0.02	W014	0.09
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.716949	-78.470716	WD079TMM, PEM wetland	

General Comments: PEM wetland located on hillside below intermittent stream, adjacent to forest, and occurs within maintained pipeline ROW (0.02 acres in ECL). PEM wetland continues upslope of Project (0.07 acres delineated) beyond ECL. AA includes entire 0.09 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20						
	Optimal			Suboptimal				Marginal				Poor									
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, previous trails, recently seeded and stabilized, or other comparable condition.			Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)																					
Condition Category:																					
Scoring:	% ZOI Area:	0%	0%	40%	0%	40%	20%														Total Score:
	Score:	0	0	12	0	4	2														
	Total Sub-score:	0.00	0.00	4.80	0.00	1.60	0.40														
0.34																					

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Agricultural plot and other wetlands occur within ZOI. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20										
	Optimal			Suboptimal				Marginal				Poor													
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20										
	Optimal			Suboptimal				Marginal				Poor													
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

Condition Score										Weighting					Sub-Scores									
a. Roadbed 0-100:										17					* (0.67)					11				
b. Roadbed 100-300:										17					* (0.33)					6				
Total Score:										17					0.85									

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Area includes maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	32	0.80
	b. Vegetation Sub-Score:	12			

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Two stressors identified due to culvert, and ROW alteration caused by pipeline maintenance and ATV use.

	Score:	14		0.70
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17		0.85
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	40	1.00
	b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.76

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/08/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD079TMM	W014	41.716949	-78.470716	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/08/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/08/17	0.01	W015	0.04
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.716675	-78.47027	RW079ATMM, PEM wetland	

General Comments: PEM wetland located on hillside below culvert, adjacent to forest, and occurs within maintained pipeline ROW (0.01 acres in ECL). Intermittent stream runs through wetland. PEM wetland continues downslope of Project (0.03 acres delineated) beyond ECL. AA includes entire 0.04 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, previous trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)																					
Condition Category:																				Total Score:	
Scoring:	% ZOI Area:	0%	0%	50%	0%	40%	10%													7.80	0.39
	Score:	0	0	12	0	4	2														
	Total Sub-score:	0.00	0.00	6.00	0.00	1.60	0.20														

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Agricultural plot and other wetlands occur within ZOI. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																							
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																							
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Condition Score										Weighting					Sub-Scores									
a. Roadbed 0-100:										17					* (0.67)					11				
b. Roadbed 100-300:										17					* (0.33)					6				
Total Score:										17					0.85									

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Area includes maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	32	0.80
	b. Vegetation Sub-Score:	12			

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Two stressors identified due to culvert, and ROW alteration caused by pipeline maintenance and ATV use.

	Score:	14		0.70
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17		0.85
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	40	1.00
	b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.77

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/08/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
RW079ATMM	W015	41.716675	-78.47027	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/08/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/08/17	0.41	W016, W016A, W016B	1.00

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.720256	-78.465447	WD081TMM, PEM and PFO wetlands

General Comments: PEM wetland located in valley bottom. Multiple man-made ponds and intermittent streams within wetland boundary. PEM wetland occurs within maintained pipeline ROW (0.40 acres in ECL) and is adjacent to forest. PEM wetland continues downslope of Project (0.12 acres delineated) beyond ECL. PFO wetland occurs partially within pipeline ROW (0.01 acres in ECL) and extends upslope of Project (0.97 acres delineated) beyond ECL. AA includes 0.52 acres of the PEM wetlands (W016A and W016B) and 0.48 acres of the PFO wetland.

1. Wetland Zone of Influence Condition Index																					
Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category										CI = Total Score/20										
	Optimal		Suboptimal			Marginal			Poor												
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.		Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.								
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.										Total Score = SUM(%Areas*Scores)											
Condition Category:												Total Score:									
% ZOI Area:										0%	0%	80%	0%	20%	0%						
Score:										0	0	12	0	4	0						
Total Sub-score:										0.00	0.00	9.60	0.00	0.80	0.00	10.40					
Comments: Area includes maintained pipeline ROW with access road/ATV trail. Streams and ponds occur within ZOI. Adjacent forest has maintained understory.												0.52									

2. Roadbed Presence Index																				
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories										CI = Total Score/20									
	Optimal		Suboptimal			Marginal			Poor											
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.		Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.							
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.												0.85								

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories										CI = Total Score/20									
	Optimal		Suboptimal			Marginal			Poor											
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.		Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.							
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2
										Condition Score		Weighting		Sub-Scores						
										a. Roadbed 0-100:		17	* (0.67)		11					
										b. Roadbed 100-300:		17	* (0.33)		6					
										Total Score:		17		0.85						
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
a. Invasive Species Presence	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: No Invasive Species identified in wetland AA.

	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40							
Comments:	a. Invasive Sub-Score: 20 Total Score: 32														0.80													
Area includes maintained pipeline ROW and maintenance road/ATV trail.	b. Vegetation Sub-Score: 12 Total Score: 32																											

4. Hydrologic Modification Index

	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20							
Comments: Two stressors identified due to culvert, and ROW alteration caused by pipeline maintenance and ATV use.	Score: 14														0.70													

5. Sediment Stressor Index

	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20							
Comments: One stressor identified due to ROW maintenance and ATV use.	Score: 17														0.85													

6. Water Quality Stressor Index

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																				
	Optimal				Suboptimal				Marginal				Poor								
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40
Comments: No stressors identified.	a. Eutrophication Score: 20 Total Score: 40														1.00						
	b. Contaminant Score: 20 Total Score: 40																				

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.79
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)				
NFG FM100 Project			10/08/17	T. Malecki, M. Groomer				
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:				
WD081TMM	W016, W016A, W016B	41.720256	-78.465447	Pipeline access road/ATV trail				
<p>Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.</p>								
Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	
<p>Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.</p>								

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/08/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	4		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/08/17	0.01	W018	0.02

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.726217	-78.452289	RW083ATMM, PEM and PFO wetlands

General Comments: PEM wetland adjacent to forest and occurs within maintained pipeline ROW (0.01 acres in ECL). PEM wetland continues downslope of Project (0.01 acres delineated) beyond ECL. Intermittent stream runs through wetland. AA includes entire 0.02 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)																					
Condition Category:																				Total Score:	
% ZOI Area:	0%	0%	80%	0%	20%	0%															10.40
Score:	0	0	12	0	4	0															0.52
Total Sub-score:	0.00	0.00	9.60	0.00	0.80	0.00															0.52

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Stream and culverts occur within ZOI. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

										Condition Score					Weighting					Sub-Scores									
										a. Roadbed 0-100:					17					* (0.67)					11				
										b. Roadbed 100-300:					17					* (0.33)					6				
										Total Score:										17									

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40														
Comments:	a. Invasive Sub-Score: 20 Total Score: 32															0.80																			
Area includes maintained pipeline ROW and maintenance road/ATV trail.	b. Vegetation Sub-Score: 12 Total Score: 32																																		

4. Hydrologic Modification Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20														
Comments:	Two stressors identified due to culvert, and ROW alteration caused by pipeline maintenance and ATV use.															0.70																			
	Score: 14																																		

5. Sediment Stressor Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20														
Comments:	One stressor identified due to ROW maintenance and ATV use.															0.85																			
	Score: 17																																		

6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																				
	Optimal					Suboptimal					Marginal						Poor				
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40
Comments:	a. Eutrophication Score: 20 Total Score: 40																				
No stressors identified.	b. Contaminant Score: 20 Total Score: 40															1.00					

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.79
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/08/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
RW083ATMM	W018	41.726217	-78.452289	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/08/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/10/17	0.72	W020, W020A	1.00

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.729827	-78.447915	WD092TMM, PFO and PEM wetland

General Comments: Large PEM and PFO wetland complex with streams throughout. PFO wetland located in valley bottom in existing pipeline ROW (0.23 acres in ECL) and forested hillside. PFO wetland continues upslope of Project (0.45 acres delineated) beyond ECL. PEM wetland occurs within maintained pipeline ROW (0.49 acres in ECL) and continues downslope of Project (0.70 acres delineated) beyond ECL. Impacts occur within both the PEM and PFO wetland. AA includes 0.72 acres of the proposed impacted area to PEM and PFO wetland, and 0.28 acres of the wetland complex that will not be impacted.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
 2. Estimate the % area within each condition category. Calculators are provided for you below.
 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Condition Category:										Total Score = SUM(%Areas*Scores)									
Scoring:	% ZOI Area:	0%	0%	90%	0%	10%	0%	Total Score:											
	Score:	0	0	12	0	4	0												
	Total Sub-score:	0.00	0.00	10.80	0.00	0.40	0.00						11.20	0.56					

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Streams and other wetlands occur within ZOI. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

										Condition Score					Weighting					Sub-Scores									
										a. Roadbed 0-100:					17					* (0.67)					11				
										b. Roadbed 100-300:					17					* (0.33)					6				
										Total Score:										17					0.85				

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	Area includes maintained pipeline ROW and maintenance road/ATV trail.																																		
																a. Invasive Sub-Score:		20		Total Score:		32		0.80											
																b. Vegetation Sub-Score:		12		Total Score:		40		1.00											

4. Hydrologic Modification Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	One stressor identified due to ROW alteration caused by pipeline maintenance and ATV use.															Score:		17		0.85															

5. Sediment Stressor Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	One stressor identified due to ROW maintenance and ATV use.															Score:		17		0.85															

6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																								
	Optimal					Suboptimal					Marginal						Poor								
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					
Comments:	No stressors identified.															a. Eutrophication Score		20		Total Score:		40		1.00	
																b. Contaminant Score		20		Total Score:		40		1.00	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index:

0.82

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/10/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD092TMM	W020, W020A	41.729827	-78.447915	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/10/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

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Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/10/17	0.81	W023	1.00	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.731417	-78.445781	WD095JLM, PEM wetland		

General Comments: Seep wetland extends across ROW and connects to stream. PEM wetland in maintained pipeline ROW (0.81 acres in ECL). Wetland continues beyond existing ROW, upslope and downslope of Project (0.73 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 1.00 acre of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)		0.49						
Condition Category:																						
Scoring:	% ZOI Area:	0%		0%		60%		10%		30%		0%										
	Score:	0		0		13		7		4		0										
Total Sub-score:		0.00		0.00		7.80		0.70		1.20		0.00										

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, and stream. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor													
No roadbeds present within 100 feet of the AA boundary	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																0.85										
														Condition Score			Weighting		Sub-Scores							
														a. Roadbed 0-100:			17		* (0.67)		11					
														b. Roadbed 100-300:			17		* (0.33)		6					
														Total Score:		17										

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

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Pennsylvania Department of Environmental Protection

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3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal					Poor																			
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category															CI = Total Score/40																			
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.	a. Invasive Sub-Score:	20	Total Score		0.80
	b. Vegetation Sub-Score:	12	32		

4. Hydrologic Modification Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.	Score:	17		0.85
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5. Sediment Stressor Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.	Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:		1.00
	b. Contaminant Score	20	40		

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.81		
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/10/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD095JLM	W023	41.731417	-78.445781	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/10/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/10/17	0.11	W025	0.25

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
J. Miner, C. Maier, M. Groomer	41.732491	-78.444463	WD092JLM, PEM wetland

General Comments: Seep wetland extends across ROW and connects to W026A. Seep wetland under forest canopy, trees are not within the seep. PEM wetland in maintained pipeline ROW (0.11 acres in ECL). Wetland continues beyond existing ROW, upslope and downslope of Project (0.14 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.25 acre of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)									
2. Estimate the % area within each condition category. Calculators are provided for you below.																			
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.										Total Score: 9.70									
Condition Category:																			
Scoring:	% ZOI Area:		0%		0%		60%		10%										
	Score:		0		0		13		7		4		0						
	Total Sub-score:		0.00		0.00		7.80		0.70		1.20		0.00						

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, and stream. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
										Condition Score				Weighting		Sub-Scores		Total Score: 17				
										a. Roadbed 0-100:				17		* (0.67)				11		
										b. Roadbed 100-300:				17		* (0.33)				6		

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																											
	Optimal				Suboptimal				Marginal					Poor														
a. Invasive Species Presence	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: One Invasive Species identified in wetland AA.

	Condition Category												CI = Total Score/40															
	Optimal				Suboptimal				Marginal					Poor														
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	13	Total Score	0.63
b. Vegetation Sub-Score:	12	25	

4. Hydrologic Modification Index

	Condition Category												CI = Total Score/20															
	Optimal				Suboptimal				Marginal					Poor														
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Within ROW alteration caused by pipeline maintenance and ATV use. One culvert in AA.

Score:	14		0.70
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5. Sediment Stressor Index

	Condition Category												CI = Total Score/20															
	Optimal				Suboptimal				Marginal					Poor														
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal				Suboptimal				Marginal					Poor						
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category												CI = Total Score/40							
	Optimal				Suboptimal				Marginal					Poor						
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	1.00
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index:	0.75
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/10/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD092JLM	W025	41.732491	-78.444463	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/10/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
mivi		10							

Total % relative cover of all invasives, collectively on site: 10 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/10/17	0.55	W026, W026A	1.00	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.733336	-78.443875	WD079JLM and WD091JLM, PEM and PSS wetlands		

General Comments: Site mowed routinely across ROW. Willow community present. Distinct elevation/slope break at edge of floodplain. Large wetland complex, W079 is PSS/PEM and W091 is PSS. PSS/PEM wetlands in maintained pipeline ROW (0.55 acres in ECL). Wetland continues beyond existing ROW, upslope and downslope of Project (3.10 acres delineated) beyond ECL. Impacts occur only to the PSS/PEM wetland area in the disturbed ROW. AA includes 0.55 acres of PSS/PEM within and 0.45 acres beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)						
Scoring:	Condition Category:																		Total Score:	
	% ZOI Area:		0%		0%		60%		10%		30%		0%							
	Score:		0		0		13		7		4		0							
Total Sub-score:		0.00		0.00		7.80		0.70		1.20		0.00						9.70		0.49

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, and streams. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
														Condition Score		Weighting		Sub-Scores			
														a. Roadbed 0-100:		17		* (0.67)		11	
														b. Roadbed 100-300:		17		* (0.33)		6	
														Total Score:		17		0.85			

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					> 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category															CI = Total Score/40																			
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	20	Total Score	32	0.80
b. Vegetation Sub-Score:	12		32	

4. Hydrologic Modification Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use. One culvert in AA.

Score:	14		0.70
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5. Sediment Stressor Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	40	1.00
b. Contaminant Score	20		40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index:			0.78
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/10/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD079JLM, WD091JLM	W026, W026A	41.733336	-78.443875	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/10/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

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Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/10/17	0.20	W027	0.59	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.733914	-78.443065	WD090JLM, PEM wetland		

General Comments: Site disturbed by pipeline construction and maintenance. Wetland connected to W026A. PEM wetland in maintained pipeline ROW (0.20 acres in ECL). Wetland continues beyond existing ROW, upslope and downslope of Project (0.39 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.59 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)						
Scoring:	Condition Category:																		Total Score:	
	% ZOI Area:		0%		0%		60%		10%		30%		0%				9.70			
	Score:		0		0		13		7		4		0							
Total Sub-score:		0.00		0.00		7.80		0.70		1.20		0.00				9.70				

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, and streams. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																					
														Condition Score		Weighting		Sub-Scores			
														a. Roadbed 0-100:		17		* (0.67)		11	
														b. Roadbed 100-300:		17		* (0.33)		6	
														Total Score:		17		0.85			

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3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal					Poor																			
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category															CI = Total Score/40																			
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.	a. Invasive Sub-Score:	20	Total Score:	32	0.80
	b. Vegetation Sub-Score:	12		32	

4. Hydrologic Modification Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.	Score:	17	0.85
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5. Sediment Stressor Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.	Score:	17	0.85
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6. Water Quality Stressor Index

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:	40	1.00
	b. Contaminant Score	20		40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/10/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD090JLM	W027	41.733914	-78.443065	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/10/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? YES NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/08/17	0.32	W028	0.46	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.738174	-78.439414	WD077JLM, PEM wetland		

General Comments: Site disturbed by pipeline construction and maintenance. Compacted soil and depressions within rutting. PEM wetland in maintained pipeline ROW (0.32 acres in ECL). Wetland continues beyond existing ROW, downslope of Project (0.14 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.46 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)		0.52					
Condition Category:																					Total Score:
% ZOI Area:		0%		0%		70%		0%		30%		0%									
Score:		0		0		13		0		4		0									
Total Sub-score:		0.00		0.00		9.10		0.00		1.20		0.00								10.30	

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20								
	Optimal				Suboptimal				Marginal				Poor										
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.														Total Score = SUM(%Areas*Scores)		0.85							
														Condition Score		Weighting		Sub-Scores					
														a. Roadbed 0-100:		17		* (0.67)		11			
														b. Roadbed 100-300:		17		* (0.33)		6			
														Total Score:		17							

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																												
a. Invasive Species Presence	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				> 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence																												
b. Vegetation Stressor Presence	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Maintained pipeline ROW and maintenance road/ATV trail.	a. Invasive Sub-Score:	20	Total Score	0.80
	b. Vegetation Sub-Score:	12	32	

4. Hydrologic Modification Index																												
Hydrologic Modification Stressor Presence	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.	Score:	17		0.85
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5. Sediment Stressor Index																												
Sediment Stressor Presence	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: One stressor identified due to ROW maintenance and ATV use.	Score:	17		0.85
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/08/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD077JLM	W028	41.738174	-78.439414	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/08/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/10/17	0.17	W029	0.21	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.740056	-78.435178	WD089JLM, PEM wetland		

General Comments: Site disturbed by pipeline construction and maintenance. Small depression confined to ROW with compacted soils. Adjacent forest all upland. PEM wetland in maintained pipeline ROW (0.17 acres in ECL). Wetland continues beyond existing ROW, downslope of Project (0.04 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.21 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)		0.52					
Condition Category:																					Total Score:
% ZOI Area:		0%		0%		70%		0%		30%		0%									
Score:		0		0		13		0		4		0									
Total Sub-score:		0.00		0.00		9.10		0.00		1.20		0.00								10.30	

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.														Total Score = SUM(%Areas*Scores)		0.85					
																					Total Score:
																				17	
																				11	
																				6	
																				17	

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal					Poor																			
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category															CI = Total Score/40																			
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	20	Total Score	32	0.80
b. Vegetation Sub-Score:	12		32	

4. Hydrologic Modification Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

Score:	17		0.85
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5. Sediment Stressor Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	40	1.00
b. Contaminant Score	20		40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.81

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/10/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD077JLM	W029	41.740056	-78.435178	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/10/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

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Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/07/17	0.33	W031, W031A	1.00

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.74408	-78.426119	WD078TMM, PFO and PEM wetland

General Comments: Large PEM and PFO wetland complex. Two ephemeral streams occur within the PEM wetland. PFO wetland located on forested hilltop and is fed by multiple seeps that drain into stream at headwaters. PFO wetland occurs in existing pipeline ROW (0.15 acres in ECL) and continues upslope of Project (1.98 acres delineated) beyond ECL. PEM wetland occurs within maintained pipeline ROW (0.18 acres in ECL) and continues downslope of Project (0.10 acres delineated) beyond ECL. Impacts occur within both the PEM and PFO wetland. AA includes 0.33 acres of the proposed impacted area to PEM and PFO wetland, and 0.67 acres of the wetland complex that will not be impacted.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
 2. Estimate the % area within each condition category. Calculators are provided for you below.
 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)								Total Score:	0.52
Condition Category:									
% ZOI Area:	0%	0%	80%	0%	20%	0%			
Score:	0	0	12	0	4	0			
Total Sub-score:	0.00	0.00	9.60	0.00	0.80	0.00	10.40		

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Streams and other wetlands occur within ZOI. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																								
	Optimal					Suboptimal					Marginal						Poor																							
(within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary					Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																				

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																								
	Optimal					Suboptimal					Marginal						Poor																							
(within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary					Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																				

Condition Score			Weighting			Sub-Scores		
	a. Roadbed 0-100:	17	*	(0.67)	11			
	b. Roadbed 100-300:	16	*	(0.33)	5			
	Total Score:				17			

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Temporary dirt access road connecting to pipeline ROW.

Wetland Condition Assessment Form

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Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																								
a. Invasive Species Presence	Condition Category																							
	Optimal				Suboptimal				Marginal				Poor											
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				> 50% of the total AA contains invasive species.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence																								
b. Vegetation Stressor Presence	Condition Category																							
	Optimal				Suboptimal				Marginal				Poor											
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: Area includes maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	20	Total Score	
b. Vegetation Sub-Score:	12	32	0.80

4. Hydrologic Modification Index																								
Hydrologic Modification Stressor Presence	Condition Category																							
	Optimal				Suboptimal				Marginal				Poor											
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Greater than five hydrologic stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: Two stressors identified due to culverts, and ROW alteration caused by pipeline maintenance and ATV use.

