



Transcontinental Gas Pipe Line Company, LLC

Section 3-6 Standard PCSM Technical Guide

Regional Energy Access Expansion Project

April 2021

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ATTACHMENT 3.6.1
REGIONAL ENERGY LATERAL –
MLV-515RA20

STANDARD PCSM TECHNICAL GUIDE

Regional Energy Lateral- MLV-515RA20

Project: Regional Energy Access Expansion

Project Name: Regional Energy Lateral - MLV-515RA20 Date: 4/01/21

Check that the following items are completed in the PCSM Plan. If an item is not applicable write N/A.

Item Location: D = E&S Drawings, N = E&S Narrative, D&N = Drawings and Narrative

“The PCSM Plan shall be prepared by a person trained and experienced in PCSM design methods and techniques applicable to the size and scope of the project being designed”

Name Kevin C. Clark Address 2525 Green Tech Drive, Suite D, State College, PA-16803

Telephone No. (814)-238-2060

“The existing topographic features of the project site and the immediate surrounding area”

<u>D</u>	Legible Mapping	D
<u>D</u>	Existing Contours	D
<u>D</u>	Type of Cover	D
<u>D</u>	Existing Improvements (i.e. roads, buildings, utilities, etc.)	D
<u>D</u>	Sufficient surrounding area	D
<u>D</u>	Complete mapping symbols and north arrow	D
<u>D&N</u>	Location Map (i.e. USGS)	D or N

“The types, depth, slope, locations and limitations of the soils and geologic formations”

<u>D&N</u>	Types, slopes and locations of soil types	D
<u>D&N</u>	Soil type use limitations and resolutions	N
<u>D&N</u>	Hydric Soils	N

“The characteristics of the project site, including the past, present and proposed land uses and the proposed alteration to the project site”

<u>D</u>	Proposed limits of construction	D
<u>D</u>	Proposed contours and grades	D
<u>D</u>	Proposed improvements (i.e. roads, buildings, utilities etc.)	D
<u>D&N</u>	Past, present and proposed land uses	N
<u>D</u>	Existing features	D
<u>D</u>	Proposed Impervious Areas	D

“An identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area”

<u>N</u>	The design storm used for calculations is identified	N
<u>N</u>	Preconstruction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	Post-construction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	The net change in runoff rate and volume are identified for the entire project site and each drainage area	N

“An identification of the location of surface waters of this Commonwealth, which may receive runoff within or from the project site and their classification under Chapter 93 (relating to water quality standards)”

<u>D</u>	Existing streams, wetlands, floodway, etc.	D
<u>D&N</u>	Receiving watercourses	D

D&N _____ Chapter 93 classification streams or other water bodies N

“A written description of the location and type of PCSM BMPs including construction details for permanent stormwater BMPs including permanent stabilization specifications and locations”

D&N _____ All permanent PCSM BMPs are identified in the narrative and shown in the plan drawings D & N
D&N _____ Construction details are included for all permanent PCSM BMPs N
D&N _____ Permanent stabilization specifications for all permanent PCSM BMPs are included N
N/A _____ Proprietary BMP systems are illustrated on the drawings in accordance with their manufacturer’s requirements D
D&N _____ Infiltration BMPs are provided with overflows and/or underdrains as needed to meet site and soil limitations D & N

“A sequence of PCSM BMP implementation or installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of PCSM BMP installation”

D&N _____ Complete and site specific sequence of BMP installations D & N
D&N _____ Activities planned to limit exposed areas D & N
D&N _____ Removal of temporary BMPs D & N
D&N _____ Critical stages of BMP installation are identified N

“Supporting calculations”

N _____ Calculations for all BMPs and points of interest are provided. N
N _____ Methodology used for all calculations is identified. N
N _____ The design storm used for each calculation is identified. N
N _____ Current (2005 or more recent) Act 167 plans are identified D or N
N _____ Act 167 plan consistency verification is provided N
N/A _____ All flowcharts from the Pennsylvania Stormwater BMP Manual with flow path highlighted have been provided N
N _____ All appropriate worksheets from the Pennsylvania Stormwater BMP Manual have been completed and are provided N

“Plan drawings”

D _____ Locations of BMPs are shown along with tributary drainage areas D
D&N _____ Construction details are included for all PCSM BMPs D
D _____ All easements and rights-of-way are shown on plan drawings. D
D _____ Sensitive resources are shown (i.e. steep slopes, riparian, etc.) D & N
D _____ Existing and proposed discharges & points of interest D
D _____ Floodplain and floodway delineations D
D _____ Locations and sufficient infiltration testing to represent proposed locations of volume and rate control BMPs D
D _____ PCSM Plan Drawings are consistent with E&S Plan in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, E&S BMPs, etc. D

Infiltration BMPs

D&N _____ All infiltration BMPs must have infiltration testing completed N
N _____ All infiltration BMPs must have soil testing completed N
D&N _____ All infiltration BMPs should be sited on un-compacted soils D & N

BMP 6.4.2 Infiltration Basins

_____ Maintain a minimum 2-foot separation to bedrock and high water table D & N
_____ Do not install on recently placed fill (<5 years) D & N
_____ Allow 2 foot buffer between bed bottom and seasonal high groundwater table D & N

