APPENDIX L-2G - LACUSTRINE RAP FORMS AND FIGURES

Summary of Methods for Pennsylvania Lacustrine Condition Level 2 Rapid Assessment Protocol

On behalf of PennEast Pipeline Company, LLC (PennEast), AECOM Biologists conducted a review of delineated lakes, reservoirs and large streams and river systems with drainage areas greater than 2,000 square miles that are proposed to be impacted by the PennEast Pipeline Project (Project) in accordance with the Pennsylvania Department of Environmental Protection's (PADEP) *Pennsylvania Lacustrine Condition Level 2 Rapid Assessment Protocol* (L2RAP). The Lacustrine Condition Assessment Form (Form) was used to evaluate these resources as part of the Joint Permit Application (JPA).

The assessment area (AA) consisted of the area of each resource that is proposed to be impacted by construction and/or operation of the Project, plus an additional 25 feet extending from each side. Each resource with the potential to be impacted by the Project was evaluated using a number of parameters, referred to as condition indices, as outlined by the L2RAP procedure. A brief summary of each condition index is discussed below.

Appendix L-2G provides a Form and corresponding map displaying the AA, land use condition category, and area of proposed impact of each resource assessed via the Lacustrine L2RAP impacted within Carbon County.

Header Information

Project Number

This is designated as AECOM's internal project number associated with PennEast.

Project Name

This was determined to be the name of the project (i.e. PennEast).

AA # The AA is defined by the Feature ID used by AECOM for unique identification of lacustrine features.

Name(s) of Evaluator(s)

The evaluators were the names of the AECOM biologists who completed the evaluation.

Date

The date was determined to be the day the field survey and Form was completed.

Latitude and Longitude

Since these features are typically crossed via horizontal direction drill (HDD), the latitude and longitude was determined in GIS using field collected data to determine the location of the resource's impact.

Impact Size (acres)

The lacustrine impact size was calculated in GIS using the intersection of the proposed right-ofway (ROW) and Project workspace to the delineated boundary of the resource that was field delineated and data points collected using a Trimble GPS unit 7. This information is provided within the Aquatic Resource Impact Table in JPA Section A-1.

AA Size (acres)

The lacustrine AA size is calculated in GIS and consists of the sum in acres of the Impact Size plus an additional 25 feet extending from each side of the impact.

Lacustrine Assessment Form Process – Form

Condition Indices

The following section describes each of the four condition indices evaluated for each lacustrine resource. Each condition index was assessed and a numerical, qualitative score was determined for each index. The four scores are then averaged together to determine the overall Lacustrine Condition Index (LCI). This is the final, combined results of the individual assessment categories.

Condition categories were assigned for each parameter in the form. There were categories that had specific details as to properly describe the feature. This was typically based on percentage of visible impact. These categories were optimal, suboptimal, marginal, and poor. Once narrowed down to a single category, a score would be assigned. The scores ranged from 0 to 20 with approximately 3 to 5 scores per category. In certain situations, the percentage range from the condition category was adjusted evenly across the scores and then selected based upon which score matched with the percentage evaluated.

1. Average Depth Condition Index

The evaluation of the lacustrine feature's average depth within the AA was determined using publically available data such as nautical charts or approximate visual estimations by biologists conducting the resource evaluations. Waterbodies that range 0-6-ft in depth are scored the highest, along with special aquatic habitats (i.e. mud flats, submerged vegetation beds, or emergent wetlands). Waterbodies that were greater than 20-ft in depth received a lower score.

2. Riparian Shoreline Vegetation Condition Index

The evaluation of the Riparian Shoreline Vegetation for lacustrine features was evaluated up to 50-ft inland from the AA's perimeter. A percent aerial coverage was determined based on the vegetative cover type observed in the area. Coverage where vegetation is comprised of mature forested areas is scored higher than areas that are of comprised of maintained lawns or lower quality lots (i.e. impervious surfaces, row crops, mine spoil lands, etc.). Observation percentages are computed in GIS and field verified. Once a percentage is given to these areas, a score is qualitatively assessed producing sub-scores. Sub-scores are then summed to provide an overall score for the index.