Score:	14	0.70
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5. Sediment Stressor Index																								
Sediment Stressor Presence	Condition Category																							
	Optimal				Suboptimal				Marginal				Poor											
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Greater than five sediment stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17	0.85
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6. Water Quality Stressor Index																								
a. Eutrophication Stressor Presence	Condition Category																							
	Optimal				Suboptimal				Marginal				Poor											
	High Optimal: No eutrophication stressors present within the AA boundary.	Low Optimal: One eutrophication stressor present within the AA boundary.				High Suboptimal: Two eutrophication stressors present within the AA boundary.				Low Suboptimal: Three eutrophication stressors present within the AA boundary.				High Marginal: Four eutrophication stressors present within the AA boundary.				Low Marginal: Five eutrophication stressors present within the AA boundary.				Greater than five eutrophication stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence																								
b. Contaminant / Toxicity Stressor Presence	Condition Category																							
	Optimal				Suboptimal				Marginal				Poor											
	High Optimal: No contaminant / toxicity stressors present within the AA boundary.	Low Optimal: One contaminant / toxicity stressor present within the AA boundary.				High Suboptimal: Two contaminant / toxicity stressors present within the AA boundary.				Low Suboptimal: Three contaminant / toxicity stressors present within the AA boundary.				High Marginal: Four contaminant / toxicity stressors present within the AA boundary.				Low Marginal: Five contaminant / toxicity stressors present within the AA boundary.				Greater than five contaminant / toxicity stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	
b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.78
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)				
NFG FM100 Project			10/07/17	T. Malecki, M. Groomer				
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:				
WD078TMM	W031, W031A	41.74408	-78.426119	Pipeline access road/ATV trail				
<p>Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.</p>								
Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		4	
<p>Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading. Temporary dirt access road connecting to pipeline ROW.</p>								

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/07/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	2		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/06/17	0.04	W034	0.35

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.752795	-78.396898	WD071TMM, PSS wetland

General Comments: PSS wetland located in relic slough within floodplain of stream. Wetland occurs in maintained pipeline ROW (0.04 acres in ECL) and continues downslope of Project (0.31 acres delineated) beyond ECL. AA includes entire 0.35 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)																																
Condition Category:																																
Scoring:	% ZOI Area:	0%					0%					30%					20%					30%					20%					Total Score:
	Score:	0					0					12					7					4					2					
	Total Sub-score:	0.00					0.00					3.60					1.40					1.20					0.40					
0.33																																

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Streams, other wetlands, cleared areas and agricultural land occur within ZOI. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Condition Score										Weighting					Sub-Scores									
a. Roadbed 0-100:										17					* (0.67)					11				
b. Roadbed 100-300:										14					* (0.33)					5				
Total Score:										16					0.80									

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Temporary dirt access road connecting paved road to pipeline ROW.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Area includes maintained pipeline ROW and maintenance road/ATV trail. Cleared area and agricultural land occur in and around wetland.

a. Invasive Sub-Score:	20	Total Score	0.73
b. Vegetation Sub-Score:	9	29	

4. Hydrologic Modification Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW alteration caused by pipeline maintenance and ATV use.

Score:	17	0.85
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5. Sediment Stressor Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Two stressors identified due to agriculture, and ROW alteration caused by pipeline maintenance and ATV use.

Score:	14	0.70
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	1.00
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.73

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/06/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD071TMM	W034	41.752795	-78.396898	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.	1	1	1
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		3	

Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading. Temporary dirt access road connecting paved road to pipeline ROW.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/06/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)	X			
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			4	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			2	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/06/17	0.07	W035	1.00

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.754615	-78.398383	WD071TMM, PSS and PEM wetland

General Comments: Large PEM and PSS wetland complex. Two streams occur within the wetland complex. PSS wetlands located within relic slough within floodplain of stream. The PSS wetland (W035) occurs within maintained pipeline ROW (0.05 acres in ECL) and continues upslope of Project (3.30 acres delineated) beyond ECL. The PEM wetland occurs within an access road (0.02 acres in ECL) and continues upslope of Project (1.11 acres delineated) beyond ECL. Impacts occur within both the PEM and PSS wetlands. AA includes 0.07 acres of the proposed impacted area to PEM and PSS wetlands, and 0.93 acres of the wetland complex that will not be impacted.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)								
Condition Category:								Total Score:
% ZOI Area:	0%	0%	20%	20%	40%	20%		
Score:	0	0	12	7	4	2		
Total Sub-score:	0.00	0.00	2.40	1.40	1.60	0.40	5.80	

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Streams, other wetlands, cleared areas and agricultural land occur within ZOI. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

			Condition Score	Weighting	Sub-Scores
	a. Roadbed 0-100:	17	* (0.67)	11	
	b. Roadbed 100-300:	14	* (0.33)	5	
			Total Score:	16	

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Temporary dirt access road connecting paved road to pipeline ROW.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Area includes maintained pipeline ROW and maintenance road/ATV trail. Cleared area and agricultural land occur in and around wetland.

a. Invasive Sub-Score:	20	Total Score	
b. Vegetation Sub-Score:	9	29	0.73

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW alteration caused by pipeline maintenance and ATV use.

Score:	17	
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Two stressors identified due to agriculture, and ROW alteration caused by pipeline maintenance and ATV use.

Score:	14	
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	
b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.73

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/06/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD071TMM	W035, W035A	41.754615	-78.398383	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.	1	1	1
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		3	

Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading. Temporary dirt access road connecting paved road to pipeline ROW.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/06/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)	X			
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			4	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			2	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/06/17	0.17	W037B, W037C	1.00	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.753999	-78.394842	RW068CJLM, PEM and PSS wetlands		

General Comments: Seasonal wet back channel to Potato Creek. PEM and PSS wetland in maintained pipeline ROW (0.17 acres in ECL). Wetland continues beyond existing ROW, upslope and downslope of Project (2.28 acres delineated) beyond ECL. Impacts occur only to the PEM and PSS wetland area in the disturbed ROW. AA includes 1.00 acre of PEM and PSS within and beyond the Project area.

1. Wetland Zone of Influence Condition Index																						
Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category										CI = Total Score/20											
	Optimal			Suboptimal			Marginal			Poor												
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.			High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.										Total Score = SUM(%Areas*Scores)		0.35										
Scoring:	Condition Category:																				Total Score:	
	% ZOI Area:		0%		0%		25%		25%		50%		5%									
	Score:		0		0		13		7		4		1									
Total Sub-score:		0.00		0.00		3.25		1.75		2.00		0.05										

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, a stream, agricultural pasture, and a paved road. Adjacent forest has maintained understory.

2. Roadbed Presence Index																								
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories										CI = Total Score/20													
	Optimal			Suboptimal			Marginal			Poor														
	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.										Total Score = SUM(%Areas*Scores)		0.80												
Scoring:	Condition Category:																				Total Score:			
	% ZOI Area:																							
	Score:																							
Total Sub-score:																								

Condition Score			Weighting		Sub-Scores	
a. Roadbed 0-100:	17	*	(0.67)	11		
b. Roadbed 100-300:	14	*	(0.33)	5		
Total Score:					16	

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Paved road within 300 feet of AA,

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																												
a. Invasive Species Presence	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				> 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: One Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category												CI = Total Score/40															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.75							

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	18	Total Score	
b. Vegetation Sub-Score:	12	30	

4. Hydrologic Modification Index																												
Hydrologic Modification Stressor Presence	Condition Category												CI = Total Score/20															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85							

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

Score:	17
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5. Sediment Stressor Index																												
Sediment Stressor Presence	Condition Category												CI = Total Score/20															
	Optimal				Suboptimal				Marginal					Poor														
	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85							

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category												CI = Total Score/40								
	Optimal				Suboptimal				Marginal					Poor							
	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1.00

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.77
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/06/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
RW068CJLM	W037B, W037C	41.753999	-78.394842	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		4	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading. Paved road within 300 feet of AA.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/06/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
loja	1								

Total % relative cover of all invasives, collectively on site: 1 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/07/17	0.15	W039	0.48

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.7548	-78.395648	WD074TMM, PEM wetland

General Comments: PEM wetland located in between stream and gas compressor station. Wetland occurs in maintained pipeline ROW (0.15 acres in ECL) and continues upslope of Project (0.33 acres delineated) beyond ECL. AA includes entire 0.48 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)																					
Condition Category:																					
% ZOI Area:	0%	0%	20%	0%	70%	10%															Total Score:
Score:	0	0	12	0	4	2															5.40
Total Sub-score:	0.00	0.00	2.40	0.00	2.80	0.20															0.27

Comments: Area includes stream, maintained pipeline ROW with access roads and gas compressor station. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Gravel access road to gas compressor station.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

					Condition Score					Weighting					Sub-Scores									
					a. Roadbed 0-100:					14					* (0.67)					9				
					b. Roadbed 100-300:					14					* (0.33)					5				
					Total Score:					14					0.70									

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Gravel access road to gas compressor station.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	Maintained pipeline ROW and maintenance road/ATV trail.															a. Invasive Sub-Score:					Total Score:					0.80									
																20					32														
																b. Vegetation Sub-Score:					12						32								

4. Hydrologic Modification Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	Within ROW alteration caused by pipeline maintenance and ATV use.															Score:					17					0.85									

5. Sediment Stressor Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	Two stressors identified due to ROW maintenance, ATV use, and cleared area for gas well pad.															Score:					14					0.70									

6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																									
	Optimal					Suboptimal					Marginal						Poor									
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						
Comments:	No stressors identified.															a. Eutrophication Score					Total Score:					1.00
																20					40					
																b. Contaminant Score					20					

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.72
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/07/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD074TMM	W039	41.7548	-78.395648	Pipeline access roads and gas compressor station	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.	1	1	1	100-300 ft.	1	1	1
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	3			100-300 ft.	3		

Road Comments: Dirt access road/atv trail used for pipeline inspection and maintenance. Gravel access road to gas compressor station.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/07/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	X			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			2	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

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Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/06/17	0.01	W041	0.32	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.754799	-78.3941	WD068JLM, PEM wetland		

General Comments: Seasonal wet back channel to Potato Creek. PEM wetland in maintained pipeline ROW (0.001 acres in ECL). Wetland continues beyond existing ROW, upslope of Project (0.31 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.32 acre of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)						
Scoring:	Condition Category:																		Total Score:	
	% ZOI Area:		0%		0%		25%		25%		30%		20%							
	Score:		0		0		13		7		4		1							
Total Sub-score:		0.00		0.00		3.25		1.75		1.20		0.20		6.40				0.32		

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, a stream, agricultural pasture, development, and a paved road. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																				

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Paved road within 300 feet of AA.																					
														Condition Score		Weighting		Sub-Scores			
														a. Roadbed 0-100:		17		* (0.67)		11	
														b. Roadbed 100-300:		12		* (0.33)		4	
														Total Score:		15		0.77			

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
a. Invasive Species Presence	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						

Comments: One Invasive Species identified in wetland AA.

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40					

Comments: Maintained pipeline ROW and maintenance road/ATV trail.				
	a. Invasive Sub-Score:	18	Total Score	0.75
	b. Vegetation Sub-Score:	12	30	

4. Hydrologic Modification Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20					

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.				
	Score:	17	0.85	

5. Sediment Stressor Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20					

Comments: One stressor identified due to ROW maintenance and ATV use.				
	Score:	17	0.85	

6. Water Quality Stressor Index

	Condition Category																				
	Optimal				Suboptimal				Marginal				Poor								
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

	Condition Category																				
	Optimal				Suboptimal				Marginal				Poor								
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40

Comments: No stressors identified.				
	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.76
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/06/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD068JLM	W041	41.754799	-78.3941	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.	1	1	1
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		5	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading. Paved road within 300 feet of AA.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/06/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
loja	1								

Total % relative cover of all invasives, collectively on site: 1 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/06/17	0.01	W042	0.02	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.754463	-78.393417	WD070JLM, PEM wetland		

General Comments: Small depression within a dirt road, intercepting drainage. Disturbed, base soil present due to disturbances. PEM wetland in maintained pipeline ROW (0.01 acres in ECL). Wetland continues beyond existing ROW, upslope of Project (0.01 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.02 acre of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)								
Scoring:	Condition Category:														Total Score:							
	% ZOI Area:																					
	Score:																					
Total Sub-score:														6.40	0.32							

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, a stream, agricultural pasture, development, and a paved road. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																									
	Optimal				Suboptimal				Marginal				Poor													
	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor													
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					
														Condition Score		Weighting		Sub-Scores								
														a. Roadbed 0-100:		17		* (0.67)		11						
														b. Roadbed 100-300:		12		* (0.33)		4						
														Total Score:		15		0.77								

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Paved road within 300 feet of AA.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.		High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.		High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence																				
Condition Category																				
Optimal			Suboptimal				Marginal			Poor										
High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.		High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.		High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	15	Total Score	
	b. Vegetation Sub-Score:	12	27	0.68

4. Hydrologic Modification Index																				
Condition Category																				
Optimal			Suboptimal				Marginal			Poor										
High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.		High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.		High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

	Score:	17		0.85
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5. Sediment Stressor Index																				
Condition Category																				
Optimal			Suboptimal				Marginal			Poor										
High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.		High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.		High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17		0.85
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6. Water Quality Stressor Index																				
Condition Category																				
Optimal			Suboptimal				Marginal			Poor										
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.		One eutrophication stressors present within the AA boundary.		Two eutrophication stressors present within the AA boundary.		Three eutrophication stressors present within the AA boundary.													
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence																				
Condition Category																				
Optimal			Suboptimal				Marginal			Poor										
No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.		Two contaminant / toxicity stressors present within the AA boundary.		Three contaminant / toxicity stressors present within the AA boundary.															
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	
	b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.74
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/06/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD070JLM	W042	41.754463	-78.393417	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.	1	1	1
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		5	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading. Paved road within 300 feet of AA.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/06/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phar		5							

Total % relative cover of all invasives, collectively on site: 5 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
algi2	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/06/17	0.05	W045	0.14	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.754627	-78.387443	RW072AJLM, PEM wetland		

General Comments: Adjacent to stream. PEM wetland in maintained pipeline ROW (0.05 acres in ECL). Wetland continues beyond existing ROW, upslope of Project (0.09 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.14 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20									
	Optimal				Suboptimal				Marginal				Poor											
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)									
Scoring:	Condition Category:																		Total Score:					
	% ZOI Area:		0%		0%		60%		10%		30%		0%											
	Score:		0		0		13		7		4		0											
Total Sub-score:		0.00		0.00		7.80		0.70		1.20		0.00		9.70						0.49				

Comments: Area includes maintained pipeline ROW with access road/ATV trail, another wetland, and streams. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20									
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																								

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20																			
	Optimal				Suboptimal				Marginal				Poor																					
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.													
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2"></th> <th style="text-align: center;">Condition Score</th> <th style="text-align: center;">Weighting</th> <th style="text-align: center;">Sub-Scores</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">a. Roadbed 0-100:</td> <td style="text-align: center;">17</td> <td style="text-align: center;">*</td> <td style="text-align: center;">(0.67)</td> <td style="text-align: center;">11</td> </tr> <tr> <td style="text-align: center;">b. Roadbed 100-300:</td> <td style="text-align: center;">17</td> <td style="text-align: center;">*</td> <td style="text-align: center;">(0.33)</td> <td style="text-align: center;">6</td> </tr> <tr> <td colspan="2"></td> <td colspan="2" style="text-align: center;">Total Score:</td> <td style="text-align: center;">17</td> </tr> </tbody> </table>																	Condition Score	Weighting	Sub-Scores	a. Roadbed 0-100:	17	*	(0.67)	11	b. Roadbed 100-300:	17	*	(0.33)	6			Total Score:		17
		Condition Score	Weighting	Sub-Scores																														
a. Roadbed 0-100:	17	*	(0.67)	11																														
b. Roadbed 100-300:	17	*	(0.33)	6																														
		Total Score:		17																														
0.85																																		

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																						
a. Invasive Species Presence	Condition Category																					
	Optimal			Suboptimal				Marginal			Poor											
	High Optimal: No invasives present.			Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.			Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.			Low Marginal: >30% but less than 50% of the total AA contains invasive species.			> 50% of the total AA contains invasive species.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence																						
b. Vegetation Stressor Presence	Condition Category																					
	Optimal			Suboptimal				Marginal			Poor											
	High Optimal: No vegetation stressors present within the AA boundary.			Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.			Low Suboptimal: Three vegetation stressors present within the AA boundary.			High Marginal: Four vegetation stressors present within the AA boundary.			Low Marginal: Five vegetation stressors present within the AA boundary.			Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Maintained pipeline ROW and maintenance road/ATV trail.	a. Invasive Sub-Score:	20	Total Score	0.80
	b. Vegetation Sub-Score:	12	32	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

4. Hydrologic Modification Index																						
Hydrologic Modification Stressor Presence	Condition Category																					
	Optimal			Suboptimal				Marginal			Poor											
	High Optimal: No hydrologic stressors present within the AA boundary.			Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.			Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.			Low Marginal: Five hydrologic stressors present within the AA boundary.			Greater than five hydrologic stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.	Score:	17	Total Score	0.85
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Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

5. Sediment Stressor Index																						
Sediment Stressor Presence	Condition Category																					
	Optimal			Suboptimal				Marginal			Poor											
	High Optimal: No sediment stressors present within the AA boundary.			Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.			Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.			Low Marginal: Five sediment stressors present within the AA boundary.			Greater than five sediment stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: One stressor identified due to ROW maintenance and ATV use.	Score:	17	Total Score	0.85
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Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No eutrophication stressors present within the AA boundary.			One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No contaminant / toxicity stressors present within the AA boundary.			One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Wetland Level 2 Condition Score:	Overall Condition Index:	0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/06/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
RW072AJLM	W045	41.754627	-78.387443	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/06/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

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Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/07/17	0.01	W049	0.03	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.757017	-78.379114	RW073DJLM, PEM wetland		

General Comments: Small seep under forest canopy and in ROW. Hillside slumps, seep forms a narrow wet swale. PEM wetland in maintained pipeline ROW (0.001 acres in ECL). Wetland continues beyond existing ROW, upslope of Project (0.02 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.03 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20								
	Optimal				Suboptimal					Marginal			Poor										
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.											Total Score = SUM(%Areas*Scores)												
2. Estimate the % area within each condition category. Calculators are provided for you below.																							
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																							
Condition Category:															Total Score:								
% ZOI Area:	0%				0%					70%			0%			30%		0%					
Score:	0				0					13			0			4		0					
Total Sub-score:	0.00				0.00					9.10			0.00			1.20		0.00		10.30		0.52	

Comments: Area includes maintained pipeline ROW with access road/ATV trail and other wetlands. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20									
	Optimal				Suboptimal					Marginal			Poor											
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				
											Condition Score										Weighting		Sub-Scores	
											a. Roadbed 0-100:			17			* (0.67)			11				
											b. Roadbed 100-300:			17			* (0.33)			6				
											Total Score:										17		0.85	

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

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Pennsylvania Department of Environmental Protection

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3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No invasives present.		Low Optimal: <5% of the total AA contains invasive species.		High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.		High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence																				
b. Vegetation Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No vegetation stressors present within the AA boundary.		Low Optimal: One vegetation stressor present within the AA boundary.		High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.		High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintained pipeline ROW and maintenance road/ATV trail.	a. Invasive Sub-Score:	20	Total Score	0.80
	b. Vegetation Sub-Score:	12	32	

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No hydrologic stressors present within the AA boundary.		Low Optimal: One hydrologic stressor present within the AA boundary.		High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.		High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.	Score:	17	0.85
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5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No sediment stressors present within the AA boundary.		Low Optimal: One sediment stressor present within the AA boundary.		High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.		High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One stressor identified due to ROW maintenance and ATV use.	Score:	17	0.85
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No eutrophication stressors present within the AA boundary.			One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No contaminant / toxicity stressors present within the AA boundary.			One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/07/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
RW073DJLM	W049	41.757017	-78.379114	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/07/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/07/17	0.29	W051	0.56	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.757017	-78.379114	RW073EJLM, PEM wetland		

General Comments: Small seep under forest canopy and in ROW. Hillside slumps, seep forms a narrow wet swale. PEM wetland in maintained pipeline ROW (0.29 acres in ECL). Wetland continues beyond existing ROW, upslope and downslope of Project (0.27 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.56 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal					Marginal			Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)						
Scoring:	Condition Category:														Total Score:					
	% ZOI Area:																			
	Score:																			
Total Sub-score:														9.40	0.47					

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, streams, and residential development. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20					
	Optimal				Suboptimal					Marginal			Poor							
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.		Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal					Marginal			Poor								
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.		Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
														Condition Score		Weighting		Sub-Scores			
														a. Roadbed 0-100:		17		* (0.67)		11	
														b. Roadbed 100-300:		17		* (0.33)		6	
														Total Score:		17		0.85			

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
a. Invasive Species Presence	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						

Comments: No Invasive Species identified in wetland AA.