3. Riparian Zone of Influence Vegetation Condition Index

The evaluation of the Riparian Zone of Influence Vegetation Condition Index for lacustrine features was evaluated from 50-100-ft inland from the AA's perimeter. A percent aerial coverage was determined based on the vegetative cover type observed in the area. Coverage where vegetation was comprised of mature forested areas is scored higher than areas that are of comprised of maintained lawns or lower quality lots (i.e. impervious surfaces, row crops, mine spoil lands, etc.). Observation percentages are computed in GIS and field verified. Once a percentage was given to these areas, a score is qualitatively assessed producing sub-scores. Sub-scores are then summed to provide an overall score for the index.

4. Shoreline and Near-shore Human Alterations Index

The Shoreline and Near-shore Human Alterations Index for lacustrine features was evaluated for manmade structures or disturbances within 50-ft or along the shoreline of the resource. The condition categories are distributed on a percentage of the area impacted by disturbances (i.e. rip-rap, logs and debris, ramps, docks, etc.). An AA with fewer impacts receives a higher score.

Once all these factors have been calculated, they are averaged to determine an overall Lacustrine Condition Index (LCI) score for the lacustrine resource. Scores can range from 0.05 to 1. A score of one or close to one is interpreted as being a feature that is of higher quality. Lacustrine resources with a lower score can be interpreted as features that have many factors that degrade the quality of the resource and subsequently, lower quality.

		Pennsylvania	Lacustrine Cond	ition Level 2 Rapi	d Assessment (D	ocument No. 310-2	2137-004)			
		-	Pennsylvan	ia Department of	Environmental Pr	otection				
		Fo	r use in lakes, reserv	voirs, and non-wade	able rivers found wit	thin Pennsylvania.				
Project #		Project Name		Date	Impa	ct Size	AA #		AA SIZE	
60414094		PennEast	4/27/2017		See Imp	act Table	052215_JC_1001_LAKE_MA(1)		11.2	
ame(s) of E	valuator(s)		Lat (dd)	Long (dd)	Notes					
	W. Anderson, T.	Lipp	40.886399	-75.561212						
Average D	epth Condition Index				-				_	
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Lacustrine Condition Assessment Form

2/4/2017

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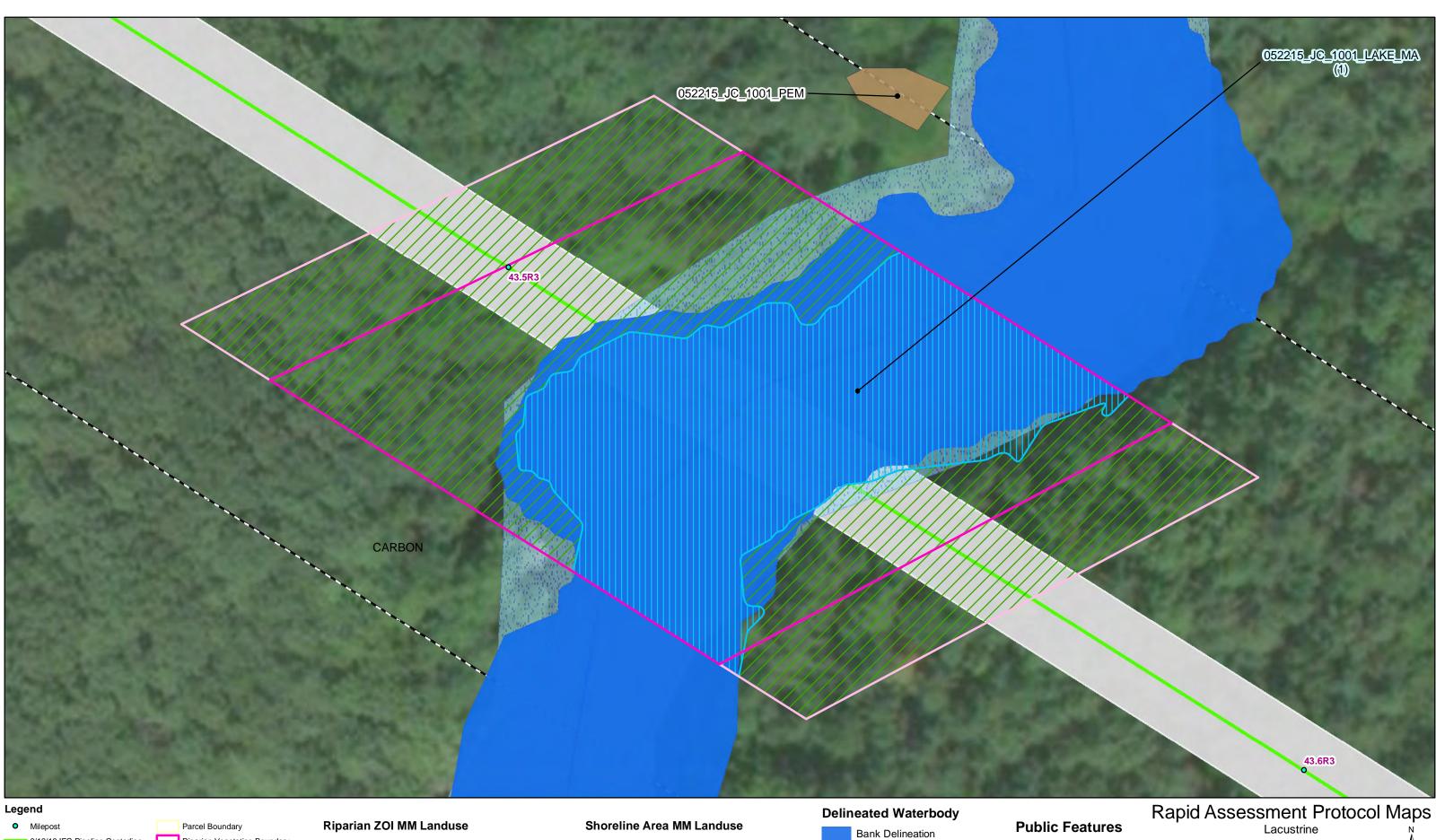
Pennsylvania Lacustrine Condition Level 2 Rapid Assessment (Document No. 310-2137-004)

Pennsylvania Department of Environmental Protection

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For use in lakes, reservoirs, and non-wadeable rivers found within Pennsylvania.

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. Riparian Zo					Category				
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omments:									
		an Alterations Index			Category				
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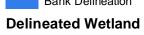
 Milepost 9/19/18 IFC Pipeline Centerline Riparian Vegetation Boundary 9/19/18 IFC Permanent Easement 9/19/18 IFC Survey Area

Riparian ZOI

Forest/Woodland Open Water

Forest/Woodland Open Water

PEM



----- NHD Stream NHD Waterbody Feature:052215_JC_1001_LAKE_MA (1) s RAP Score: Page 2 of 3 60 120 90 15 30 Feet

Lacustrine Condition Assessment Form

Pennsylvania Lacustrine Condition Level 2 Rapid Assessment (Document No. 310-2137-004)

Pennsylvania Department of Environmental Protection

			FO	r use in lakes, reserv	voirs, and non-wadea	able rivers found wit	hin Pennsylvania.			
Project #		Project Name			Date	Impa	ct Size	AA	A #	AA SIZE
60414094		PennEas	t		4/27/2017	See Imp	act Table	052215_JC_100	01_LAKE_MA(2)	9.6
Name(s) of Ev	valuator(s)			Lat (dd)	Long (dd)	Notes				
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Shoreline Vegetation (from water's	containing both her layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥	ub ry. s, or 10	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree	of a non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum and areas of hay production, and ponds or open water	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable	
Shoreline Vegetation	containing both her layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥	ub ry. s, or 10	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less	of a non-maintained, dense herbaceous vegetation, riparian areas lacking shrub and tree stratum and areas of hay production, and ponds or open water areas (< 10	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable	CI= Total
Shoreline Vegetation (from water's edge to 50 ft.	containing both her layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥	ub ry. s, or 10	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree	of a 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)present. If tree stratum (dbh >3	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable	CI= Total Score/2
Shoreline Vegetation (from water's edge to 50 ft.	containing both her layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥	ub ry. s, or 10	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree	of a 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)present. If tree stratum (dbh <3 inches) present, less	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable	CI= Total
Shoreline Vegetation (from water's edge to 50 ft.	containing both her layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥	ub ry. s, or 10	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree	of a 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)present. If tree stratum (dbh >3 inches) present, less than 30% tree canopy cover with	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable	CI= Total Score/2
Shoreline Vegetation (from water's edge to 50 ft.	containing both her layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥	ub ry. s, or 10	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree	of a 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)present. If tree stratum (dbh <3 inches) present, less than 30% tree canopy cover with maintained	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable	CI= Total Score/2
Shoreline Vegetation (from water's edge to 50 ft.	containing both her layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥	ub ry. s, or 10	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree	of a 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)present. If tree stratum (dbh >3 inches) present, less than 30% tree canopy cover with	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable	CI= Total Score/2
Shoreline Vegetation (from waters edge to 50 ft. inland)	containing both he layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus acres are sco	rbaceous and shru intained understo of stream channeli ss of classification strine resources ≥ red as optimal.	ub ry. s, or 10	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained understory.	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree canopy cover.	of a 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)present. If tree stratum (dbh >3 inches) present, less than 30% tree canopy cover with maintained understory.	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI= Total Score/2