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40					

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	
	b. Vegetation Sub-Score:	12	32	0.80

4. Hydrologic Modification Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20					

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

	Score:	17		0.85
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5. Sediment Stressor Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20					

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category																				
	Optimal				Suboptimal				Marginal				Poor								
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

	Condition Category																				
	Optimal				Suboptimal				Marginal				Poor								
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	
	b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.80
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/07/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
RW073EJLM	W051	41.757017	-78.379114	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/07/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	10/07/17	0.05	W054	0.07	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, C. Maier, M. Groomer		41.756895	-78.374947	WD075JLM, PEM wetland		

General Comments: Wetland connected to perennial stream and within floodplain. PEM wetland in maintained pipeline ROW (0.05 acres in ECL). Wetland continues beyond existing ROW, downslope of Project (0.02 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.07 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20														
	Optimal				Suboptimal				Marginal				Poor																
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1									
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.														Total Score = SUM(%Areas*Scores)															
2. Estimate the % area within each condition category. Calculators are provided for you below.																													
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																													
Condition Category:																	Total Score:												
% ZOI Area:	0%				0%				50%				5%					40%				5%							
Score:	0				0				13				7					4				1							
Total Sub-score:	0.00				0.00				6.50				0.35				1.60				0.05				8.50				0.43

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other wetlands, streams, and residential development. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20													
	Optimal				Suboptimal				Marginal				Poor															
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20													
	Optimal				Suboptimal				Marginal				Poor															
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								
														Condition Score		Weighting		Sub-Scores		Total Score:								
														a. Roadbed 0-100:		17		* (0.67)			11							
														b. Roadbed 100-300:		17		* (0.33)			6							
														17		17		17		0.85								

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
a. Invasive Species Presence	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						

Comments: No Invasive Species identified in wetland AA.

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40					

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	
	b. Vegetation Sub-Score:	12	32	0.80

4. Hydrologic Modification Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20					

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

	Score:	17		0.85
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5. Sediment Stressor Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20					

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category																				
	Optimal				Suboptimal				Marginal				Poor								
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

	Condition Category																				
	Optimal				Suboptimal				Marginal				Poor								
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	
	b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.80		0.80
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/07/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD075JLM	W054	41.756895	-78.374947	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/07/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? YES NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/07/17	0.15	W055	0.46

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.757137	-78.372617	WD074TMM, PEM wetland

General Comments: PEM wetland connected to perennial stream. Wetland occurs in maintained pipeline ROW (0.01 acres in ECL), continues upslope and downslope of Project (0.31 acres delineated) beyond ECL. AA includes entire 0.46 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)								0.28
Total Score:								
5.60								
0.28								

Comments: Area includes maintained pipeline ROW with access road/ATV trail, another wetland, a stream, development, and a paved road. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Condition Score			Weighting			Sub-Scores		
a. Roadbed 0-100:	17	*(0.67)	11					
b. Roadbed 100-300:	13	*(0.33)	4					
Total Score:			16					

Comments: Dirt road leading to well pad and paved road within 300 feet.

Condition Score			Weighting			Sub-Scores		
a. Roadbed 0-100:	17	*(0.67)	11					
b. Roadbed 100-300:	13	*(0.33)	4					
Total Score:			16					

Comments: Dirt road leading to well pad and paved road within 300 feet.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	Maintained pipeline ROW															a. Invasive Sub-Score:					Total Score					0.80									
																20					32														
																12					32														

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	Within ROW alteration caused by pipeline maintenance															Score:					17					0.85									
																17																			

5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments:	One stressor identified due to ROW maintenance															Score:					17					0.85									
																17																			

6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																									
	Optimal					Suboptimal					Marginal						Poor									
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						
Comments:	No stressors identified.															a. Eutrophication Score					Total Score:					1.00
																20					40					
																20					40					

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.76
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/07/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD074TMM	W055	41.757137	-78.372617		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.	1	1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		4	

Road Comments: Maintained pipeline ROW, dirt road leading to well pad, and paved road.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/07/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			X
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? YES NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/07/17	0.01	W056	0.02

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.757105	-78.372081	WD074TMM, PEM wetland

General Comments: PEM wetland located between gas compressor station and perennial stream. Wetland occurs in maintained pipeline ROW (0.001 acres in ECL), continues upslope of Project (0.01 acres delineated) beyond ECL. AA includes entire 0.02 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)								
Condition Category:								Total Score:
% ZOI Area:	0%	0%	20%	20%	40%	20%	0.28	
Score:	0	0	12	7	4	1		
Total Sub-score:	0.00	0.00	2.40	1.40	1.60	0.20		5.60

Comments: Area includes maintained pipeline ROW with access road/ATV trail, another wetland, a stream, development, and a paved road. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

			Condition Score	Weighting	Sub-Scores
	a. Roadbed 0-100:	17	* (0.67)	11	
	b. Roadbed 100-300:	13	* (0.33)	4	
			Total Score:	16	

Comments: Dirt road leading to well pad and paved road within 300 feet.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.		High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.		High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence																				
b. Vegetation Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.		High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.		High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintained pipeline ROW

	a. Invasive Sub-Score:	20	Total Score	
	b. Vegetation Sub-Score:	12	32	0.80

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.		High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.		High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Within ROW alteration caused by pipeline maintenance

	Score:	17		0.85
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5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.		High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.		High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One stressor identified due to ROW maintenance

	Score:	17		0.85
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.		Two eutrophication stressors present within the AA boundary.		Three eutrophication stressors present within the AA boundary.		Four eutrophication stressors present within the AA boundary.		Five eutrophication stressors present within the AA boundary.		Greater than five eutrophication stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.		Two contaminant / toxicity stressors present within the AA boundary.		Three contaminant / toxicity stressors present within the AA boundary.		Four contaminant / toxicity stressors present within the AA boundary.		Five contaminant / toxicity stressors present within the AA boundary.		Greater than five contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	
	b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:		0.76
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/07/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD074TMM	W056	41.757105	-78.372081		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.	1	1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	4		

Road Comments: Maintained pipeline ROW, dirt road leading to well pad, and paved road.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/07/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			X
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

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Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	08/03/18	0.12	W059A	1.00	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, M. Groomer		41.755869	-78.349029	WD211JLM, PEM and PFO wetlands		

General Comments: PEM wetland channelized across ROW. Broad channel with 6 inches of surface water. Channel drains through culvert. PEM wetland in maintained pipeline ROW (0.12 acres in ECL) and continues beyond existing ROW, upslope and downslope of Project (0.12 acres delineated) beyond ECL. Connected to PFO wetland downslope of the Project (1.27 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.24 acres of PEM and 0.76 acres of PFO within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)						
Scoring:	Condition Category:																Total Score:			
	% ZOI Area:		0%		40%		20%		20%		20%		0%							
	Score:		0		13		9		7		4		0							
Total Sub-score:		0.00		5.20		1.80		1.40		0.80		0.00		9.20		0.46				

Comments: Area includes maintained pipeline ROW with access road/ATV trail, another access road, wetlands, and a ditch. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
High Optimal: No roadbeds present within 100 feet of the AA boundary Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
														Condition Score		Weighting		Sub-Scores			
														a. Roadbed 0-100:		14		* (0.67)		9	
														b. Roadbed 100-300:		14		* (0.33)		5	
														Total Score:		14		0.70			

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.		High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.		High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence																				
b. Vegetation Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.		High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.		High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	
	b. Vegetation Sub-Score:	12	32	0.80

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.		High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.		High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Within ROW alteration caused by pipeline maintenance and ATV use. Culvert draining wetland to ditch.

	Score:	14		0.70
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5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.		High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.		High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17		0.85
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.		Two eutrophication stressors present within the AA boundary.		Three eutrophication stressors present within the AA boundary.		Four eutrophication stressors present within the AA boundary.		Five eutrophication stressors present within the AA boundary.		Greater than five eutrophication stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.		Two contaminant / toxicity stressors present within the AA boundary.		Three contaminant / toxicity stressors present within the AA boundary.		Four contaminant / toxicity stressors present within the AA boundary.		Five contaminant / toxicity stressors present within the AA boundary.		Greater than five contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	
	b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.75
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/03/18	J. Miner, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD211JLM	W059A	41.755869	-78.349029	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	2	2	4	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/03/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	08/03/18	0.57	W061	1.00	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, M. Groomer		41.758834	-78.341033	WD209JLM, PEM wetland		

General Comments: PEM wetland in maintained pipeline ROW (0.57 acres in ECL). Wetland continues beyond existing ROW, upslope and downslope of Project (0.50 acres delineated) beyond ECL. Connected to PFO wetland downslope of the Project (0.85 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 1.00 acre of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.

2. Estimate the % area within each condition category. Calculators are provided for you below.

3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Condition Category:							Total Score = SUM(%Areas*Scores)					0.48
Scoring:	% ZOI Area:	0%	50%	10%	20%	20%	0%	Total Score:				
	Score:	0	13	9	7	4	0					
	Total Sub-score:	0.00	6.50	0.90	1.40	0.80	0.00				9.60	

Comments: Area includes maintained pipeline ROW with access road/ATV trail, another access road, and other wetlands. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
No roadbeds present within 100 feet of the AA boundary	High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
No roadbeds present within 100 - 300 feet of the AA boundary	High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
							Condition Score				Weighting		Sub-Scores		0.80					
							a. Roadbed 0-100:				17		* (0.67)			11				
							b. Roadbed 100-300:				14		* (0.33)			5				
											Total Score:		16							

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.	High Suboptimal: >5% but less than 10% of the total AA contains invasive species.	Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.	High Marginal: >20% but less than 30% of the total AA contains invasive species.	Low Marginal: >30% but less than 50% of the total AA contains invasive species.	> 50% of the total AA contains invasive species.													
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category													CI = Total Score/40							
	Optimal			Suboptimal				Marginal			Poor										
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.	High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.	High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	13	Total Score	0.63
	b. Vegetation Sub-Score:	12	25	

4. Hydrologic Modification Index																					
Hydrologic Modification Stressor Presence	Condition Category													CI = Total Score/20							
	Optimal			Suboptimal				Marginal			Poor										
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.	High Suboptimal: Two hydrologic stressors present within the AA boundary.	Low Suboptimal: Three hydrologic stressors present within the AA boundary.	High Marginal: Four hydrologic stressors present within the AA boundary.	Low Marginal: Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

	Score:	17	0.85
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5. Sediment Stressor Index																					
Sediment Stressor Presence	Condition Category													CI = Total Score/20							
	Optimal			Suboptimal				Marginal			Poor										
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.	High Suboptimal: Two sediment stressors present within the AA boundary.	Low Suboptimal: Three sediment stressors present within the AA boundary.	High Marginal: Four sediment stressors present within the AA boundary.	Low Marginal: Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17	0.85
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6. Water Quality Stressor Index																					
a. Eutrophication Stressor Presence	Condition Category																				
	Optimal			Suboptimal				Marginal			Poor										
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category													CI = Total Score/40							
	Optimal			Suboptimal				Marginal			Poor										
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.												
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.77
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/03/18	J. Miner, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD209JLM	W061	41.758834	-78.341033	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		4	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/03/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
aggi2		10							

Total % relative cover of all invasives, collectively on site: 10 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
algi2	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	20	Total Score	0.80
b. Vegetation Sub-Score:	12	32	

4. Hydrologic Modification Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

Score:	17		0.85
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5. Sediment Stressor Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	1.00
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index:			0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/02/17	J. Miner, F. Davis, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD038JLM	W066A	41.760518	-78.337248	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/02/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/02/17	0.02	W067	0.04

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
J. Miner, F. Davis, M. Groomer	41.763338	-78.32955	WD037JLM, PEM wetland

General Comments: Wetland restricted to floodplain/valley bottom of small creek. PEM wetland in maintained pipeline ROW (0.02 acres in ECL). Wetland continues beyond existing ROW, downslope of Project (0.02 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.04 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)									
2. Estimate the % area within each condition category. Calculators are provided for you below.																			
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.										Total Score: 10.60									
Condition Category:																			
Scoring:	% ZOI Area:	0%	70%	0%	10%	20%	0%	Total Score:											
	Score:	0	13	0	7	4	0	10.60											
	Total Sub-score:	0.00	9.10	0.00	0.70	0.80	0.00	10.60											

Comments: Area includes maintained pipeline ROW with access road/ATV trail and streams. Adjacent forest has maintained understorey.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
										Condition Score				Weighting		Sub-Scores						
										a. Roadbed 0-100:				17	*(0.67)		11					
										b. Roadbed 100-300:				17	*(0.33)		6					
														Total Score:		17		0.85				

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					> 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.	a. Invasive Sub-Score:	20	Total Score	0.80
	b. Vegetation Sub-Score:	12	32	

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.	Score:	17	0.85
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.	Score:	17	0.85
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/02/17	J. Miner, F. Davis, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD037JLM	W067	41.763338	-78.32955	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/02/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? YES NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/02/17	0.02	W070	0.06

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.766956	-78.314731	WD048TMM, PEM wetland

General Comments: PEM wetland located in floodplain and abutts stream. Wetland occurs in maintained pipeline ROW (0.02 acres in ECL) and continues downslope of Project (0.04 acres delineated) beyond ECL. AA includes entire 0.06 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20								
	Optimal				Suboptimal				Marginal				Poor												
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)															
2. Estimate the % area within each condition category. Calculators are provided for you below.																									
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																									
Condition Category:																									
Scoring:	% ZOI Area:				0%				70%				0%				30%				0%				Total Score:
	Score:				0				12				0				4				0				
	Total Sub-score:				0.00				8.40				0.00				1.20				0.00				
Comments: Area includes stream, maintained pipeline ROW with access roads/ATV trail. Adjacent forest has maintained understory.																									

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Permanent dirt access road intersecting maintained pipeline ROW.																												

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								
										Condition Score										Weighting		Sub-Scores						
										a. Roadbed 0-100:				13				* (0.67)		9								
										b. Roadbed 100-300:				13				* (0.33)		4								
										Total Score:										13								
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Permanent dirt access road intersecting maintained pipeline ROW.																												

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.		High Suboptimal: >5% but less than 10% of the total AA contains invasive species.	Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.		High Marginal: >20% but less than 30% of the total AA contains invasive species.	Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

3. Vegetation Condition Index																				
b. Vegetation Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.		High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.		High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	
	b. Vegetation Sub-Score:	12	32	0.80

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.		High Suboptimal: Two hydrologic stressors present within the AA boundary.	Low Suboptimal: Three hydrologic stressors present within the AA boundary.		High Marginal: Four hydrologic stressors present within the AA boundary.	Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

	Score:	17		0.85
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5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.		High Suboptimal: Two sediment stressors present within the AA boundary.	Low Suboptimal: Three sediment stressors present within the AA boundary.		High Marginal: Four sediment stressors present within the AA boundary.	Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.										
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17		0.85
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.		Two eutrophication stressors present within the AA boundary.		Three eutrophication stressors present within the AA boundary.			Four eutrophication stressors present within the AA boundary.		Five eutrophication stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.		Two contaminant / toxicity stressors present within the AA boundary.		Three contaminant / toxicity stressors present within the AA boundary.			Four contaminant / toxicity stressors present within the AA boundary.		Five contaminant / toxicity stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	
	b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:		0.77
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)				
NFG FM100 Project			10/02/17	T. Malecki, M. Groomer				
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:				
WD048TMM	W070	41.766956	-78.314731	Pipeline access roads				
<p>Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.</p>								
Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	2	2	4	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	
<p>Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Permanent dirt access road intersecting maintained pipeline ROW.</p>								

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/02/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/02/17	0.02	W071	0.17
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.766819	-78.314517	WD048TMM, PEM wetland	

General Comments: PEM wetland located in floodplain and abutts stream. Wetland occurs in maintained pipeline ROW (0.02 acres in ECL) and continues downslope of Project (0.15 acres delineated) beyond ECL. AA includes entire 0.17 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)															
Condition Category:															Total Score:															
% ZOI Area:																														
Score:																														
Total Sub-score:															9.60															
															0.48															

Comments: Area includes stream, maintained pipeline ROW with access roads/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
															Total Score:																				
Condition Score																																			
Weighting																																			
Sub-Scores															0.65																				
a. Roadbed 0-100: 13 * (0.67) = 9 b. Roadbed 100-300: 13 * (0.33) = 4																																			
															13																				

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Permanent dirt access road intersecting maintained pipeline ROW.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.		High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.		High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

3. Vegetation Condition Index																				
b. Vegetation Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.		High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.		High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: Maintained pipeline ROW and maintenance road/ATV trail.													CI = Total Score/40							
													a. Invasive Sub-Score:	20	Total Score:	32	0.80			
													b. Vegetation Sub-Score:	12						

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.		High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.		High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: Within ROW alteration caused by pipeline maintenance and ATV use.													CI = Total Score/20							
													Score:	17	0.85					

5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.		High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.		High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: One stressor identified due to ROW maintenance and ATV use.													CI = Total Score/20							
													Score:	17	0.85					

6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.		Two eutrophication stressors present within the AA boundary.		Three eutrophication stressors present within the AA boundary.		Four eutrophication stressors present within the AA boundary.		Five eutrophication stressors present within the AA boundary.		Greater than five eutrophication stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.													CI = Total Score/40							

6. Water Quality Stressor Index																				
b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.		Two contaminant / toxicity stressors present within the AA boundary.		Three contaminant / toxicity stressors present within the AA boundary.		Four contaminant / toxicity stressors present within the AA boundary.		Five contaminant / toxicity stressors present within the AA boundary.		Greater than five contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.													CI = Total Score/40							
													a. Eutrophication Score	20	Total Score:	40	1.00			
													b. Contaminant Score	20						

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.77
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/02/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD048TMM	W071	41.766819	-78.314517	Pipeline access roads

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	2	2	4	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Dirt access road/ATV trail used for pipeline inspection and maintenance. Permanent dirt access road intersecting maintained pipeline ROW.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/02/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			X
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.01	W075	0.29

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.787011	-78.272842	WD061TMM, PEM wetland

General Comments: PEM wetland located in inactive agricultural field at toe of slope between terraced field and drains into an ephemeral stream. Wetland occurs in recently mowed site (0.01 acres in ECL) and continues upslope of Project (0.28 acres delineated) beyond ECL. AA includes entire 0.29 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
 2. Estimate the % area within each condition category. Calculators are provided for you below.
 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Condition Category:								Total Score = SUM(%Areas*Scores)	
% ZOI Area:	0%	0%	10%	0%	90%	0%		Total Score:	
Score:	0	0	12	0	4	0		4.80	
Total Sub-score:	0.00	0.00	1.20	0.00	3.60	0.00		0.24	

Comments: Area includes stream and inactive agricultural field. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No roadbeds present within 0-100 feet of AA.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Condition Score			Weighting		Sub-Scores	
a. Roadbed 0-100:	20		* (0.67)		13	
b. Roadbed 100-300:	13		* (0.33)		4	
			Total Score:		18	

Comments: Dirt road leading to residential development and one paved road on edge of ZOI.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																														
	Optimal					Suboptimal					Marginal					Poor															
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: No Invasive Species identified in wetland AA.

	Condition Category																														
	Optimal					Suboptimal					Marginal					Poor															
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: AA recently mowed and located in inactive agricultural field.

a. Invasive Sub-Score:	20	Total Score	0.93
b. Vegetation Sub-Score:	17	37	

4. Hydrologic Modification Index

	Condition Category																														
	Optimal					Suboptimal					Marginal					Poor															
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: No stressors identified.

Score:	20	1.00
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5. Sediment Stressor Index

	Condition Category																														
	Optimal					Suboptimal					Marginal					Poor															
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: No stressors identified.

Score:	20	1.00
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal					Poor				
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																			
	Optimal					Suboptimal					Marginal					Poor				
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	1.00
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.84

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/05/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD061TMM	W075	41.787011	-78.272842	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	4		

Road Comments: Dirt road leading to residential development and one paved road on edge of ZOI.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)				X
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)				X
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			1	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)				X
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			0	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:				X
Total Number:			0	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.03	W076	0.05

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.787781	-78.271437	WD062TMM, PEM wetland

General Comments: PEM wetland located in floodplain. Adjacent to W077, forest with maintained understory, and in active agricultural field. Wetland occurs in inactive agricultural field and on edge of forest (0.03 acres in ECL) and continues upslope of Project (0.02 acres delineated) beyond ECL. AA includes entire 0.05 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)								
Condition Category:								Total Score:
% ZOI Area:	0%	0%	30%	0%	70%	0%		
Score:	0	0	12	0	4	0		
Total Sub-score:	0.00	0.00	3.60	0.00	2.80	0.00	6.40	
							0.32	

Comments: Area includes stream, other wetlands, and inactive agricultural field. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No roadbeds present within 0-100 feet of AA.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

			Condition Score	Weighting	Sub-Scores
	a. Roadbed 0-100:	20	* (0.67)	13	
	b. Roadbed 100-300:	17	* (0.33)	6	
			Total Score:	19	
0.95					

Comments: Dirt road leading to residential development on edge of ZOI.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal:	Low Optimal:	High Suboptimal:	Low Suboptimal:	High Marginal:	Low Marginal:														
	No invasives present.			<5% of the total AA contains invasive species.				>5% but less than 10% of the total AA contains invasive species.			>10% but less than 20% of the total AA contains invasive species.		>20% but less than 30% of the total AA contains invasive species.			>30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence																				
b. Vegetation Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal:	Low Optimal:	High Suboptimal:	Low Suboptimal:	High Marginal:	Low Marginal:														
	No vegetation stressors present within the AA boundary.			One vegetation stressor present within the AA boundary.				Two vegetation stressors present within the AA boundary.			Three vegetation stressors present within the AA boundary.		Four vegetation stressors present within the AA boundary.			Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: AA located in inactive agricultural field.													a. Invasive Sub-Score:		13	Total Score		0.75		
													b. Vegetation Sub-Score:		17	30				

Comments: AA located in inactive agricultural field.

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal:	Low Optimal:	High Suboptimal:	Low Suboptimal:	High Marginal:	Low Marginal:														
	No hydrologic stressors present within the AA boundary.			One hydrologic stressor present within the AA boundary.				Two hydrologic stressors present within the AA boundary.			Three hydrologic stressors present within the AA boundary.		Four hydrologic stressors present within the AA boundary.			Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.													Score:		20	1.00				

Comments: No stressors identified.

5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal:	Low Optimal:	High Suboptimal:	Low Suboptimal:	High Marginal:	Low Marginal:														
	No sediment stressors present within the AA boundary.			One sediment stressor present within the AA boundary.				Two sediment stressors present within the AA boundary.			Three sediment stressors present within the AA boundary.		Four sediment stressors present within the AA boundary.			Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.													Score:		20	1.00				

Comments: No stressors identified.

6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal:	Low Optimal:	High Suboptimal:	Low Suboptimal:	High Marginal:	Low Marginal:														
	No eutrophication stressors present within the AA boundary.			One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence																				
b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal:	Low Optimal:	High Suboptimal:	Low Suboptimal:	High Marginal:	Low Marginal:														
	No contaminant / toxicity stressors present within the AA boundary.			One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.													a. Eutrophication Score		20	Total Score:		1.00		
													b. Contaminant Score		20	40				

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.84

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)				
NFG FM100 Project			10/05/17	T. Malecki, M. Groomer				
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:				
WD062TMM	W076	41.787781	-78.271437					
<p>Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.</p>								
Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		0		100-300 ft.		2	
<p>Road Comments: Dirt road leading to residential development on edge of ZOI.</p>								

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)				X
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)				X
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			1	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)				X
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			0	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:				X
Total Number:			0	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
romu		10%							

Total % relative cover of all invasives, collectively on site: 10 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.06	W077	0.45
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.787608	-78.271007	WD062TMM, PSS/PEM wetland	

General Comments: PSS/PEM wetland located in floodplain. Wetland has man-made features influencing it including culvert and artificial bed and bank features. Adjacent to W076, forest with maintained understory, and in active agricultural field. Wetland occurs in inactive agricultural field and on edge of forest (0.03 acres in ECL) and continues upslope of Project (0.02 acres delineated) beyond ECL. AA includes entire 0.05 acres of the PSS/PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Condition Category:								Total Score = SUM(%Areas*Scores)							
Scoring:	% ZOI Area:		0%		0%		60%		0%		30%		10%		Total Score:
	Score:		0		0		12		0		4		1		
	Total Sub-score:		0.00		0.00		7.20		0.00		1.20		0.10		

Comments: Area includes stream, other wetlands, and inactive agricultural field. Adjacent forest has maintained understory. Highway, railroad, dirt road, and residential development within 300 feet of AA.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												

Comments: No roadbeds present within 0-100 feet of AA.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												

								Condition Score				Weighting				Sub-Scores							
								a. Roadbed 0-100:				20				* (0.67)				13			
								b. Roadbed 100-300:				11				* (0.33)				4			
								Total Score:								17							

Comments: Highway, railroad, and dirt road leading to residential development on edge of ZOI.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																														
	Optimal					Suboptimal					Marginal					Poor															
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: One Invasive Species identified in wetland AA.

	Condition Category														CI = Total Score/40																
	Optimal					Suboptimal					Marginal					Poor															
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: Portion of AA located in maintained pipeline ROW.	a. Invasive Sub-Score:	13	Total Score	0.63
	b. Vegetation Sub-Score:	12	25	

4. Hydrologic Modification Index

	Condition Category														CI = Total Score/20																
	Optimal					Suboptimal					Marginal					Poor															
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: Two stressors identified due to culverts and portion of AA in maintained pipeline ROW.	Score:	14		0.70
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5. Sediment Stressor Index

	Condition Category														CI = Total Score/20																
	Optimal					Suboptimal					Marginal					Poor															
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: No stressors identified.	Score:	20		1.00
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal					Poor				
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category														CI = Total Score/40					
	Optimal					Suboptimal					Marginal					Poor				
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.77
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/05/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD062TMM	W077	41.787608	-78.271007	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.	1	2	2
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	6		

Road Comments: Highway, railroad, and dirt road leading to residential development on edge of ZOI.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	2		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:				X
Total Number:			0	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
romu		10%							

Total % relative cover of all invasives, collectively on site: 10 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
algi2	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.01	W078	0.08

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.788483	-78.270692	WD064TMM, PEM wetland

General Comments: PEM wetland located in floodplain of perennial stream. Adjacent to W077 and W080. Wetland occurs on edge of maintained pipeline ROW and forest with maintained understorey (0.01 acres in ECL) and continues upslope of Project (0.08 acres delineated) beyond ECL. AA includes entire 0.08 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20				
	Optimal			Suboptimal			Marginal			Poor										
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)											
Scoring:	Condition Category:										Total Score:
	% ZOI Area:	0%	0%	60%	0%	20%	20%				
	Score:	0	0	12	0	4	1				
	Total Sub-score:	0.00	0.00	7.20	0.00	0.80	0.20	8.20			0.41

Comments: Area includes stream, other wetlands, and inactive agricultural field. Adjacent forest has maintained understorey. Highway, railroad, and development within 300 feet of AA.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20					
	Optimal			Suboptimal			Marginal			Poor											
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No roadbeds present within 0-100 feet of AA.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20					
	Optimal			Suboptimal			Marginal			Poor											
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

			Condition Score			Weighting			Sub-Scores					
			a. Roadbed 0-100:			20			* (0.67)			13		
			b. Roadbed 100-300:			11			* (0.33)			4		
						Total Score:			17			0.85		

Comments: Highway and dirt road leading to residential development on edge of ZOI.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One Invasive Species identified in wetland AA.

	Condition Category															CI = Total Score/40																			
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: AA located near maintained pipeline ROW and forest with maintained understorey.

a. Invasive Sub-Score:	8	Total Score	25	0.63
b. Vegetation Sub-Score:	17			

4. Hydrologic Modification Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: AA located near maintained pipeline ROW and forest with maintained understorey.

Score:	17			0.85
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5. Sediment Stressor Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No stressors identified.

Score:	20			1.00
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	40	1.00
b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.79
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/05/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD064TMM	W078	41.788483	-78.270692		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.	1	2	2
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	0			100-300 ft.	6		

Road Comments: Highway, railroad, dirt road, and development within 300 feet of AA.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)			X	
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			1	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)			X	
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			1	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:			X	
Total Number:			0	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phar			30%						

Total % relative cover of all invasives, collectively on site: 30 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.01	W080, Pond 07	0.16
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.788357	-78.270172	WD064TMM, PEM wetland and Pond 07	

General Comments: PEM wetland located in floodplain between perennial stream and railroad tracks. Intermittent stream runs through wetland and connects to perennial stream and pond. Beaver activity present creating pond. Pond takes up about 25 percent of the wetland. Wetland adjacent to W078, W079, W081, and W082. Wetland and pond occur on edge of maintained pipeline ROW and forest with maintained understory (0.01 acres in ECL) and continues downslope of Project (0.15 acres delineated) beyond ECL. AA includes 0.16 acres of the PEM wetland and pond.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1							
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																	Total Score = SUM(%Areas*Scores)											
Scoring:	Condition Category:																Total Score:											
	% ZOI Area:		0%	0%	50%	0%	20%	30%	7.10																			
	Score:		0	0	12	0	4	1																				
Total Sub-score:		0.00	0.00	6.00	0.00	0.80	0.30																					
Comments: Area includes streams, other wetlands, and maintained pipeline ROW. Adjacent forest has maintained understory. Highway, railroad, and development within 300 feet of AA.																												

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											
Comments: Railroad within 100 feet of AA.																																

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20																
	Optimal				Suboptimal				Marginal				Poor																				
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Condition Score</th> <th>Weighting</th> <th>Sub-Scores</th> </tr> <tr> <td>a. Roadbed 0-100:</td> <td>16</td> <td>*(0.67)</td> <td>11</td> </tr> <tr> <td>b. Roadbed 100-300:</td> <td>9</td> <td>*(0.33)</td> <td>3</td> </tr> <tr> <td colspan="2">Total Score:</td> <td></td> <td>14</td> </tr> </table>																	Condition Score		Weighting	Sub-Scores	a. Roadbed 0-100:	16	*(0.67)	11	b. Roadbed 100-300:	9	*(0.33)	3	Total Score:			14	0.68
Condition Score		Weighting	Sub-Scores																														
a. Roadbed 0-100:	16	*(0.67)	11																														
b. Roadbed 100-300:	9	*(0.33)	3																														
Total Score:			14																														
Comments: Highway, railroad, dirt road, gravel road, and development within 300 feet of AA.																																	

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1							
Comments: One Invasive Species identified in wetland AA.																												

	Condition Category
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Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

b. Vegetation Stressor Presence	Optimal					Suboptimal					Marginal					Poor					CI = Total Score/40													
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.						High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														

Comments: AA located in forest with maintained understory.		a. Invasive Sub-Score:	8	Total Score	
		b. Vegetation Sub-Score:	17	25	0.63

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category															CI = Total Score/20																		
	Optimal					Suboptimal					Marginal						Poor																	
High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														

Comments: AA located in forest with maintained understory.		Score:	17		0.85
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category															CI = Total Score/20																		
	Optimal					Suboptimal					Marginal						Poor																	
High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														

Comments: No stressors identified.		Score:	20		1.00
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category															CI = Total Score/40					
	Optimal					Suboptimal					Marginal						Poor				
No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.					
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b. Contaminant / Toxicity Stressor Presence	Condition Category															CI = Total Score/40					
	Optimal					Suboptimal					Marginal						Poor				
No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.					
		a. Eutrophication Score	20	Total Score:	
		b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.		Overall Condition Index:	0.75		0.75
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/05/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD064TMM	W080, Pond 07	41.788357	-78.270172	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.	1	1	1
Dirt Road	0-100 ft.		2	0	100-300 ft.	1	2	2
Railroad	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		7	

Road Comments: Highway, railroad, dirt road, and development within 300 feet of AA.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)			X	
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:		1		
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)			X	
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:		1		
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:			X	
Total Number:		0		
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:		0		
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:		0		
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phar			30%						

Total % relative cover of all invasives, collectively on site: 30 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
algl2	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
glidi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.13	W083	0.16

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
J. Miner, C. Maier, M. Groomer	41.790866	-78.266353	WD066JLM, PEM wetland

General Comments: Wetland located within the swale adjacent to stream. Seeps contribute to intermittent channel. Site impacted by hoof shearing and cattle grazing, creating micro hummocks/tussocks. PEM wetland in grazed pasture (0.13 acres in ECL). Impacts occur only to the PEM wetland area in the Project area. AA includes entire 0.16 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)															
2. Estimate the % area within each condition category. Calculators are provided for you below.																									
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.										Total Score: 6.40															
Condition Category:																									
Scoring:		% ZOI Area:		0%		30%		0%												0%		60%		10%	
Score:		0		13		0		0												4		1			
Total Sub-score:		0.00		3.90		0.00		0.00		2.40		0.10		6.40											

Comments: Area includes grazed pasture, residential development, paved roads, other wetlands, and streams. Adjacent forest has maintained understorey.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Dirt road to residential development within 100 feet of wetland.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
Condition Score														Weighting		Sub-Scores						
														a. Roadbed 0-100:		17		*(0.67)		11		
														b. Roadbed 100-300:		14		*(0.33)		5		
														Total Score:		16						

Comments: Dirt road to residential development and paved road within 300 feet of wetland.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					> 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Grazed cattle pasture	a. Invasive Sub-Score:	20	Total Score	0.73
	b. Vegetation Sub-Score:	9	29	

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Grazed cattle pasture	Score:	17	0.85
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to pasture	Score:	17	0.85
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.76
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/05/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD066JLM	W083	41.790866	-78.266353		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		4	

Road Comments: Dirt road to residential development within 100 feet and paved road within 300 feet of wetland.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)	X			
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			4	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.01	W082	0.15
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.788754	-78.269234	WD065TMM, PEM wetland	

General Comments: PEM wetland located in meadow at toe of slope, and is connected to a ditch (0.01 acres in ECL). Impacts occur only to the wetland area in the Project area. AA includes entire 0.15 acre of PEM wetland. Wetland delineated as 0.15 acres and impacts are 0.000351 acres (impact size rounded up for form).

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20					
	Optimal			Suboptimal			Marginal			Poor											
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.			High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)											
2. Estimate the % area within each condition category. Calculators are provided for you below.																					
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																					
Scoring:	Condition Category:															Total Score:					
	% ZOI Area:																				
	Score:																				
Total Sub-score:															4.55	0.23					

Comments: Area includes ditches, a stream, existing pipeline ROW, forest with maintained understorey, paved roads, residential areas, open water, and cleared land.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20													
	Optimal			Suboptimal			Marginal			Poor																			
	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.							
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								
Condition Score															Weighting					Sub-Scores									
a. Roadbed 0-100:															9					* (0.67)					6				
b. Roadbed 100-300:															9					* (0.33)					3				
															Total Score:					9					0.45				

Comments: Existing ROW and paved roads present.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category															CI = Total Score/20								
	Optimal			Suboptimal			Marginal			Poor														
	High Optimal: No invasives present.			Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.			Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.			Low Marginal: >30% but less than 50% of the total AA contains invasive species.			Poor: > 50% of the total AA contains invasive species.					
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
Condition Category															Marginal					Poor				
b. Vegetation															Marginal					Poor				

Comments: No Invasive Species identified in wetland AA.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.	High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.	High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	CI = Total Score/40
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	

Comments: Maintained pipeline ROW, grazed pasture, residential areas that are mowed and maintained.	a. Invasive Sub-Score:	20	Total Score	29	0.73
	b. Vegetation Sub-Score:	9			

4. Hydrologic Modification Index

Condition Category								CI = Total Score/20
	Optimal	Suboptimal	Marginal	Poor				
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.	High Suboptimal: Two hydrologic stressors present within the AA boundary.	Low Suboptimal: Three hydrologic stressors present within the AA boundary.	High Marginal: Four hydrologic stressors present within the AA boundary.	Low Marginal: Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1				0.55
Comments: Maintenance on pipeline ROW, culverts and ditches, runoff from road.								Score: 11

5. Sediment Stressor Index

Condition Category								CI = Total Score/20
	Optimal	Suboptimal	Marginal	Poor				
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.	High Suboptimal: Two sediment stressors present within the AA boundary.	Low Suboptimal: Three sediment stressors present within the AA boundary.	High Marginal: Four sediment stressors present within the AA boundary.	Low Marginal: Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1				0.85
Comments: One stressor identified due to ROW maintenance.								Score: 17

6. Water Quality Stressor Index

Condition Category								CI = Total Score/40
	Optimal	Suboptimal	Marginal	Poor				
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1				
Comments: No stressors identified.								

Condition Category								CI = Total Score/40
	Optimal	Suboptimal	Marginal	Poor				
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1				
Comments: No stressors identified.								
								a. Eutrophication Score 20 Total Score:
								b. Contaminant Score 20 40

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.63
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/05/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD065TMM	W082	41.788754	-78.269234	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	2	2	4	100-300 ft.	2	2	4
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	2	2	4	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		8		100-300 ft.		8	

Road Comments: Existing ROW and paved roads present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)	X			
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			4	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods	X	3		
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	8		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			3	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.10	W086	0.10
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, C. Maier, M. Groomer		41.792551	-78.264545	WD066JLM, PEM wetland	

General Comments: PEM wetland in grazed pasture and is connected to ephemeral stream (0.10 acres in ECL). Impacts occur only to the wetland area in the Project area. AA includes entire 0.10 acre of PEM wetland. Wetland delineated as 0.07 acres and impacts are 0.06 acres (impact size and AA size rounded for form).

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20							
	Optimal			Suboptimal			Marginal			Poor													
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.			High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)													
2. Estimate the % area within each condition category. Calculators are provided for you below.																							
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																							
Scoring:	Condition Category:															Total Score:							
	% ZOI Area:			5%			15%			5%			15%				30%			30%			
	Score:			15			13			9			7				4			1			
Total Sub-score:			0.75			1.95			0.45			1.05			1.20			0.30			5.70		
0.29																							

Comments: Area includes a stream, existing pipeline ROW, forest with maintained understorey, paved road, residential areas, and cleared land.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20								
	Optimal			Suboptimal			Marginal			Poor														
	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
										Condition Score					Weighting					Sub-Scores				
										a. Roadbed 0-100:					11					* (0.67)				
b. Roadbed 100-300:					11					* (0.33)					4									
										Total Score:					11					0.55				

Comments: Existing ROW and paved road present.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category															CI = Total Score/20					
	Optimal			Suboptimal			Marginal			Poor											
	High Optimal: No invasives present.			Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.			Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.			Low Marginal: >30% but less than 50% of the total AA contains invasive species.			Poor: > 50% of the total AA contains invasive species.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
0.55																					

Comments: No Invasive Species identified in wetland AA.

b. Vegetation	Condition Category														
	Optimal			Suboptimal			Marginal			Poor					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.	High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.	High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	CI = Total Score/40													
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Maintained pipeline ROW, grazed pasture, residential areas that are mowed and maintained.																					
								a. Invasive Sub-Score: 20	Total Score: 29	0.73											
								b. Vegetation Sub-Score: 9													

4. Hydrologic Modification Index

Condition Category										CI = Total Score/20											
Optimal		Suboptimal			Marginal			Poor													
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.	High Suboptimal: Two hydrologic stressors present within the AA boundary.	Low Suboptimal: Three hydrologic stressors present within the AA boundary.	High Marginal: Four hydrologic stressors present within the AA boundary.	Low Marginal: Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.70
Comments: Maintenance on pipeline ROW and runoff from road								Score: 14													

5. Sediment Stressor Index

Condition Category										CI = Total Score/20											
Optimal		Suboptimal			Marginal			Poor													
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.	High Suboptimal: Two sediment stressors present within the AA boundary.	Low Suboptimal: Three sediment stressors present within the AA boundary.	High Marginal: Four sediment stressors present within the AA boundary.	Low Marginal: Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.														
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85
Comments: One stressor identified due to ROW maintenance.								Score: 17													

6. Water Quality Stressor Index

Condition Category										CI = Total Score/40											
Optimal		Suboptimal			Marginal			Poor													
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.			Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.													
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: No stressors identified.																					

Condition Category										CI = Total Score/40											
Optimal		Suboptimal			Marginal			Poor													
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.			Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.													
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: No stressors identified.								a. Eutrophication Score: 20	Total Score: 40	1.00											
								b. Contaminant Score: 20													

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.69
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/05/17	J. Miner, C. Maier, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD066JLM	W086	41.792551	-78.264545	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	2	2	4	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		6		100-300 ft.		6	

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)	X			
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:		4		
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:		2		
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:		1		
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:		0		
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:		0		
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.33	W088	1.00
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, C. Maier, M. Groomer		41.79567	-78.264205	WD064JLM, PEM wetland	

General Comments: Mowed hayfield, nearly 100 percent reed canary grass. Depression inundated during wet season. PEM located in agricultural field (0.33 acres in ECL). Wetland continues upslope and downslope of Project (1.47 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the Project area. AA includes 0.33 acres of PEM within and 0.67 acres beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)					
Condition Category:															Total Score:					
% ZOI Area:																0.42				
Score:																				
Total Sub-score:															8.40					

Comments: Area includes maintained pipeline ROW with access road/ATV trail, other access road, wetlands, and streams. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor													
No roadbeds present within 100 feet of the AA boundary	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						
Condition Categories															Total Score:											
a. Roadbed 0-100:																17										
b. Roadbed 100-300:																17										
Condition Score															17											
Weighting															11											
Sub-Scores															6											
Total Score:															17											

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
	a. Invasive Species Presence	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.
SCORE:	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						

Comments: One Invasive Species identified in wetland AA.