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Shoreline Vegetation (from waters edge to 50 ft. inland) SCORE 1. Identify all a 2. Estimate th	containing both her layers or a non-ma Areas comprised of wetlands (regardles condition) and lacus acres are sco 20 19 applicable Condition of e % area within each	rbaceous and shru intained understo of stream channel iss of classification strine resources ≥ red as optimal.	ub ry. s, or 10 16 thin t	of ā tree stratum ((dbh >3 inches)) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained understory.	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree canopy cover.	of a 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)present. If tree stratum (dbh <3 inches) present, less than 30% tree canopy cover with maintained understory. 8 7 6	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI= Total Score/2
Shoreline Vegetation (from waters edge to 50 ft. inland) SCORE 1. Identify all a 2. Estimate th	containing both here layers or a non-ma Areas comprised of wetlands (regardless condition) and lacus acres are sco 20 19 applicable Condition of e % area within each Shoreline Area in de	rbaceous and shru intained understo of stream channeli ss of classification strine resources ≥ red as optimal.	ub ry. s, or 10 16 thin t	of ā tree stratum ((dbh >3 inches)) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained understory.	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree canopy cover.	of a 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)present. If tree stratum (dbh <3 inches) present, less than 30% tree canopy cover with maintained understory. 8 7 6	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI= Total Score/2
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Shoreline Vegetation (from waters edge to 50 ft. inland) SCORE 1. Identify all a 2. Estimate th 3. Enter the %	containing both her layers or a non-ma Areas comprised d wetlands (regardles condition) and lacus acres are sco acres are sco 20 19 20 19 20 2	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥ red as optimal. 18 17 Category areas wi condition categor coimal form (0.00) 100%	ub ry. s, or 10 16 thin t	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained understory.	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree canopy cover.	of a 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)present. If tree stratum (dbh >3 inches) present, less than 30% tree canopy cover with maintained understory. 8 7 6 Total Su	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI= Total Score/2 0
Shoreline Vegetation (from waters edge to 50 ft. inland) SCORE 1. Identify all a 2. Estimate th 3. Enter the %	containing both her layers or a non-ma Areas comprised d wetlands (regardles condition) and lacus acres are sco acres are sco 20 19 20 20 19 20 20 19 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 2	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥ red as optimal.	ub ry. s, or 10 16 thin t	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained understory.	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree canopy cover.	of a 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)present. If tree stratum (dbh >3 inches) present, less than 30% tree canopy cover with maintained understory. 8 7 6 Total Su	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. 3 2 1 Scores) Total Sub-Scores:	CI= Total Score/2
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Shoreline Vegetation (from water's edge to 50 ft. inland) SCORE 1. Identify all a 2. Estimate the 3. Enter the %	containing both her layers or a non-ma Areas comprised d wetlands (regardles condition) and lacus acres are sco acres are sco 20 19 20 20 19 20 20 19 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 2	rbaceous and shru intained understo of stream channel ss of classification strine resources ≥ red as optimal.	ub ry. s, or 10 16 thin t	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover and containing both herbaceous and shrub layers or a non-maintained understory.	of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained understory.	of a non-maintained, dense herbaceous vegetation with either a shrub layer or a tree stratum (dbh >3 inches) present, with less than 30% tree canopy cover.	of a 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)present. If tree stratum (dbh >3 inches) present, less than 30% tree canopy cover with maintained understory. 8 7 6 Total So 0% 0	maintained areas, nurseries; no-till cropland; actively grazed pasture, sparsely vegetated non-maintained area, recently seeded and stabilized, or other comparable condition.	mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions. 3 2 1 Scores) Total Sub-Scores:	CI= Total Score/2 0