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
	b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.
SCORE:	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40					

Comments: Mowed hayfield	a. Invasive Sub-Score:	1	Total Score		10
	b. Vegetation Sub-Score:	9			0.25

4. Hydrologic Modification Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
	Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.
SCORE:	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20					

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.	Score:	17		0.85
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5. Sediment Stressor Index

	Condition Category																									
	Optimal				Suboptimal				Marginal				Poor													
	Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.
SCORE:	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20					

Comments: Two stressors identified due to hayfield	Score:	14		0.70
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.						
SCORE:	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																				
	Optimal				Suboptimal				Marginal				Poor								
	b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.							
SCORE:	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40

Comments: No stressors identified.	a. Eutrophication Score	20	Total Score:		1.00
	b. Contaminant Score	20			40

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.68
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/05/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD064JLM	W088	41.79567	-78.264205	Pipeline access road/ATV trail	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)	X			
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			4	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			2	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phar				100					

Total % relative cover of all invasives, collectively on site: 100 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
algi2	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.80	W091	1.00

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
J. Miner, C. Maier, M. Groomer	41.795333	-78.254476	WD058JLM, PSS wetland

General Comments: Large PSS wetland in a backwater of the Allegheny River. Forested areas occur outside of the plot. PSS located 0.80 acres in ECL and continues downslope of Project (4.2 acres delineated) beyond ECL. Impacts occur only to the PSS wetland area in the Project area. AA includes 0.80 acres of PSS within and 0.20 acres beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor											
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

	Condition Category:	Total Score = SUM(%Areas*Scores)															
Scoring:	% ZOI Area:	0%	40%	10%	10%	20%	20%	Total Score:									
	Score:	0	13	9	7	4	1										
	Total Sub-score:	0.00	5.20	0.90	0.70	0.80	0.20					7.80	0.39				

Comments: Area includes maintained pipeline ROW, paved roads, development, wetlands, and streams. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Maintained pipeline ROW and dirt road to residential development within 100 feet of wetland.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								
																Condition Score	Weighting	Sub-Scores										
																a. Roadbed 0-100:	14	*(0.67)	9									
																b. Roadbed 100-300:	6	*(0.33)	2									
																Total Score:		11				0.57						

Comments: Maintained pipeline ROW, dirt road to residential development, and paved roads within 300 feet of wetland.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
High Optimal: No invasives present. Low Optimal: <5% of the total AA contains invasive species. High Suboptimal: >5% but less than 10% of the total AA contains invasive species. Low Suboptimal: >10% but less than 20% of the total AA contains invasive species. High Marginal: >20% but less than 30% of the total AA contains invasive species. Low Marginal: >30% but less than 50% of the total AA contains invasive species. > 50% of the total AA contains invasive species.																					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
High Optimal: No vegetation stressors present within the AA boundary. Low Optimal: One vegetation stressor present within the AA boundary. High Suboptimal: Two vegetation stressors present within the AA boundary. Low Suboptimal: Three vegetation stressors present within the AA boundary. High Marginal: Four vegetation stressors present within the AA boundary. Low Marginal: Five vegetation stressors present within the AA boundary. Greater than five vegetation stressors present within the AA boundary.																			CI = Total Score/40		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

	a. Invasive Sub-Score:	20	Total Score	40	1.00
	b. Vegetation Sub-Score:	20			

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
High Optimal: No hydrologic stressors present within the AA boundary. Low Optimal: One hydrologic stressor present within the AA boundary. High Suboptimal: Two hydrologic stressors present within the AA boundary. Low Suboptimal: Three hydrologic stressors present within the AA boundary. High Marginal: Four hydrologic stressors present within the AA boundary. Low Marginal: Five hydrologic stressors present within the AA boundary. Greater than five hydrologic stressors present within the AA boundary.																			CI = Total Score/20		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

	Score:	20	1.00
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
High Optimal: No sediment stressors present within the AA boundary. Low Optimal: One sediment stressor present within the AA boundary. High Suboptimal: Two sediment stressors present within the AA boundary. Low Suboptimal: Three sediment stressors present within the AA boundary. High Marginal: Four sediment stressors present within the AA boundary. Low Marginal: Five sediment stressors present within the AA boundary. Greater than five sediment stressors present within the AA boundary.																			CI = Total Score/20		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

	Score:	20	1.00
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
No eutrophication stressors present within the AA boundary. One eutrophication stressors present within the AA boundary. Two eutrophication stressors present within the AA boundary. Three eutrophication stressors present within the AA boundary.																					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																				
	Optimal					Suboptimal					Marginal					Poor					
No contaminant / toxicity stressors present within the AA boundary. One contaminant / toxicity stressors present within the AA boundary. Two contaminant / toxicity stressors present within the AA boundary. Three contaminant / toxicity stressors present within the AA boundary.																			CI = Total Score/40		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	40	1.00
	b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.83
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/05/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD058JLM	W091	41.795333	-78.254476		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.	1	4	4
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	2	2	4	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		10	

Road Comments: Dirt roads to residential development within 100 feet and paved roads within 300 feet of wetland.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)			X	
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)			X	
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			0	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)			X	
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)			X	
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			0	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:			X	
Total Number:			0	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/05/17	0.38	W091A	0.80
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, C. Maier, M. Groomer		41.795924	-78.255239	WD058JLM, PEM wetland	

General Comments: PEM wetland in a backwater of the Allegheny River. Forested areas occur outside of the plot and connected to PSS wetland. PEM wetland in maintained pipeline ROW (0.38 acres in ECL) and continues upslope of Project (0.42 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the disturbed ROW. AA includes 0.38 acres of PEM within and 0.42 acres beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20																							
	Optimal					Suboptimal					Marginal						Poor																						
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.													
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																			
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)																								
Condition Category:															Total Score:																								
Scoring:	% ZOI Area:					0%					40%					10%					10%					20%					20%								
	Score:					0					13					9					7					4					1								
	Total Sub-score:					0.00					5.20					0.90					0.70					0.80					0.20					7.80			
Comments: Area includes paved roads, development, wetlands, and streams. Adjacent forest has maintained understory.																																							

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments: Dirt roads to residential development within 100 feet of wetland.																																			

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments: Dirt roads to residential development and paved roads within 300 feet of wetland.																																			

Condition Score															Weighting					Sub-Scores				
a. Roadbed 0-100:										14					* (0.67)					9				
b. Roadbed 100-300:										6					* (0.33)					2				
Total Score:															11									

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					> 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	0.80
	b. Vegetation Sub-Score:	12	32	

4. Hydrologic Modification Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

	Score:	17	CI = Total Score/20	0.85
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5. Sediment Stressor Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17	CI = Total Score/20	0.85
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.74
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			10/05/17	J. Miner, C. Maier, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD058JLM	W091A	41.795924	-78.255239		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.	1	4	4
2 Lane Paved	0-100 ft.		2	0	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	2	2	4	100-300 ft.	2	2	4
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		10	

Road Comments: Dirt roads to residential development within 100 feet and paved roads within 300 feet of wetland.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/05/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	09/30/17	0.04	W094	0.46	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, F. Davis, M. Groomer		41.795241	-78.250459	WD034JLM, PEM wetland		

General Comments: Wetland is within a hayfield. Soils compacted by plow pan/operations. Wetland is the low end of the hayfield, intercepts drainage ditch. PEM wetland in agricultural field (0.04 acres in ECL) and continues downslope of Project (0.42 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the Project area. AA includes 0.46 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20						
	Optimal			Suboptimal					Marginal			Poor										
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.															Total Score = SUM(%Areas*Scores)												
2. Estimate the % area within each condition category. Calculators are provided for you below.																											
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																											
Scoring:	Condition Category:														Total Score:												
	% ZOI Area:		0%					0%			5%					5%				80%				10%			
	Score:		0					0			9			7			4			1							
Total Sub-score:		0.00					0.00			0.45			0.35			3.20			0.10				4.10	0.21			

Comments: Area includes paved road, development, wetlands, and ditches.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																
	Optimal			Suboptimal					Marginal			Poor																				
No roadbeds present within 100 feet of the AA boundary	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												

Comments: Paved road and dirt roads to residential development within 100 feet of wetland.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																
	Optimal			Suboptimal					Marginal			Poor																				
No roadbeds present within 100 - 300 feet of the AA boundary	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary			Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												
															Condition Score			Weighting			Sub-Scores											
															a. Roadbed 0-100:			9			* (0.67)			6								
															b. Roadbed 100-300:			9			* (0.33)			3								
															Total Score:			9			0.45											

Comments: Paved road and dirt roads to residential development within 300 feet of wetland.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																									
a. Invasive Species Presence	Condition Category																								
	Optimal					Suboptimal					Marginal		Poor												
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.			> 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

Comments: Two Invasive Species identified in wetland AA.

4. Hydrologic Modification Index																									
b. Vegetation Stressor Presence	Condition Category																								
	Optimal					Suboptimal					Marginal		Poor												
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.			High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.			Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

Comments: Agricultural field

a. Invasive Sub-Score:	3	Total Score	15	0.38
b. Vegetation Sub-Score:	12			

5. Sediment Stressor Index																									
Hydrologic Modification Stressor Presence	Condition Category																								
	Optimal					Suboptimal					Marginal		Poor												
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.			Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

Comments: Agricultural field and ditch

Score:	14			0.70
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6. Water Quality Stressor Index																									
Sediment Stressor Presence	Condition Category																								
	Optimal					Suboptimal					Marginal		Poor												
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.			Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					

Comments: Two stressors identified due to agricultural field.

Score:	14			0.70
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7. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal		Poor							
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.		Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

8. Water Quality Stressor Index																				
b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal		Poor							
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.		Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	40	1.00
b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score. **Overall Condition Index: 0.57**

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			09/30/17	J. Miner, F. Davis, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD034JLM	W094	41.795241	-78.250459	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	3	2	6	100-300 ft.	3	2	6
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		8		100-300 ft.		8	

Road Comments: Paved road and dirt roads within 100-300 feet of wetland.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		09/30/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods	X	1		
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			2	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phar				70					
hola	1								

Total % relative cover of all invasives, collectively on site: 71 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European watercress	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	09/30/17	0.01	W096	0.03

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.811266	-78.205338	WD041TMM, PEM wetland

General Comments: Intermittent stream drains into wetland. Wetland adjacent to perennial stream. PEM wetland located in existing pipeline ROW at valley bottom (0.004 acres in ECL) and continues upslope of Project (0.02 acres delineated) beyond ECL. AA includes entire 0.03 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Condition Category:	Total Score = SUM(%Areas*Scores)														0.31
Scoring:	% ZOI Area:	0%	0%	30%	0%	60%	10%							Total Score:	
	Score:	0	0	12	0	4	1								
	Total Sub-score:	0.00	0.00	3.60	0.00	2.40	0.10							6.10	

Comments: Area includes streams, maintained pipeline ROW, and clearcut forested area. Remainder of adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

														Condition Score	Weighting	Sub-Scores	0.85	
														a. Roadbed 0-100:	17	* (0.67)		11
														b. Roadbed 100-300:	17	* (0.33)		6
														Total Score:				17

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																										
a. Invasive Species Presence	Condition Category																									
	Optimal					Suboptimal					Marginal				Poor											
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						

Comments: One Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category														CI = Total Score/40											
	Optimal					Suboptimal					Marginal					Poor										
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.60					

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	7	Total Score	0.60
b. Vegetation Sub-Score:	17	24	

4. Hydrologic Modification Index																										
Hydrologic Modification Stressor Presence	Condition Category														CI = Total Score/20											
	Optimal					Suboptimal					Marginal					Poor										
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85					

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

Score:	17	
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5. Sediment Stressor Index																										
Sediment Stressor Presence	Condition Category														CI = Total Score/20											
	Optimal					Suboptimal					Marginal					Poor										
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85					

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17	
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal					Poor				
	No eutrophication stressors present within the AA boundary.	One eutrophication stressor present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				Four eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category														CI = Total Score/40						
	Optimal					Suboptimal					Marginal					Poor					
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				Four contaminant / toxicity stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1.00

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	1.00
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.74
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			09/30/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD041TMM	W096	41.811266	-78.205338	Pipeline access roads	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	2			100-300 ft.	2		

Road Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Dirt access road/atv trail used for pipeline inspection and maintenance.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		09/30/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)	X			
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			4	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	X			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:				X
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? YES NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phar			40%						

Total % relative cover of all invasives, collectively on site: 40 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	10/09/17	0.10	W101	0.69

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.819422	-78.193012	WD044TMM, PEM wetland

General Comments: PEM wetland located in active cow pasture in valley bottom and floodplain. Abutts intermittent stream, and is adjacent to W099 and W100. Wetland has 0.10 acres in ECL and continues downslope of Project (0.59 acres delineated) beyond ECL. AA includes entire 0.69 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)															
Scoring:	Condition Category:															Total Score:														
	% ZOI Area:																													
	Score:																													
Total Sub-score:															4.00	0.20														

Comments: Area includes streams, other wetlands, and active cow pasture lands.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No roadbeds present in ZOI.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
															Condition Score			Weighting			Sub-Scores														
															a. Roadbed 0-100:			20			* (0.67)			13											
															b. Roadbed 100-300:			20			* (0.33)			7											
															Total Score:			20			1.00														

Comments: No roadbeds present in ZOI.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																					
	Optimal					Suboptimal					Marginal			Poor								
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.			Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: No Invasive Species identified in wetland AA.

	Condition Category															CI = Total Score/40						
	Optimal					Suboptimal					Marginal			Poor								
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.			High Marginal: Four vegetation stressors present within the AA boundary.			Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Maintenance on agricultural land and active cow pasture.

a. Invasive Sub-Score:	20	Total Score		
b. Vegetation Sub-Score:	14	34	0.85	

4. Hydrologic Modification Index

	Condition Category															CI = Total Score/20						
	Optimal					Suboptimal					Marginal			Poor								
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.			Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: Maintenance on agricultural land and active cow pasture.

Score:	17	0.85
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5. Sediment Stressor Index

	Condition Category															CI = Total Score/20						
	Optimal					Suboptimal					Marginal			Poor								
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.			Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		

Comments: One stressor identified due to maintenance on agricultural land and active cow pasture.

Score:	17	0.85
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal			Poor						
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal			Poor						
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:		
b. Contaminant Score	20	40	1.00	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.79
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			10/09/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD044TMM	W101	41.819422	-78.193012	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.		2	0
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		0		100-300 ft.		0	

Road Comments: No roadbeds present in ZOI.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		10/09/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)	X			
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)				X
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)				X
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)				X
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:	X			
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
algi2	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	09/29/17	0.04	W112	0.08	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
T. Malecki, M. Groomer		41.883906	-77.955779	WD032TMM, PEM wetland		

General Comments: PEM wetland located on hillside in depression within existing ROW. Wetland is adjacent but not connected to W113 and W114. Wetland occurs in maintained pipeline ROW (0.04 acres in ECL) and continues downslope of Project (0.04 acres delineated) beyond ECL. AA includes entire 0.08 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Total Score = SUM(%Areas*Scores)								0.52
Condition Category:								
% ZOI Area:	0%	0%	80%	0%	20%	0%	Total Score:	
Score:	0	0	12	0	4	0		
Total Sub-score:	0.00	0.00	9.60	0.00	0.80	0.00	10.40	

Comments: Area includes stream, other wetlands, maintained pipeline ROW, and forest with maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																								
	Optimal					Suboptimal					Marginal						Poor																							
(within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary					Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																				

Comments: Maintained pipeline ROW.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																								
	Optimal					Suboptimal					Marginal						Poor																							
(within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary					Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																				

			Condition Score	Weighting	Sub-Scores
	a. Roadbed 0-100:		17	*(0.67)	11
	b. Roadbed 100-300:		17	*(0.33)	6
			Total Score:		17

Comments: Maintained pipeline ROW.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW.

	a. Invasive Sub-Score:	20	Total Score	32
	b. Vegetation Sub-Score:	12		
				0.80

4. Hydrologic Modification Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintenance on pipeline ROW

	Score:	17		0.85
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5. Sediment Stressor Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to maintenance on pipeline ROW

	Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	40
	b. Contaminant Score	20		
				1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.81

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			09/29/17	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD032TMM	W112	41.883906	-77.955779	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Maintained pipeline ROW

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		09/29/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	09/29/17	0.05	W114	0.14

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.884082	-77.95518	WD032TMM, PEM wetland

General Comments: PEM wetland located on hillside in depression within existing ROW. Wetland is adjacent but not connected to W112 and W113. Wetland occurs in maintained pipeline ROW (0.05 acres in ECL) and continues downslope of Project (0.09 acres delineated) beyond ECL. AA includes entire 0.14 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)						
Condition Category:														Total Score:						
% ZOI Area:		0%		0%		80%		0%		20%		0%								
Score:		0		0		12		0		4		0								
Total Sub-score:		0.00		0.00		9.60		0.00		0.80		0.00		10.40						
Comments: Area includes stream, other wetlands, maintained pipeline ROW, and forest with maintained understory.																				

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
Comments: Maintained pipeline ROW.																						

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor									
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
														Condition Score		Weighting		Sub-Scores				
														a. Roadbed 0-100:		17		* (0.67)		11		
														b. Roadbed 100-300:		17		* (0.33)		6		
														Total Score:		17		0.85				
Comments: Maintained pipeline ROW.																						

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal				Suboptimal					Marginal			Poor							
	High Optimal: No invasives present.		Low Optimal: <5% of the total AA contains invasive species.		High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.	Poor: > 50% of the total AA contains invasive species.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

4. Hydrologic Modification Index																					
b. Vegetation Stressor Presence	Condition Category																				
	Optimal				Suboptimal					Marginal			Poor								
	High Optimal: No vegetation stressors present within the AA boundary.		Low Optimal: One vegetation stressor present within the AA boundary.		High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.			High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.	Poor: Greater than five vegetation stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40
Comments: Maintained pipeline ROW.															a. Invasive Sub-Score:	20	Total Score		0.80		
															b. Vegetation Sub-Score:		12	32			

5. Sediment Stressor Index																					
Hydrologic Modification Stressor Presence	Condition Category																				
	Optimal				Suboptimal					Marginal			Poor								
	High Optimal: No hydrologic stressors present within the AA boundary.		Low Optimal: One hydrologic stressor present within the AA boundary.		High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.	Poor: Greater than five hydrologic stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20
Comments: Maintenance on pipeline ROW															Score:		17	0.85			

6. Water Quality Stressor Index																					
Sediment Stressor Presence	Condition Category																				
	Optimal				Suboptimal					Marginal			Poor								
	High Optimal: No sediment stressors present within the AA boundary.		Low Optimal: One sediment stressor present within the AA boundary.		High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.	Poor: Greater than five sediment stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20
Comments: One stressor identified due to maintenance on pipeline ROW															Score:		17	0.85			

7. Eutrophication Stressor Index																					
a. Eutrophication Stressor Presence	Condition Category																				
	Optimal				Suboptimal					Marginal			Poor								
	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40
Comments: No stressors identified.																					

8. Contaminant / Toxicity Stressor Index																					
b. Contaminant / Toxicity Stressor Presence	Condition Category																				
	Optimal				Suboptimal					Marginal			Poor								
	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.								
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40
Comments: No stressors identified.															a. Eutrophication Score		20	Total Score:		1.00	
															b. Contaminant Score		20	40			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.81
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			09/29/17	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD032TMM	W114	41.884082	-77.95518		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Maintained pipeline ROW

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		09/29/17		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/01/18	0.11	W124A, W124B	0.11
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, M. Groomer		41.845306	-78.064734	WD202JLM, PEM wetland	

General Comments: Small PEM wetlands in valley bottom/floodplain. Spring flow enters wetland. Perennial stream separates W124A and W124B. Wetlands tie to stream. PEM wetland in and adjacent to maintained ROW (0.11 acres in ECL). Impacts occur only to the PEM wetland area in the Project area. AA includes entire 0.11 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)															
Scoring:	Condition Category:																				Total Score:									
	% ZOI Area:		0%		5%		5%		10%		75%		5%																	
	Score:		0		13		9		7		4		1									4.85								
Total Sub-score:		0.00		0.65		0.45		0.70		3.00		0.05		4.85						0.24										

Comments: Area includes paved road, residential area, other wetlands, a stream, and maintained ROW.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments: Paved road and maintained ROW																																			
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments: Paved road and maintained ROW																																			
Condition Score															Weighting					Sub-Scores															
										a. Roadbed 0-100:					14					* (0.67)					9										
										b. Roadbed 100-300:					14					* (0.33)					5										
															Total Score:					14					0.70										

Wetland Condition Assessment Form

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Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No invasives present.		Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category														CI = Total Score/40					
	Optimal					Suboptimal					Marginal					Poor				
	High Optimal: No vegetation stressors present within the AA boundary.		Low Optimal: One vegetation stressor present within the AA boundary.			High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.			High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.			Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	20	Total Score	0.80
b. Vegetation Sub-Score:	12	32	

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category														CI = Total Score/20					
	Optimal					Suboptimal					Marginal					Poor				
	High Optimal: No hydrologic stressors present within the AA boundary.		Low Optimal: One hydrologic stressor present within the AA boundary.			High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.			Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

Score:	17	
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5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category														CI = Total Score/20					
	Optimal					Suboptimal					Marginal					Poor				
	High Optimal: No sediment stressors present within the AA boundary.		Low Optimal: One sediment stressor present within the AA boundary.			High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.			Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17	
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category														CI = Total Score/40					
	Optimal					Suboptimal					Marginal					Poor				
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category														CI = Total Score/40					
	Optimal					Suboptimal					Marginal					Poor				
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	1.00
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.74
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/01/18	J. Miner, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD202JLM	W124A, W124B	41.845306	-78.064734	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Paved road and maintained ROW

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/01/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	08/01/18	0.12	W125	0.44	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, M. Groomer		41.845733	-78.067454	WD202JLM, PEM wetland		

General Comments: Small PEM wetland in valley bottom/floodplain. Spring flow enters wetland. Drainage ditch from upstream residential area also enters site. Wetland ties to stream which is lateral extent of wetland. PEM wetland in maintained ROW and residential area (0.12 acres in ECL). Wetland continues upslope and downslope of Project (0.32 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the Project area. AA includes entire 0.44 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)																				
Scoring:	Condition Category:																				Total Score:														
	% ZOI Area:		0%		10%		5%		5%		75%		5%																						
	Score:		0		13		9		7		4		1									5.15													
Total Sub-score:		0.00		1.30		0.45		0.35		3.00		0.05								0.26															

Comments: Area includes paved road, residential area, another wetland, a ditch, and maintained ROW.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20							
	Optimal					Suboptimal					Marginal						Poor						
	High Optimal: No roadbeds present within 100 feet of the AA boundary		Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
Comments: Paved road and maintained ROW																							
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20							
	Optimal					Suboptimal					Marginal						Poor						
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary		Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
Comments: Paved road and maintained ROW																							
Condition Score															Weighting		Sub-Scores						
										a. Roadbed 0-100:		14		* (0.67)		9							
										b. Roadbed 100-300:		14		* (0.33)		5							
										Total Score:		14		0.70									

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																	
	Optimal					Suboptimal					Marginal						Poor																	
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.						Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																	
	Optimal					Suboptimal					Marginal						Poor																	
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.						Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40													

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	32	0.80
	b. Vegetation Sub-Score:	12			

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																	
	Optimal					Suboptimal					Marginal						Poor																	
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.						Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20													

Comments: Within ROW alteration caused by pipeline maintenance and ATV use. Drainage ditch from residential area connected to wetland.