2/4/2017

Lacustrine Condition Assessment Form

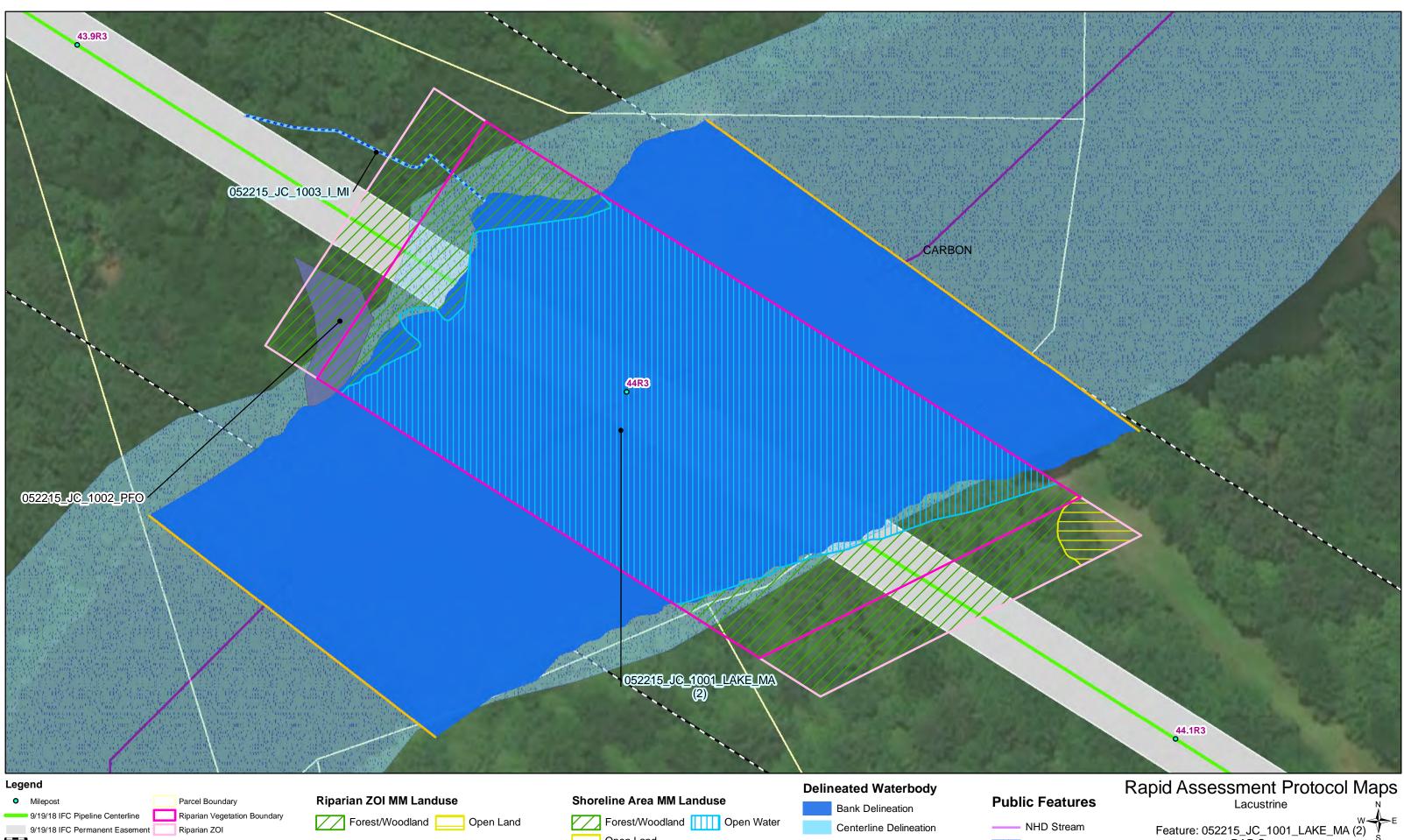
Pennsylvania Lacustrine Condition Level 2 Rapid Assessment (Document No. 310-2137-004)

Pennsylvania Department of Environmental Protection

For use in lakes, reservoirs, and non-wadeable rivers found within Pennsylvania.