	Score:	14	0.70
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																	
	Optimal					Suboptimal					Marginal						Poor																	
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.						Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/20													

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17	0.85
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																				
	Optimal					Suboptimal					Marginal						Poor				
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.						Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																				
	Optimal					Suboptimal					Marginal						Poor				
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.						Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	CI = Total Score/40

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	40	1.00
	b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

	Overall Condition Index:	0.72
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/01/18	J. Miner, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD202JLM	W125	41.845733	-78.067454	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Paved road and maintained ROW

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/01/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods	X	1		
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

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Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/02/18	0.03	W126C	0.07
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, M. Groomer		41.767178	-78.315141	WD204JLM, PEM wetland	

General Comments: PEM seep/old seasonal channel. Seep occurs at base of terrace slope/floodplain break. Distinct topographic break. PEM adjacent to maintained pipeline ROW (0.03 acres in ECL). Wetland continues upslope of Project (0.04 acres delineated) beyond ECL. Impacts occur only to the PEM wetland area in the Project area. AA includes 0.07 acres of PEM within and beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20						
	Optimal				Suboptimal					Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.	High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.	Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.														Total Score = SUM(%Areas*Scores)							
2. Estimate the % area within each condition category. Calculators are provided for you below.																					
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																					
Condition Category:															Total Score:						
Scoring:	% ZOI Area:	0%				60%					10%				10%	20%	0%				
	Score:	0				13					9				7	4	0				
	Total Sub-score:	0.00				7.80					0.90				0.70	0.80	0.00	10.20			
Comments: Area includes maintained pipeline ROW with access road/ATV trail, other access roads, wetlands, and streams. Adjacent forest has maintained understory.																					

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20						
	Optimal				Suboptimal					Marginal				Poor							
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.	High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.	Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
														Condition Score		Weighting		Sub-Scores			
														a. Roadbed 0-100:		17		* (0.67)		11	
														b. Roadbed 100-300:		11		* (0.33)		4	
														Total Score:		15					
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting. Additional dirt access roads within 300 feet of wetland.																					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.	Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.	Low Marginal: >30% but less than 50% of the total AA contains invasive species.			> 50% of the total AA contains invasive species.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category														CI = Total Score/40					
	Optimal					Suboptimal					Marginal					Poor				
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.				Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	20	Total Score	0.80
	b. Vegetation Sub-Score:	12	32	

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category														CI = Total Score/20					
	Optimal					Suboptimal					Marginal					Poor				
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.	Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.	Low Marginal: Five hydrologic stressors present within the AA boundary.				Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

	Score:	17	0.85
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5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category														CI = Total Score/20					
	Optimal					Suboptimal					Marginal					Poor				
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.	Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.	Low Marginal: Five sediment stressors present within the AA boundary.				Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17	0.85
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal					Poor				
	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category														CI = Total Score/40					
	Optimal					Suboptimal					Marginal					Poor				
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.79
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/02/18	J. Miner, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD204JLM	W126C	41.767178	-78.315141	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	3	2	6
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		6	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/02/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	08/03/18	0.14	W127	1.00	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, M. Groomer		41.760453	-78.337957	WD207JLM, PFO and PEM wetland		

General Comments: Wetland/upland mosaic that includes approximately 20-30 percent uplands. Wetland depressions with upland hummocks. PFO wetland in maintained pipeline ROW (0.14 acres in ECL). Wetland continues beyond existing ROW, upslope of Project (0.22 acres delineated) beyond ECL. Connected to PEM wetland within Project area and continues downslope of the Project (0.33 acres delineated) beyond ECL. PEM wetland is connected to another PFO wetland which has no impacts and does not occur within the Project area. Impacts occur only to the PFO and PEM wetland area in the disturbed ROW. AA includes 0.59 acres of PFO and PEM within the Project area and 0.41 acres beyond the Project area.

1. Wetland Zone of Influence Condition Index																					
Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																				
	Optimal			Suboptimal			Marginal			Poor											
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.			High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.			Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.										Total Score = SUM(%Areas*Scores)											
Scoring:	Condition Category:																				
	% ZOI Area:		0%		60%		10%		10%		20%		0%						Total Score:		
	Score:		0		13		9		7		4		0						10.20		
Total Sub-score:		0.00		7.80		0.90		0.70		0.80		0.00						10.20		0.51	

Comments: Area includes maintained pipeline ROW with access road/ATV trail and other wetlands. Adjacent forest has maintained understory.

2. Roadbed Presence Index																								
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																							
	Optimal			Suboptimal			Marginal			Poor														
	High Optimal: No roadbeds present within 100 feet of the AA boundary			Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																							
	Optimal			Suboptimal			Marginal			Poor														
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary			Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.			Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
										Condition Score		Weighting		Sub-Scores										
										a. Roadbed 0-100:		17		* (0.67)		11								
										b. Roadbed 100-300:		17		* (0.33)		6								
												Total Score:		17						0.85				

Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

a. Invasive Sub-Score:	13	Total Score	
b. Vegetation Sub-Score:	12	25	0.63

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Within ROW alteration caused by pipeline maintenance and ATV use.

Score:	17	
		0.85

5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to ROW maintenance and ATV use.

Score:	17	
		0.85

6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	
b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index: 0.78

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/03/18	J. Miner, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD207JLM	W127	41.760453	-78.337957	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/03/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
mivi		10							

Total % relative cover of all invasives, collectively on site: 10 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/07/18	0.10	W134A	1.00
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, B. Shamblin, M. Groomer		41.259983	-78.351378	RW227JLM, PEM wetland	
General Comments: Large PEM wetland in maintained ROW (0.10 acres in ECL). Impacts occur only to the wetland area in the Project area. AA includes 1.00 acre of PEM wetland, wetland delineated as 6.62 acres.					

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor											
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																Total Score = SUM(%Areas*Scores)								
Scoring:	Condition Category:																Total Score:							
	% ZOI Area:																							
	Score:																							
Total Sub-score:																6.90	0.35							

Comments: Area includes another wetland, existing pipeline ROW, forest with maintained understory, paved road, and cleared land.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								
Condition Score																13	Weighting	* (0.67)	Sub-Scores	9								
a. Roadbed 0-100:																13	* (0.33)	4	Total Score:	13								
b. Roadbed 100-300:																13	* (0.33)	4	Total Score:	13								

Comments: Existing ROW and paved road present.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				> 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				
Condition Category																Optimal	Suboptimal	Marginal	Poor					
b. Vegetation																								

Comments: No Invasive Species identified in wetland AA.

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/07/18	J. Miner, B. Shamblin, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
RW227JLM	W134A	41.259983	-78.351378	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/07/18		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			2	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)	
456456	NFG FM100 Project	08/07/18	0.16	W135	1.20	
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:		
J. Miner, B. Shamblyn, M. Groomer		41.253369	-78.362233	WD228JLM, PEM wetland		

General Comments: Wetland begins in ROW at culvert under highway. Extends in ROW as a narrow channel with wetland fringe to valley bottom. Valley bottom outside of ROW is wetland. Wetland extends in ROW to a water box which diverts flow off ROW. PEM wetland in and adjacent to maintained ROW (0.16 acres in ECL). Impacts occur only to the PEM wetland area in the Project area. AA includes 0.16 acres of PEM within and 1.04 acres beyond the Project area.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)															
Scoring:	Condition Category:																				Total Score:									
	% ZOI Area:		0%		80%		0%		0%		20%		0%																	
	Score:		0		13		0		0		4		0																	
Total Sub-score:		0.00		10.40		0.00		0.00		0.80		0.00		11.20						0.56										

Comments: Area includes maintained pipeline ROW with access road/ATV trail. Adjacent forest has maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																																			
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments: Pipeline ROW maintenance road, two-track, vegetated, with rutting.																																			
Condition Score															Weighting					Sub-Scores															
										a. Roadbed 0-100:					17					* (0.67)					11										
										b. Roadbed 100-300:					17					* (0.33)					6										
															Total Score:					17					0.85										

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No invasives present.		Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One Invasive Species identified in wetland AA.

Condition Category																				
b. Vegetation Stressor Presence	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No vegetation stressors present within the AA boundary.		Low Optimal: One vegetation stressor present within the AA boundary.			High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.			High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.					
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

Comments: Maintained pipeline ROW and maintenance road/ATV trail.

	a. Invasive Sub-Score:	14	Total Score:	26	0.65
	b. Vegetation Sub-Score:	12			

Condition Category																				
Hydrologic Modification Stressor Presence	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No hydrologic stressors present within the AA boundary.		Low Optimal: One hydrologic stressor present within the AA boundary.			High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.					
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

Comments: Within ROW alteration caused by pipeline maintenance and ATV use. Drainage ditch and culvert connected to wetland.

	Score:	12	0.60
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Condition Category																				
Sediment Stressor Presence	Optimal					Suboptimal					Marginal				Poor					
	High Optimal: No sediment stressors present within the AA boundary.		Low Optimal: One sediment stressor present within the AA boundary.			High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.					
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

Comments: One stressor identified due to ROW maintenance and ATV use.

	Score:	17	0.85
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Condition Category																				
a. Eutrophication Stressor Presence	Optimal					Suboptimal					Marginal				Poor					
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.					
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

Comments: No stressors identified.

Condition Category																				
b. Contaminant / Toxicity Stressor Presence	Optimal					Suboptimal					Marginal				Poor					
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.					
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.75
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/07/18	J. Miner, B. Shamblin, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD228JLM	W135	41.253369	-78.362233	Pipeline access road/ATV trail

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	

Road Comments: Unimproved access road/ATV trail used for pipeline inspection and maintenance. Not an improved road, no gravel, no grading.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/07/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods	X	1		
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			3	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
mivi		10							

Total % relative cover of all invasives, collectively on site: 10 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/07/18	0.01	W137	0.01
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, B. Shamblin, M. Groomer		41.241145	-78.418386	RW232JLM, PEM wetland	
General Comments: PEM wetland connected to intermittent and perennial stream. Wetland in and adjacent to maintained ROW (0.003 acres in ECL). Impacts occur only to the wetland area in the Project area. AA includes 0.007 acres of PEM wetland (impact and AA size rounded to 0.01 for form).					

1. Wetland Zone of Influence Condition Index																																
Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																			CI = Total Score/20												
	Optimal					Suboptimal					Marginal					Poor																
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.					High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)																						
2. Estimate the % area within each condition category. Calculators are provided for you below.																																
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																																
Scoring:	Condition Category:																			Total Score:												
	% ZOI Area:																															
	5%					10%					30%					40%					10%											
	Score: 15					9					7					4					1				6.10							
Total Sub-score: 0.75					0.65					0.90					2.10				1.60				0.10				6.10					
Comments: Area includes streams, another wetland, existing pipeline ROW, forest with maintained understorey, paved road, and cleared land.																																

2. Roadbed Presence Index																																					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																			CI = Total Score/20																	
	Optimal					Suboptimal					Marginal					Poor																					
	High Optimal: No roadbeds present within 100 feet of the AA boundary					Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																	
Comments: Existing ROW and paved road present.																																					

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)										CI = Total Score/20																											
Optimal					Suboptimal						Marginal					Poor																					
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary					Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.						High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																	
										Condition Score					Weighting					Sub-Scores																	
										a. Roadbed 0-100:					13					* (0.67)				9													
										b. Roadbed 100-300:					13					* (0.33)				4													
										Total Score:										13																	
Comments: Existing ROW and paved road present.																																					

3. Vegetation Condition Index																																	
a. Invasive Species Presence	Condition Category																			CI = Total Score/20													
	Optimal					Suboptimal					Marginal					Poor																	
	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1													
Comments: No Invasive Species identified in wetland AA.																																	
b. Vegetation										Condition Category																							
Optimal					Suboptimal					Marginal					Poor																		

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.	High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.	High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	CI = Total Score/40		
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			
Comments: Maintained pipeline ROW.								0.85		
							a. Invasive Sub-Score:	20	Total Score	34
							b. Vegetation Sub-Score:	14		

4. Hydrologic Modification Index

Condition Category										CI = Total Score/20
Optimal		Suboptimal			Marginal			Poor		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.	High Suboptimal: Two hydrologic stressors present within the AA boundary.	Low Suboptimal: Three hydrologic stressors present within the AA boundary.	High Marginal: Four hydrologic stressors present within the AA boundary.	Low Marginal: Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			
Comments: Maintenance on pipeline ROW and runoff from road								Score:	14	0.70

5. Sediment Stressor Index

Condition Category										CI = Total Score/20
Optimal		Suboptimal			Marginal			Poor		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.	High Suboptimal: Two sediment stressors present within the AA boundary.	Low Suboptimal: Three sediment stressors present within the AA boundary.	High Marginal: Four sediment stressors present within the AA boundary.	Low Marginal: Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.			
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1			
Comments: One stressor identified due to ROW maintenance.								Score:	17	0.85

6. Water Quality Stressor Index

Condition Category										CI = Total Score/40
Optimal		Suboptimal			Marginal			Poor		
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.			Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.		
SCORE	20 19 18 17 16	15 14 13 12 11			10 9 8 7 6		5 4 3 2 1			
Comments: No stressors identified.										
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.			Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.		
SCORE	20 19 18 17 16	15 14 13 12 11			10 9 8 7 6		5 4 3 2 1			
Comments: No stressors identified.										
							a. Eutrophication Score	20	Total Score:	40
							b. Contaminant Score	20		

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.73
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/07/18	J. Miner, B. Shamblin, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
RW232JLM	W137	41.241145	-78.418386	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/07/18		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			2	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
algl2	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
glidi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/08/18	0.02	W138	0.07
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, B. Shamblin, M. Groomer		41.240996	-78.417151	WD233JLM, PEM wetland	
General Comments: PEM wetland adjacent to perennial stream. Wetland in and adjacent to maintained ROW (0.02 acres in ECL). Impacts occur only to the wetland area in the Project area. AA includes 0.07 acres of PEM wetland.					

1. Wetland Zone of Influence Condition Index																					
Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category											CI = Total Score/20									
	Optimal			Suboptimal			Marginal			Poor											
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.			High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.											Total Score = SUM(%Areas*Scores)										
2. Estimate the % area within each condition category. Calculators are provided for you below.																					
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																					
Scoring:	Condition Category:															Total Score:		0.46			
	% ZOI Area:		5%			35%			30%			10%		10%							
	Score:		15			13			9			7		4							
	Total Sub-score:		0.75			4.55			2.70			0.70		0.40							

Comments: Area includes streams, another wetland, existing pipeline ROW, forest with maintained understorey, and paved road.

2. Roadbed Presence Index																					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories											CI = Total Score/20									
	Optimal		Suboptimal			Marginal			Poor												
	High Optimal: No roadbeds present within 100 feet of the AA boundary		Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: Existing ROW and paved road present.																					
b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories											CI = Total Score/20									
	Optimal		Suboptimal			Marginal			Poor												
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary		Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
											Condition Score		Weighting		Sub-Scores						
											a. Roadbed 0-100:		13		* (0.67)		9				
											b. Roadbed 100-300:		13		* (0.33)		4				
											Total Score:		13				0.65				
Comments: Existing ROW and paved road present.																					

3. Vegetation Condition Index																					
a. Invasive Species Presence	Condition Category											CI = Total Score/20									
	Optimal		Suboptimal			Marginal			Poor												
	High Optimal: No invasives present.		Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.			Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.			Low Marginal: >30% but less than 50% of the total AA contains invasive species.		Poor: > 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
Comments: No Invasive Species identified in wetland AA.																					
b. Vegetation	Condition Category																				
	Optimal			Suboptimal			Marginal			Poor											

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.	High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.	High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	CI = Total Score/40
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	

Comments: Maintained pipeline ROW.	a. Invasive Sub-Score:	20	Total Score	34	0.85
	b. Vegetation Sub-Score:	14			

4. Hydrologic Modification Index

Condition Category								CI = Total Score/20	
	Optimal	Suboptimal	Marginal	Poor					
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.	High Suboptimal: Two hydrologic stressors present within the AA boundary.	Low Suboptimal: Three hydrologic stressors present within the AA boundary.	High Marginal: Four hydrologic stressors present within the AA boundary.	Low Marginal: Five hydrologic stressors present within the AA boundary.	Greater than five hydrologic stressors present within the AA boundary.		
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		
Comments: Maintenance on pipeline ROW and runoff from road							Score:	14	0.70

5. Sediment Stressor Index

Condition Category								CI = Total Score/20	
	Optimal	Suboptimal	Marginal	Poor					
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.	High Suboptimal: Two sediment stressors present within the AA boundary.	Low Suboptimal: Three sediment stressors present within the AA boundary.	High Marginal: Four sediment stressors present within the AA boundary.	Low Marginal: Five sediment stressors present within the AA boundary.	Greater than five sediment stressors present within the AA boundary.		
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		
Comments: One stressor identified due to ROW maintenance.							Score:	17	0.85

6. Water Quality Stressor Index

Condition Category								CI = Total Score/40
	Optimal	Suboptimal	Marginal	Poor				
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.	One eutrophication stressors present within the AA boundary.	Two eutrophication stressors present within the AA boundary.	Three eutrophication stressors present within the AA boundary.				
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	

Comments: No stressors identified.

Condition Category								CI = Total Score/40			
	Optimal	Suboptimal	Marginal	Poor							
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.	Two contaminant / toxicity stressors present within the AA boundary.	Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1				
Comments: No stressors identified.							a. Eutrophication Score	20	Total Score:	40	1.00
							b. Contaminant Score	20			

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.75
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/08/18	J. Miner, B. Shamblin, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD233JLM	W138	41.240996	-78.417151	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/08/18		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			2	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/08/18	0.02	W139	0.06
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, B. Shamblin, M. Groomer		41.232687	-78.474216	WD235JLM, PEM wetland	
General Comments: PEM wetland located in between perennial stream and road. Wetland connects to stream in maintained ROW only. Wetland in and adjacent to maintained ROW (0.02 acres in ECL). Impacts occur only to the wetland area in the Project area. AA includes 0.06 acres of PEM wetland.					

1. Wetland Zone of Influence Condition Index																					
Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category										CI = Total Score/20										
	Optimal		Suboptimal			Marginal			Poor												
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.		High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.			Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.			High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)											
2. Estimate the % area within each condition category. Calculators are provided for you below.																					
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																					
Scoring:	Condition Category:																				
	% ZOI Area:		5%			10%			5%			30%		40%		10%				Total Score:	
	Score:		15			13			9			7		4		1					
	Total Sub-score:		0.75			1.30			0.45			2.10		1.60		0.10		6.30		0.32	

Comments: Area includes streams, another wetland, existing pipeline ROW, forest with maintained understorey, paved road, and cleared land.

2. Roadbed Presence Index																					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories										CI = Total Score/20										
	Optimal		Suboptimal			Marginal			Poor												
	High Optimal: No roadbeds present within 100 feet of the AA boundary		Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.			High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: Existing ROW and paved road present.										Total Score = SUM(%Areas*Scores)											
Scoring:	Condition Category:																				
	a. Roadbed 0-100:		13			13			13			13		13		13				Total Score:	
	b. Roadbed 100-300:		13			13			13			13		13		13					
	Total Sub-score:		0.75			1.30			0.45			2.10		1.60		0.10		6.30		0.65	

Comments: Existing ROW and paved road present.