Riparian Zo	one of influence (20								T
					Category				Ļ
		timal	Suboptimal			ginal		por	
Riparian Zone of Influence from 50-100 feet inland)	stratum (diameter at 3 inches) present, equal to 60% tree containing both he layers or a non-ma Areas comprised wetlands (regardle: condition) and lacus	tion consists of a free breast height (dbh) > with greater than or canopy cover and rbaceous and shrub initained understory. of stream channels, ss of classification or strine resources ≥ 10 red as optimal.	High Suboptimal: Riparian ZOI vegetation consists of a tree stratum (dbh >3 inches) present, with greater 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 vegetation consists of a tree stratum (dbh >3 inches) present, with greater than or equal to 30% and less than 60% tree canopy cover with maintained understory.	High Marginal: Riparian ZOI vegetation consists of non-maintained, dense herbaceous vegetation with either a shrub layer or a tree layer (dbh >3 inches) present, with less than or equal to 30% tree canopy cover.	Low Marqinal: Riparian ZOI vegetation consists of a 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)present. If tree stratum (dbh >3 inches) present, less than 30% tree canopy cover with maintained understory.	High Poor: Riparian ZOI vegetation consists of lawns, mowed, and 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 vegetation consists of impervious surfaces, mine spoil lands, denuded surfaces, row crops, active feed lots, impervious trails, or other comparable conditions.	CI= Tota Score 0
SCORE				13 12 11	10 9	8 7 6	5 4	3 2 1	
2. Estimate th	ne % area within each	Category areas within condition category. (form (0.00) and Score	Calculators are provide		ð.	Total Se	core = SUM(%Areas*	Scores)	
	Condition Category:							Total	
0	% ZOI Area:	100%	0%	0%	0%	0%	0%	Sub-Scores:	
Scoring:	Score: Sub-score:	20 21.00	0.00	0.00	0.00	0.00	0	21.00	1.05
omments:									
	and Near chore Hum	on Alterations Index							
	and Near-shore Hum	an Alterations Index		Conditior	n Category				
	Opt	timal	Subo	ptimal	Mar	iginal		por	
4. Shoreline a				ptimal <u>Low Suboptimal:</u> Man-made structures, roads or other disturbances within 50 feet or along the lacustrine shoreline occupying greater than or equal to 25% but		Low Marginal: Man made structures, roads or other disturbances within 50 feet or along the lacustrine shoreline occupying greater than or equal to 55% but less than 70% of	Properties of the shoreline.	Dor Low Poor: Man-made structures, roads or other disturbances within 50 feet or along the lacustrine (shoreline) occupying greater than or equal to 85% of the shoreline.	CI= Tota Score. 0
Shoreline and Near-shore Human Alterations	Optimal: No man-made structures, roads or other disturbances within 50 feet or along the lacustrine shoreline.	timal <u>Low Optimal:</u> Man-made Structures, roads or other disturbances within 50 feet or along the lacustrine shoreline occupying less than 10% of the shoreline.	Subo High Suboptimal: Man-made structures, roads or other disturbances within 50 feet or along the lacustrine shoreline occupying greater than or equal to 10% but less than 25% of the shoreline.	ptimal Low Suboptimal: Man-made structures, roads or other disturbances within 50 feet or along the lacustrine shoreline occupying greater than or equal to 25% but less than 40% of the	Mar High Marginal: Man-made structures, roads or other disturbances within 50 feet or along the lacustrine shoreline occupying greater than or equal to 40% but less than 55% of the	Low Marginal: Man made structures, roads or other disturbances within 50 feet or along the lacustrine shoreline occupying greater than or equal to 55% but less than 70% of	High Poor: Man-made structures, roads or other disturbances within 50 feet or along the lacustrine (shoreline) occupying greater than or equal to 70% but less than 85% of the shoreline.	Low Poor: Man-made structures, roads or other disturbances within 50 feet or along the lacustrine (shoreline) occupying greater than or equal to 85%	Tota Score 0

2/4/2017



9/19/18 IFC Survey Area

Open Land

Delineated Wetland



Open Ended Delineation

PFO

Rap	oid A	Asse	ssmer	nt Prote	ocol Maps
			Lacust	rine	N A
	Feat	ure: 052	2215_JC_ RAP So Page 1		(E_MA (2) s €
0	20	40	80	120	160
					Feet

NHD Waterbody