3. Vegetation Condition Index																					
a. Invasive Species Presence	Condition Category										CI = Total Score/20										
	Optimal		Suboptimal			Marginal			Poor												
	High Optimal: No invasives present.		Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.			Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.			Low Marginal: >30% but less than 50% of the total AA contains invasive species.			Poor: > 50% of the total AA contains invasive species.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No Invasive Species identified in wetland AA.										Total Score = SUM(%Areas*Scores)											
Scoring:	Condition Category:																				
	b. Vegetation		13			13			13			13		13		13		13			

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.	High Suboptimal: Two vegetation stressors present within the AA boundary.	Low Suboptimal: Three vegetation stressors present within the AA boundary.	High Marginal: Four vegetation stressors present within the AA boundary.	Low Marginal: Five vegetation stressors present within the AA boundary.	Greater than five vegetation stressors present within the AA boundary.	CI = Total Score/40
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1	

Comments: Maintained pipeline ROW.	a. Invasive Sub-Score:	20	Total Score	34	0.85
	b. Vegetation Sub-Score:	14			

4. Hydrologic Modification Index

Condition Category										CI = Total Score/20											
	Optimal			Suboptimal			Marginal				Poor										
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.			Low Optimal: One hydrologic stressor present within the AA boundary.			High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.			High Marginal: Four hydrologic stressors present within the AA boundary.			Low Marginal: Five hydrologic stressors present within the AA boundary.			Greater than five hydrologic stressors present within the AA boundary.	
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		5 4 3 2 1		14	0.70									

Comments: Maintenance on pipeline ROW and runoff from road

5. Sediment Stressor Index

Condition Category										CI = Total Score/20											
	Optimal			Suboptimal			Marginal				Poor										
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.			Low Optimal: One sediment stressor present within the AA boundary.			High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.			High Marginal: Four sediment stressors present within the AA boundary.			Low Marginal: Five sediment stressors present within the AA boundary.			Greater than five sediment stressors present within the AA boundary.	
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		5 4 3 2 1		17	0.85									

Comments: One stressor identified due to ROW maintenance.

6. Water Quality Stressor Index

Condition Category													
	Optimal			Suboptimal			Marginal				Poor		
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.			One eutrophication stressors present within the AA boundary.			Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.		
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1						

Comments: No stressors identified.

Condition Category										CI = Total Score/40			
	Optimal			Suboptimal			Marginal				Poor		
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.			One contaminant / toxicity stressors present within the AA boundary.			Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.		
SCORE	20 19 18 17 16		15 14 13 12 11		10 9 8 7 6		5 4 3 2 1		20	Total Score:	40	1.00	
					a. Eutrophication Score	20			b. Contaminant Score	20			

Comments: No stressors identified.

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.73
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/08/18	J. Miner, B. Shamblin, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD235JLM	W139	41.232687	-78.474216	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/08/18		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			2	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
algl2	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
glidi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/08/18	0.02	W139A	0.03
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
J. Miner, B. Shamblin, M. Groomer		41.232885	-78.475562	RW235JLM, PEM wetland	
General Comments: PEM wetland connected to intermittent stream. Wetland in and adjacent to maintained ROW (0.02 acres in ECL). Impacts occur only to the wetland area in the Project area. AA includes 0.03 acres of PEM wetland.					

1. Wetland Zone of Influence Condition Index																					
Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category										CI = Total Score/20										
	Optimal		Suboptimal			Marginal			Poor												
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understorey.		Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understorey.			High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.			Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understorey.		High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.								
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.										Total Score = SUM(%Areas*Scores)											
2. Estimate the % area within each condition category. Calculators are provided for you below.																					
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																					
Scoring:	Condition Category:																				Total Score:
	% ZOI Area:		5%			10%			30%			40%		10%							
	Score:		15			13			9			4		1							
	Total Sub-score:		0.75			1.30			0.45			2.10		1.60		0.10		6.30			
Comments: Area includes streams, another wetland, existing pipeline ROW, forest with maintained understorey, paved road, and cleared land.																					

2. Roadbed Presence Index																					
a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories										CI = Total Score/20										
	Optimal		Suboptimal			Marginal			Poor												
Roadbeds present within 100 feet of the AA boundary	High Optimal: No roadbeds present within 100 feet of the AA boundary		Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.		
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: Existing ROW and paved road present.																					

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)										CI = Total Score/20											
Optimal		Suboptimal			Marginal			Poor													
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary		Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.			High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.			Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.			High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.			Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.		High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
										Condition Score		Weighting		Sub-Scores							
										a. Roadbed 0-100:		13		* (0.67)		9					
										b. Roadbed 100-300:		13		* (0.33)		4					
										Total Score:		13		0.65							
Comments: Existing ROW and paved road present.																					

3. Vegetation Condition Index																					
a. Invasive Species Presence	Condition Category										CI = Total Score/20										
	Optimal		Suboptimal			Marginal			Poor												
Invasive species present	High Optimal: No invasives present.		Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.			Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.			High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		Poor: > 50% of the total AA contains invasive species.					
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No Invasive Species identified in wetland AA.																					
b. Vegetation										Condition Category											
Optimal		Suboptimal			Marginal			Poor													

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/08/18	J. Miner, B. Shamblin, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD235JLM	W139A	41.232885	-78.475562	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/08/18		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			2	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/01/2018	0.39	W141, W141A	1.00

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.835692	-78.124825	WD206TMM, PSS and PEM wetland

General Comments: PSS wetland parallels intermittent stream on both sides and is connected to PEM wetland (W141A). PSS Wetland has 0.10 acres in ECL and continues downslope of Project (0.72 acres delineated) beyond ECL. PEM wetland occurs in mowed agricultural field (0.29 acres in ECL) and continues downslope of Project (0.18 acres delineated) beyond ECL where it connects to W141. AA includes entire 0.47 acres of the PEM wetland and 0.53 acres of the PSS wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries, no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Condition Category:	Total Score = SUM(%Areas*Scores)																					
Scoring:	% ZOI Area:	0%					50%					45%					5%					Total Score:
	Score:	0					12					4					1					
	Total Sub-score:	0.00					6.00					1.80					0.05					

Comments: Area includes streams, agricultural fields, forest with maintained understory, and residential development.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																								
	Optimal					Suboptimal					Marginal						Poor																							
No roadbeds present within 100 feet of the AA boundary	High Optimal: No roadbeds present within 100 feet of the AA boundary					Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																				

Comments: No roadbeds present in ZOI.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																								
	Optimal					Suboptimal					Marginal						Poor																							
No roadbeds present within 100 - 300 feet of the AA boundary	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary					Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																				

		Condition Score										Weighting					Sub-Scores									
		a. Roadbed 0-100:										20					* (0.67)					13				
		b. Roadbed 100-300:										20					* (0.33)					7				
												Total Score:					20									

Comments: No roadbeds present in ZOI.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	High Optimal: No invasives present.			Low Optimal: <5% of the total AA contains invasive species.			High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.		High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		> 50% of the total AA contains invasive species.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	High Optimal: No vegetation stressors present within the AA boundary.			Low Optimal: One vegetation stressor present within the AA boundary.			High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.		High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintaine on agricultural land.

	a. Invasive Sub-Score:	20	Total Score	0.85
	b. Vegetation Sub-Score:	14	34	

4. Hydrologic Modification Index																				
Hydrologic Modification Stressor Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	High Optimal: No hydrologic stressors present within the AA boundary.			Low Optimal: One hydrologic stressor present within the AA boundary.			High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.		High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: Maintaine on agricultural land and presence of added spring boxes and PVC pipes placed along intermittent stream.

	Score:	14	0.70
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5. Sediment Stressor Index																				
Sediment Stressor Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	High Optimal: No sediment stressors present within the AA boundary.			Low Optimal: One sediment stressor present within the AA boundary.			High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.		High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: One stressor identified due to maintaine on agricultural land and active cow pasture.

	Score:	17	0.85
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	No eutrophication stressors present within the AA boundary.			One eutrophication stressors present within the AA boundary.			Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
	No contaminant / toxicity stressors present within the AA boundary.			One contaminant / toxicity stressors present within the AA boundary.			Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	1.00
	b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.80
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			08/01/2018	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD206TMM	W141, W141A	41.835692	-78.124825		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.		2	0
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		0		100-300 ft.		0	

Road Comments: No roadbeds present in ZOI.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/01/2018		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)	X			
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)				X
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)				X
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)	X	2		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			2	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:				X
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** **NO**

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%

Total % relative cover of all invasives, collectively on site: 0 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/02/2018	0.31	W142	0.96

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.835602	-78.12785	WD207TMM, PSS/PEM wetland

General Comments: PSS wetland located on stream bank and extends to agricultural field built on a terrace. Wetland is classified as PEM wetland in agricultural areas that have been mowed. Abutts perennial stream, and is adjacent to W142A, W141, and W141A. Wetland has 0.31 acres in ECL and continues downslope of Project (0.65 acres delineated) beyond ECL. AA includes entire 0.96 acres of the PSS/PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20					
	Optimal				Suboptimal				Marginal				Poor							
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
2. Estimate the % area within each condition category. Calculators are provided for you below.
3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Condition Category:	Total Score = SUM(%Areas*Scores)														0.26
Scoring:	% ZOI Area:	0%	0%	10%	20%	60%	10%	Total Score:							
	Score:	0	0	12	7	4	1								
	Total Sub-score:	0.00	0.00	1.20	1.40	2.40	0.10	5.10							

Comments: Area includes stream, another wetland, agricultural fields, maintained forest, a dirt road, and residential development.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																							
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

Comments: No roadbeds present within 100 feet of AA.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20									
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary	Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

	Condition Score	Weighting	Sub-Scores	0.95
a. Roadbed 0-100:	20	* (0.67)	13	
b. Roadbed 100-300:	17	* (0.33)	6	
Total Score:			19	

Comments: Dirt road for access to residential development within 300 feet of AA.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																										
a. Invasive Species Presence	Condition Category																									
	Optimal					Suboptimal					Marginal				Poor											
	High Optimal: No invasives present.	Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1						

Comments: One Invasive Species identified in wetland AA.

b. Vegetation Stressor Presence	Condition Category														CI = Total Score/40											
	Optimal					Suboptimal					Marginal					Poor										
	High Optimal: No vegetation stressors present within the AA boundary.	Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.63					

Comments: Maintenance on agricultural land.

a. Invasive Sub-Score:	11	Total Score	
b. Vegetation Sub-Score:	14	25	

4. Hydrologic Modification Index																										
Hydrologic Modification Stressor Presence	Condition Category														CI = Total Score/20											
	Optimal					Suboptimal					Marginal					Poor										
	High Optimal: No hydrologic stressors present within the AA boundary.	Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85					

Comments: Maintenance on agricultural land.

Score:	17
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5. Sediment Stressor Index																										
Sediment Stressor Presence	Condition Category														CI = Total Score/20											
	Optimal					Suboptimal					Marginal					Poor										
	High Optimal: No sediment stressors present within the AA boundary.	Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0.85					

Comments: One stressor identified due to maintenance on agricultural land.

Score:	17
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6. Water Quality Stressor Index																				
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal					Suboptimal					Marginal					Poor				
	No eutrophication stressors present within the AA boundary.	One eutrophication stressor present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				Four eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

b. Contaminant / Toxicity Stressor Presence	Condition Category														CI = Total Score/40						
	Optimal					Suboptimal					Marginal					Poor					
	No contaminant / toxicity stressors present within the AA boundary.	One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				Four contaminant / toxicity stressors present within the AA boundary.					
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	1.00

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	
b. Contaminant Score	20	40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score. **Overall Condition Index: 0.76**

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)				
NFG FM100 Project			08/02/2018	T. Malecki, M. Groomer				
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:				
WD207TMM	W142	41.835602	-78.12785					
<p>Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.</p>								
Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		0		100-300 ft.		2	
<p>Road Comments: Dirt road for access to residential development within 300 feet of AA.</p>								

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/02/2018		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)				X
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)				X
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)				X
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
loja		20%							

Total % relative cover of all invasives, collectively on site: 20 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/02/2018	0.06	W143	0.08

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.821705	-78.191506	WD209TMM, PEM wetland

General Comments: PEM wetland located in depression within floodplain of stream. Abutts perennial stream, and is adjacent to W103 and W143A. Wetland has 0.06 acres in ECL and continues on both sides of Project (0.02 acres delineated) beyond ECL. AA includes entire 0.08 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)															
Scoring:	Condition Category:															Total Score:														
	% ZOI Area:																													
	Score:																													
Total Sub-score:															2.50	0.13														

Comments: Area includes stream, other wetlands, and agricultural fields.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																								
	Optimal					Suboptimal					Marginal						Poor																							
No roadbeds present within 100 feet of the AA boundary	High Optimal: No roadbeds present within 100 feet of the AA boundary					Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																				
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)																									
Scoring:	Condition Category:															Total Score:																								
	% ZOI Area:																																							
	Score:																																							
Total Sub-score:															20	1.00																								

Comments: No roadbeds present in ZOI.

Wetland Condition Assessment Form

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Pennsylvania Department of Environmental Protection

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3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					> 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One Invasive Species identified in wetland AA.

	Condition Category															CI = Total Score/40																			
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintaine on agricultural land.

	a. Invasive Sub-Score:	8	Total Score		22
	b. Vegetation Sub-Score:	14			0.55

4. Hydrologic Modification Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintaine on agricultural land.

	Score:	17		0.85
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5. Sediment Stressor Index

	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: One stressor identified due to maintaine on agricultural land and active cow pasture.

	Score:	17		0.85
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category															CI = Total Score/40				
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:		40
	b. Contaminant Score	20			1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.73
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/02/2018	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD209TMM	W143	41.821705	-78.191506	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.		2	0
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		0		100-300 ft.		0	

Road Comments: No roadbeds present in ZOI.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/02/2018		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)	X			
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)				X
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)				X
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:				X
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
phar			30%						

Total % relative cover of all invasives, collectively on site: 30 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/03/18	0.04	W145	0.09

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.715968	-78.474561	WD212TMM, PEM wetland

General Comments: PEM wetland located on hillside terrace at corner of agricultural plot and adjacent to forest (0.04 acres in ECL). PEM wetland continues downslope of Project (0.05 acres delineated) beyond ECL. AA includes entire 0.09 acres of the PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category														CI = Total Score/20						
	Optimal				Suboptimal				Marginal				Poor								
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.		Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.														Total Score = SUM(%Areas*Scores)		0.41					
Condition Category:																	Total Score:				
% ZOI Area:														0%	0%			60%	0%	10%	30%
Score:														0	0			12	0	4	2
Total Sub-score:														0.00	0.00	7.20	0.00	0.40	0.60	8.20	

Comments: Area includes maintained agricultural plot and forest with maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories														CI = Total Score/20									
	Optimal				Suboptimal				Marginal				Poor											
High Optimal: No roadbeds present within 100 feet of the AA boundary	Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.		Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.	
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				
Comments: No roadbeds occur within AA.																1.00								
Condition Categories																								
a. Roadbed 0-100:														20	* (0.67)		13							
b. Roadbed 100-300:														20	* (0.33)		7							
Total Score:														20										

Comments: No roadbeds occur within AA.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index																				
a. Invasive Species Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No invasives present.			Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.		Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.		High Marginal: >20% but less than 30% of the total AA contains invasive species.		Low Marginal: >30% but less than 50% of the total AA contains invasive species.		Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: One Invasive Species identified in wetland AA at 20% cover.																				
4. Hydrologic Modification Index																				
b. Vegetation Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No vegetation stressors present within the AA boundary.			Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.		Low Suboptimal: Three vegetation stressors present within the AA boundary.		High Marginal: Four vegetation stressors present within the AA boundary.		Low Marginal: Five vegetation stressors present within the AA boundary.		Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: Area includes maintained agricultural plot and forest with maintained understory.																				
													a. Invasive Sub-Score: 11	Total Score		0.58				
													b. Vegetation Sub-Score: 12		23					
5. Sediment Stressor Index																				
Hydrologic Modification Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No hydrologic stressors present within the AA boundary.			Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.		Low Suboptimal: Three hydrologic stressors present within the AA boundary.		High Marginal: Four hydrologic stressors present within the AA boundary.		Low Marginal: Five hydrologic stressors present within the AA boundary.		Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: One stressor identified due to agricultural plot.													Score: 17		0.85					
6. Water Quality Stressor Index																				
Sediment Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	High Optimal: No sediment stressors present within the AA boundary.			Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.		Low Suboptimal: Three sediment stressors present within the AA boundary.		High Marginal: Four sediment stressors present within the AA boundary.		Low Marginal: Five sediment stressors present within the AA boundary.		Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: One stressor identified due to agricultural plot.													Score: 17		0.85					
a. Eutrophication Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No eutrophication stressors present within the AA boundary.			One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.			Three eutrophication stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.																				
b. Contaminant / Toxicity Stressor Presence	Condition Category																			
	Optimal			Suboptimal				Marginal			Poor									
	No contaminant / toxicity stressors present within the AA boundary.			One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.			Three contaminant / toxicity stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments: No stressors identified.													a. Eutrophication Score: 20		Total Score:		1.00			
													b. Contaminant Score: 20		40					
Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.													Overall Condition Index:		0.78					

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/03/18	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
WD212TMM	W145	41.715968	-78.474561	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.		2	0	100-300 ft.		2	0
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		0		100-300 ft.		0	

Road Comments: No roadbeds occur in AA.

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/03/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing	X			
Moderate livestock grazing (within one year)				X
Crops (annual row crops, within one year)	X			
Selective tree harvesting/cutting (>50% removal, within 5 years)				X
Right-of-way clearing (mechanical or chemical)				X
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris				X
Aquatic weed control (mechanical or herbicide)				X
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)				X
Plantation (conversion from typical natural tree species, including orchards)				X
Other:				X
Total Number:			3	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods				X
Dike/weir/dam				X
Filling/grading				X
Dredging/excavation				X
Stormwater inputs (culvert or similar concentrated urban runoff)				X
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *				X
Stream alteration (channelization or incision)				X
Other:				X
Total Number:			1	
Sedimentation				
Sediment deposits/plumes				X
Eroding banks/slopes				X
Active construction (earth disturbance for development)				X
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)				X
Active selective forestry harvesting (within one year)				X
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)				X
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)				X
Other:				X
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.				X
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.				X
Heavy or moderately heavy formation of algal mats				X
Other:				X
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)				X
Obvious spills, discharges, plumes, odors, etc.				X
Acidic drainages (mined sites, quarries, road cuts)				X
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites				X
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)				X
Fish or wildlife kills or obvious disease or abnormalities observed				X
Excessive garbage/dumping				X
Other:				X
Total Number:			0	

Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Invasive Species Presence Worksheet

Are invasive species (from list) present at the site in any layer? **YES** NO

If listed species present, enter the percent areal coverage for each species below:

Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%	Species Code	<5%	≥ 5-20%	≥ 20 - 50%	≥ 50%
mivi		20%							

Total % relative cover of all invasives, collectively on site: 20 %

Comments:

Common Invasives/Aggressives List

Code	Common Name	Scientific	Status	Code	Common Name	Scientific	Status
aggi2	Redtop	<i>Agrostis gigantea</i>	FACW	luhe	Water primrose	<i>Ludwigia hexapetala</i>	OBLW
alg12	European Alder	<i>Alnus glutinosa</i>	FACW	lyvu	Garden loosestrife	<i>Lysimachia vulgaris</i>	OBLW
arhi3	Carpetgrass	<i>Arthraxon hispidus</i>	FAC-	lysa2	Purple loosestrife	<i>Lythrum salicaria</i>	FACW
beth	Japanese barberry	<i>Berberis thunbergii</i>	FACW	maqu	European waterclover	<i>Marsilea quadrifolia</i>	OBLW
bevu	European barberry	<i>Berberis vulgaris</i>	FACW	mivi	Japanese stiltgrass	<i>Microstegium vimineum</i>	FAC
butom	Flowering Rush	<i>Butomus umbellatus</i>	OBLW	nami2	Water cress	<i>Nasturtium officinale</i>	OBLW
calli6	Pond water-starwort	<i>Callitriche stagnalis</i>	OBLW	pelo	Low smartweed	<i>Persicaria longiseta</i>	FACW
egde	Brazilian waterweed	<i>Egeria densa</i>	OBLW	phar	Reed canary grass	<i>Phalaris arundinacea</i>	FACW
elan	Russian olive	<i>Elaeagnus angustifolia</i>	FACU	phau7	Common Reed	<i>Phragmites australis</i>	OBLW
elum	Autumn olive	<i>Elaeagnus umbellata</i>	FACU	potr	Rough bluegrass	<i>Poa trivialis</i>	FACW
ephi	Hairy willow-herb	<i>Epilobium hirsutum</i>	FACW	pocu6	Japanese knotweed	<i>Polygonum (Faloia) cuspidatum</i>	FAC-
eppa5	Willow-herb	<i>Epilobium parviflorum</i>	FACW	pgpf	Mile-a-minute	<i>Polygonum perfoliatum</i>	FAC-
fasa	Giant knotweed	<i>Fallopia sachalinensis</i>	OBLW	puera	Kudzu-vine	<i>Pueraria lobata</i>	FAC-
gldi	Mudmats	<i>Glossostigma diandrum</i>	OBLW	pysp1	Apple/crabapple/pear	<i>Pyrus sp.</i>	FAC?
hola	Velvetgrass	<i>Holcus lanatus</i>	FAC	rhfr	Glossy Buckthorn	<i>Rhamnus frangula</i>	FAC-
huja	Japanese Hops	<i>Humulus japonicus</i>	FACU	romu	Multiflora rose	<i>Rosa multiflora</i>	FACU
loja	Japanese honeysuckle	<i>Lonicera japonica</i>	FAC-	tyan	Cattail (hybrid)	<i>Typha angustifolia</i>	OBLW
lomo	Morrow's honeysuckle	<i>Lonicera morrowii</i>	NI	tygl	Hybrid cattail	<i>Typha x glauca</i>	OBLW
lota	Tartarian honeysuckle	<i>Lonicera tatarica</i>					

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/06/18	0.11	W148	0.17

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.328294	-78.201643	WD224TMM, PSS wetland

General Comments: PSS wetland located along roadside in riverine valley. Intermittent stream drains into wetland. Wetland occurs in existing pipeline ROW (0.11 acres in ECL) and continues on both sides of Project (0.06 acres delineated) beyond ECL. AA includes entire 0.17 acres of the PSS wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category															CI = Total Score/20														
	Optimal					Suboptimal					Marginal						Poor													
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.					Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.					High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.					Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.					High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.					Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1										
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.															Total Score = SUM(%Areas*Scores)					0.52										
Condition Category:															Total Score:															
% ZOI Area:																10.40														
Score:																	0.52													
Total Sub-score:																		0.52												

Comments: Area includes streams, existing pipeline ROW, and forest with maintained understory.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories															CI = Total Score/20																								
	Optimal					Suboptimal					Marginal						Poor																							
(within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary					Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.					High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.					Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.					High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.					Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.					High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.					Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1																				

Condition Categories															0.85		
a. Roadbed 0-100:																0.85	
b. Roadbed 100-300:																	0.85
Total Score:																	

Comments: Existing pipeline ROW present.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
a. Invasive Species Presence	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: No Invasive Species identified in wetland AA.

	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.				Low Optimal: One vegetation stressor present within the AA boundary.				High Suboptimal: Two vegetation stressors present within the AA boundary.				Low Suboptimal: Three vegetation stressors present within the AA boundary.				High Marginal: Four vegetation stressors present within the AA boundary.				Low Marginal: Five vegetation stressors present within the AA boundary.				Poor: Greater than five vegetation stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Maintenance on pipeline ROW

a. Invasive Sub-Score:	20	Total Score	34	0.85
b. Vegetation Sub-Score:	14		34	

4. Hydrologic Modification Index

	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.				Low Optimal: One hydrologic stressor present within the AA boundary.				High Suboptimal: Two hydrologic stressors present within the AA boundary.				Low Suboptimal: Three hydrologic stressors present within the AA boundary.				High Marginal: Four hydrologic stressors present within the AA boundary.				Low Marginal: Five hydrologic stressors present within the AA boundary.				Poor: Greater than five hydrologic stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: Maintenance on pipeline ROW

Score:	17			0.85
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5. Sediment Stressor Index

	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.				Low Optimal: One sediment stressor present within the AA boundary.				High Suboptimal: Two sediment stressors present within the AA boundary.				Low Suboptimal: Three sediment stressors present within the AA boundary.				High Marginal: Four sediment stressors present within the AA boundary.				Low Marginal: Five sediment stressors present within the AA boundary.				Poor: Greater than five sediment stressors present within the AA boundary.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								

Comments: One stressor identified due to maintenance on pipeline ROW

Score:	17			0.85
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.				One eutrophication stressors present within the AA boundary.				Two eutrophication stressors present within the AA boundary.				Three eutrophication stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																			
	Optimal				Suboptimal				Marginal				Poor							
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.				One contaminant / toxicity stressors present within the AA boundary.				Two contaminant / toxicity stressors present within the AA boundary.				Three contaminant / toxicity stressors present within the AA boundary.							
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

a. Eutrophication Score	20	Total Score:	40	1.00
b. Contaminant Score	20		40	

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

Overall Condition Index:				0.82
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)				
NFG FM100 Project			08/06/18	T. Malecki, M. Groomer				
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:				
WD224TMM	W148	41.328294	-78.201643					
<p>Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.</p>								
Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.		2	0	100-300 ft.		2	0
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		2		100-300 ft.		2	
<p>Road Comments: Existing ROW present</p>								

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/06/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)			X	
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			1	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)			X	
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)			X	
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			1	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/07/18	0.11	W149	1.00

Name(s) of Evaluator(s)	Lat (dd)	Long (dd)	Notes:
T. Malecki, M. Groomer	41.219774	-78.55829	WD226TMM, PSS wetland

General Comments: PSS wetland located between road and stream. Intermittent stream runs through wetland. Wetland occurs in existing pipeline ROW (0.11 acres in ECL) and continues on both sides of Project (1.01 acres delineated) beyond ECL. AA includes 1.00 acre of the PSS wetland out of 1.12 acres that were delineated.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20							
	Optimal				Suboptimal				Marginal				Poor											
ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.	High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1				

1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above.
 2. Estimate the % area within each condition category. Calculators are provided for you below.
 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.

Condition Category:										Total Score = SUM(%Areas*Scores)									
Scoring:	% ZOI Area:	0%	0%	30%	20%	20%	30%	Total Score:											
	Score:	0	0	12	7	4	1												
	Total Sub-score:	0.00	0.00	3.60	1.40	0.80	0.30					6.10	0.31						

Comments: Area includes streams, other wetlands, existing pipeline ROW, forest with maintained understory, paved road, open water, and cleared land.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
(within 0 - 100 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												

Comments: Existing pipeline ROW and paved road present.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
(within 100 - 300 foot Wetland ZOI distance)	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1												

										Condition Score				Weighting				Sub-Scores							
										a. Roadbed 0-100:				13				* (0.67)				9			
										b. Roadbed 100-300:				13				* (0.33)				4			
										Total Score:										13				0.65	

Comments: Existing pipeline ROW and paved road present.

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

3. Vegetation Condition Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
a. Invasive Species Presence	High Optimal: No invasives present.					Low Optimal: <5% of the total AA contains invasive species.					High Suboptimal: >5% but less than 10% of the total AA contains invasive species.					Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.					High Marginal: >20% but less than 30% of the total AA contains invasive species.					Low Marginal: >30% but less than 50% of the total AA contains invasive species.					Poor: > 50% of the total AA contains invasive species.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: No Invasive Species identified in wetland AA.

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
b. Vegetation Stressor Presence	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.					High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Poor: Greater than five vegetation stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintenance on pipeline ROW

	a. Invasive Sub-Score:	20	Total Score	
	b. Vegetation Sub-Score:	14	34	0.85

4. Hydrologic Modification Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Hydrologic Modification Stressor Presence	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Poor: Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Maintenance on pipeline ROW and runoff from road

	Score:	14		0.70
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5. Sediment Stressor Index

	Condition Category																																		
	Optimal					Suboptimal					Marginal						Poor																		
Sediment Stressor Presence	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Poor: Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															

Comments: Three stressors identified due to maintenance on pipeline ROW and construction in the area.

	Score:	12		0.60
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6. Water Quality Stressor Index

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
a. Eutrophication Stressor Presence	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	Condition Category																			
	Optimal					Suboptimal					Marginal						Poor			
b. Contaminant / Toxicity Stressor Presence	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Comments: No stressors identified.

	a. Eutrophication Score	20	Total Score:	
	b. Contaminant Score	20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.

	Overall Condition Index:			0.68
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)	
NFG FM100 Project			08/07/18	T. Malecki, M. Groomer	
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:	
WD226TMM	W149	41.219774	-78.55829		

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.	4			100-300 ft.	4		

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/07/18		
		Occurrence in AA		
		Y	#s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			2	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	X			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			3	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/07/18	0.10	W149C	0.39
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.219321	-78.553844	RW228TMM, PEM wetland	

General Comments: PEM wetland located between stream and PSS wetland. Adjacent but not connected to W149D. Wetland occurs in existing pipeline ROW (0.10 acres in ECL); continues upslope of Project (0.27 acres delineated) and downslope of Project (0.02 acres delineated) beyond ECL. AA includes entire 0.39 acres of PEM wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1							
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																	Total Score = SUM(%Areas*Scores)											
Scoring:	Condition Category:																				Total Score:							
	% ZOI Area:		15%		15%		10%		10%		40%		10%								7.20							
	Score:		14		12		9		7		4		1								0.36							
Total Sub-score:		2.10		1.80		0.90		0.70		1.60		0.10																

Comments: Area includes stream, another wetland, existing pipeline ROW, forest with maintained understory, paved road, open water, and cleared land.

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											

Comments: Existing pipeline ROW and paved road present.

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											
Condition Score																	Weighting	Sub-Scores														
																	a. Roadbed 0-100:	13	* (0.67)	9												
																	b. Roadbed 100-300:	13	* (0.33)	4												
																	Total Score:			13												

Comments: Existing pipeline ROW and paved road present.

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1							

Comments: No Invasive Species identified in wetland AA.

Condition Category

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

b. Vegetation Stressor Presence	Optimal					Suboptimal					Marginal					Poor					CI = Total Score/40													
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.						High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														

Comments: Maintenance on pipeline ROW		a. Invasive Sub-Score: 20	Total Score	0.85
		b. Vegetation Sub-Score: 14	34	

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category										CI = Total Score/20																							
	Optimal					Suboptimal						Marginal					Poor																	
High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														

Comments: Maintenance on pipeline ROW and runoff from road		Score: 14		0.70
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5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category										CI = Total Score/20																							
	Optimal					Suboptimal						Marginal					Poor																	
High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														

Comments: Three stressors identified due to maintenance on pipeline ROW and construction in the area.		Score: 12		0.60
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6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category										CI = Total Score/40										
	Optimal					Suboptimal						Marginal					Poor				
No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.				
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b. Contaminant / Toxicity Stressor Presence	Condition Category										CI = Total Score/40										
	Optimal					Suboptimal						Marginal					Poor				
No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.						
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	

Comments: No stressors identified.		a. Eutrophication Score: 20	Total Score:	
		b. Contaminant Score: 20	40	1.00

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.		Overall Condition Index:		0.69
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/07/18	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
RW228TMM	W149C	41.219321	-78.553844	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/07/18		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			2	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	X			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			3	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

Project #	Project Name	Date	Proposed Impact Size (acres)	AA #	AA Size (acres)
456456	NFG FM100 Project	08/07/18	0.03	W149D	0.12
Name(s) of Evaluator(s)		Lat (dd)	Long (dd)	Notes:	
T. Malecki, M. Groomer		41.219088	-78.552983	RW227TMM, PSS wetland	

General Comments: PSS wetland located between stream and PEM wetland. Adjacent but not connected to W149C. Wetland occurs in existing pipeline ROW (0.03 acres in ECL); continues upslope of Project (0.02 acres delineated) and downslope of Project (0.07 acres delineated) beyond ECL. AA includes entire 0.12 acres of PSS wetland.

1. Wetland Zone of Influence Condition Index

Wetland Zone of Influence (300 foot area around AA perimeter)	Condition Category																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
	ZOI area vegetation consists of a tree stratum present (diameter at breast height (dbh) > 3 inches) with greater than or equal to 60% tree canopy cover. Areas comprised of stream channels, wetlands (regardless of classification or condition) and lacustrine resources ≥ 10 acres are scored as optimal.				High Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.				Low Suboptimal: ZOI area vegetation consists of a tree stratum (dbh > 3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with a maintained understory.				High Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover.				Low Marginal: ZOI area vegetation consists of non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum, areas of hay production, and ponds or open water areas (< 10 acres). If trees are present, tree stratum (dbh > 3 inches) present, with less than 30% tree canopy cover with maintained understory.				High Poor: ZOI area vegetation consists of lawns, mowed, and maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, pervious trails, recently seeded and stabilized, or other comparable condition.				Low Poor: ZOI area vegetation consists of impervious surfaces; mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1							
1. Identify all applicable Condition Category areas within the wetland zone of influence using the descriptors above. 2. Estimate the % area within each condition category. Calculators are provided for you below. 3. Enter the % ZOI Area in decimal form (0.00) and Score for each category in the blocks below.																	Total Score = SUM(%Areas*Scores)											
Scoring:	Condition Category:																				Total Score:							
	% ZOI Area:		15%		15%		10%		10%		40%		10%															
	Score:		14		12		9		7		4		1															
Total Sub-score:		2.10		1.80		0.90		0.70		1.60		0.10										7.20						
0.36																												
Comments: Area includes stream, another wetland, existing pipeline ROW, forest with maintained understory, paved road, open water, and cleared land.																												

2. Roadbed Presence Index

a. Roadbed Presence (within 0 - 100 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 feet of the AA boundary				Low Optimal: Roadbed presence score within 0-100 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 0-100 foot distance of the AA boundary is greater than 12.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											
Comments: Existing pipeline ROW and paved road present.																																

b. Roadbed Presence (within 100 - 300 foot Wetland ZOI distance)	Condition Categories																CI = Total Score/20															
	Optimal				Suboptimal				Marginal				Poor																			
	High Optimal: No roadbeds present within 100 - 300 feet of the AA boundary				Low Optimal: Roadbed presence score within 100 - 300 feet of the AA boundary equal to or less than 2.				High Suboptimal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 2 but equal to or less than 4.				Low Suboptimal: Roadbed presence score within 100 - 300 feet AA boundary is greater than 4 but less than or equal to 6.				High Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 6 but less than or equal to 8.				Low Marginal: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 8 but less than or equal to 10.				High Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 10 but less than or equal to 12.				Low Poor: Roadbed presence score within 100 - 300 feet of the AA boundary is greater than 12.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1											
																	Condition Score		Weighting		Sub-Scores											
																	a. Roadbed 0-100:		13		* (0.67)		9									
																	b. Roadbed 100-300:		13		* (0.33)		4									
																			Total Score:		13											
0.65																																
Comments: Existing pipeline ROW and paved road present.																																

3. Vegetation Condition Index

a. Invasive Species Presence	Condition Category																CI = Total Score/20											
	Optimal				Suboptimal				Marginal				Poor															
	High Optimal: No invasives present.				Low Optimal: <5% of the total AA contains invasive species.				High Suboptimal: >5% but less than 10% of the total AA contains invasive species.				Low Suboptimal: >10% but less than 20% of the total AA contains invasive species.				High Marginal: >20% but less than 30% of the total AA contains invasive species.				Low Marginal: >30% but less than 50% of the total AA contains invasive species.				Poor: > 50% of the total AA contains invasive species.			
	SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1							
Comments: No Invasive Species identified in wetland AA.																												

Condition Category

Wetland Condition Assessment Form

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

For use in all wetland classifications found within Pennsylvania except those found within the banks of a watercourse.

b. Vegetation Stressor Presence	Optimal					Suboptimal					Marginal					Poor					CI = Total Score/40													
	High Optimal: No vegetation stressors present within the AA boundary.					Low Optimal: One vegetation stressor present within the AA boundary.					High Suboptimal: Two vegetation stressors present within the AA boundary.					Low Suboptimal: Three vegetation stressors present within the AA boundary.						High Marginal: Four vegetation stressors present within the AA boundary.					Low Marginal: Five vegetation stressors present within the AA boundary.					Greater than five vegetation stressors present within the AA boundary.		
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1														
Comments: Maintenance on pipeline ROW															a. Invasive Sub-Score: 20					Total Score: 34					0.85									
															b. Vegetation Sub-Score: 14																			

4. Hydrologic Modification Index

Hydrologic Modification Stressor Presence	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No hydrologic stressors present within the AA boundary.					Low Optimal: One hydrologic stressor present within the AA boundary.					High Suboptimal: Two hydrologic stressors present within the AA boundary.					Low Suboptimal: Three hydrologic stressors present within the AA boundary.					High Marginal: Four hydrologic stressors present within the AA boundary.					Low Marginal: Five hydrologic stressors present within the AA boundary.					Greater than five hydrologic stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments: Maintenance on pipeline ROW and runoff from road															Score: 14										0.70										

5. Sediment Stressor Index

Sediment Stressor Presence	Condition Category															CI = Total Score/20																			
	Optimal					Suboptimal					Marginal						Poor																		
	High Optimal: No sediment stressors present within the AA boundary.					Low Optimal: One sediment stressor present within the AA boundary.					High Suboptimal: Two sediment stressors present within the AA boundary.					Low Suboptimal: Three sediment stressors present within the AA boundary.					High Marginal: Four sediment stressors present within the AA boundary.					Low Marginal: Five sediment stressors present within the AA boundary.					Greater than five sediment stressors present within the AA boundary.				
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1															
Comments: Three stressors identified due to maintenance on pipeline ROW and construction in the area.															Score: 12										0.60										

6. Water Quality Stressor Index

a. Eutrophication Stressor Presence	Condition Category															CI = Total Score/40									
	Optimal					Suboptimal					Marginal						Poor								
	No eutrophication stressors present within the AA boundary.					One eutrophication stressors present within the AA boundary.					Two eutrophication stressors present within the AA boundary.					Three eutrophication stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					
Comments: No stressors identified.																									1.00

b. Contaminant / Toxicity Stressor Presence	Condition Category															CI = Total Score/40									
	Optimal					Suboptimal					Marginal						Poor								
	No contaminant / toxicity stressors present within the AA boundary.					One contaminant / toxicity stressors present within the AA boundary.					Two contaminant / toxicity stressors present within the AA boundary.					Three contaminant / toxicity stressors present within the AA boundary.									
SCORE	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1					
Comments: No stressors identified.															a. Eutrophication Score: 20					Total Score: 40					1.00
															b. Contaminant Score: 20										

Overall Wetland Level 2 Condition Score: Sum all six of the Condition Indexes and divide by 6 to calculate the overall condition score.	Overall Condition Index:	0.69
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Pennsylvania Wetland Condition Level 2 Rapid Assessment

(Document No. 310-2137-002)

Pennsylvania Department of Environmental Protection

Roadbed Worksheet

Project Name / Identifier			Date	Name(s) of Evaluator(s)
NFG FM100 Project			08/07/18	T. Malecki, M. Groomer
Resource Identifier	AA #	Lat (dd)	Long (dd)	Notes:
RW227TMM	W149D	41.219088	-78.552983	

Roadbeds: Record the number of occurrences by roadbed type and distance category. Multiply the number of occurrences by the weighting factors for each roadbed type and distance category then sum the total score for each distance category. The total scores for each distance category are then compared to the condition category descriptions.

Roadbed Type	Distance	Occurrences	Weighting Factor	Score	Distance	Occurrences	Weighting Factor	Score
≥ 4 Lane Paved	0-100 ft.		4	0	100-300 ft.		4	0
2 Lane Paved	0-100 ft.	1	2	2	100-300 ft.	1	2	2
1 Lane Paved	0-100 ft.		1	0	100-300 ft.		1	0
Gravel Road	0-100 ft.		1	0	100-300 ft.		1	0
Dirt Road	0-100 ft.	1	2	2	100-300 ft.	1	2	2
Railroad	0-100 ft.		2	0	100-300 ft.		2	0
Other Roadbeds	0-100 ft.		1, 2 or 4	0	100-300 ft.		1, 2 or 4	0
Total Scores:	0-100 ft.		4		100-300 ft.		4	

Road Comments: Existing ROW and paved road present

Pennsylvania Wetland Condition Level 2 Rapid Assessment (Document No. 310-2137-002) Pennsylvania Department of Environmental Protection STRESSOR WORKSHEET		08/07/18		
		Occurrence in AA		
		Y	#'s	N
Vegetation Alteration				
Mowing			X	
Moderate livestock grazing (within one year)			X	
Crops (annual row crops, within one year)			X	
Selective tree harvesting/cutting (>50% removal, within 5 years)			X	
Right-of-way clearing (mechanical or chemical)	X	1		
Clear cutting or Brush cutting (mechanized removal of shrubs and saplings)	X			
Removal of woody debris			X	
Aquatic weed control (mechanical or herbicide)			X	
Excessive herbivory (deer, muskrat, nutria, carp, insects, etc.)			X	
Plantation (conversion from typical natural tree species, including orchards)			X	
Other:			X	
Total Number:			2	
Hydrologic Modification				
Ditching, tile draining, or other dewatering methods			X	
Dike/weir/dam			X	
Filling/grading			X	
Dredging/excavation			X	
Stormwater inputs (culvert or similar concentrated urban runoff)	X	1		
Microtopographic alterations (e.g., plowing, forestry bedding, skidder/ATV tracks)	X			
Dead or dying trees (trunks still standing) *			X	
Stream alteration (channelization or incision)			X	
Other:			X	
Total Number:			2	
Sedimentation				
Sediment deposits/plumes			X	
Eroding banks/slopes			X	
Active construction (earth disturbance for development)			X	
Active plowing (plowing for crop planting in past year)	X			
Intensive livestock grazing (in one year, ground is >50% bare)			X	
Active selective forestry harvesting (within one year)			X	
Active forest harvesting (within two years, includes roads, borrow areas, pads, etc.)	X			
Turbidity (moderate concentration of suspended solids in the water column, obvious sediment discharges)			X	
Other:	X			
Total Number:			3	
Eutrophication				
Direct discharges from agricultural feedlots, manure pits, etc.			X	
Direct discharges from septic or sewage treatment plants, fish hatcheries, etc.			X	
Heavy or moderately heavy formation of algal mats			X	
Other:			X	
Total Number:			0	
Contaminant/Toxicity				
Severe vegetation stress (source unknown or suspected)			X	
Obvious spills, discharges, plumes, odors, etc.			X	
Acidic drainages (mined sites, quarries, road cuts)			X	
Point discharges from adjacent industrial facilities, landfills, railroad yards, or comparable sites			X	
Chemical defoliation (majority of herbaceous and woody plants affected, within one year)			X	
Fish or wildlife kills or obvious disease or abnormalities observed			X	
Excessive garbage/dumping			X	
Other:			X	
Total Number:			0	
* Dead or dying trees attributed to beaver activity or emerald ash borer (or other identifiable insect infestation) should not be recorded as a stressor present. The assessor is responsible for recording observations in the comment section concerning presence of these conditions.				