BMP 6.4.4 Infiltration Trench

_____	Perforated pipe set at a minimum slope in a stone filled, level-bottomed trench	D & N
_____	Limited in width (3 to 8 feet) and depth of stone (6 feet max recommended)	D & N
_____	Trench is wrapped in nonwoven geotextile (top, sides, and bottom)	D & N
_____	A minimum of 6" of topsoil is placed over trench and vegetated	D & N

BMP 6.4.5 Bio-retention

_____	Ponding depths generally limited to 12 inches or less	D & N
_____	Native vegetation that is tolerant of variability, salts and stress	D & N
_____	Modify soil with compost	D & N

BMP 6.4.8 Vegetated swale

_____	Longitudinal slopes range from 1 to 6 %	D & N
_____	Side slopes range from 3:1 to 5:1	D & N
_____	Bottom width of 2 to 8 feet	D & N
_____	Convey the 10-year storm event with a minimum of 6 inches of freeboard	D & N
_____	Designed for non-erosive velocities up to the 10-year storm event	D & N

BMP 6.4.9 Vegetated Filter strip

_____	Filter Strip length is a function of the slope, vegetative cover, and soil type	D & N
_____	Minimum recommended length of filter strip is 25 feet	D & N
_____	Filter strip slope should never exceed 8%; less than 5% are preferred	D & N
_____	Level spreading devices are recommended to provide uniform sheet flow	D & N
_____	Maximum contributing drainage area slope is generally less than 5%	D & N
_____	Minimum filter strip width should equal the width of the drainage area	D & N

BMP 6.4.10 Infiltration Berm

_____	Maintain a minimum 2-foot separation to bedrock and high water table	D & N
_____	Berms should be relatively low, preferable no more than 24 inches in height	D & N
_____	If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1	D & N
_____	Berms should be vegetated with turf grass at a minimum	D & N

BMP 6.5.2 Runoff recapture and use

_____	Storage devices designed to capture a portion of small, frequent storm events	D & N
_____	Systems must provide for bypass or overflow of large storm events	D & N
_____	Water budget incorporating anticipated water inflow and usage required	D & N

Water Quality and Rate Control BMPs

BMP 6.6.1 Constructed Wetlands

_____	Adequate drainage area or proof of sustained base flow	D & N
_____	Maintenance of permanent water surface	D & N
_____	Relatively impermeable soils or engineered liner	D & N
_____	Sediment collection and removal	D & N
_____	Adjustable permanent pool and dewatering mechanism	D & N

BMP 6.6.2 Wet pond/Retention basin

_____	Adequate drainage area or proof of sustained baseflow	D & N
_____	Natural high groundwater table	D & N
_____	Maintenance of permanent water surface	D & N
_____	Should have at least 2 to 1 length to width ratio	D & N
_____	Forebay for sediment collection and removal	D & N
_____	Dewatering mechanism	D & N

BMP 6.6.3 Dry extended basin

<u>D&N</u>	Hydraulic capacity controls effectiveness	D & N
<u>D&N</u>	Ideal in combination with other BMPs	D & N

Restoration BMPs

BMP 6.7.1 Riparian buffer restoration

_____	Reestablish buffer areas along perennial, intermittent, and ephemeral streams	D & N
_____	Plant native, diverse tree and shrub vegetation	D & N
_____	Create a short-term maintenance and long-term maintenance plan	D & N
_____	Clear, well-marked boundary	D & N

BMP 6.7.2 Landscape restoration

_____	Minimize traditional turf lawn area	D & N
_____	Maximize landscape restoration area planted with native vegetation	D & N
_____	Protect landscape restoration area during construction	D & N
_____	Prevent post-construction erosion through adequate stabilization	D & N
_____	Minimize mowing (two times per year)	D & N

BMP 6.7.3 Soil amendment and restoration

_____	Physical loosening	D & N
_____	Compost amendments	D & N

BMP 6.7.4 Floodplain restoration

_____	Can prevent riparian problems from getting worse or can fix problems caused by historical practices	D & N
_____	Reattachment of root systems of floodplain vegetation/riparian areas connected to groundwater and/or base flow	D & N
_____	Removal of "legacy sediments" and associated nutrients stored within the stream corridors prior to release through bank erosion	D & N

Other BMPs and related structural measures

BMP 6.8.1 Level spreaders

_____	Must be level	D & N
_____	Are not applicable in areas with easily erodible soils and/or little vegetation	D & N
_____	Should safely diffuse at least the 10-year storm peak rate	D & N
_____	Bypassed flows should be stabilized in a sufficient manner	D & N

"A long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation"

<u>D&N</u>	Inspection schedule of each permanent BMP is provided	N
<u>D&N</u>	Directions for maintenance and/or replacement of each BMP	N
<u>D&N</u>	Directions for sediment disposal	N
<u>D&N</u>	Responsible party (owner, operator, inspector) has been identified	N

"Procedures which ensure that the proper measures for recycling or disposal of materials associated with or from the PCSM BMPs are in accordance with DEP laws, regulations and requirements"

<u>D&N</u>	Project wastes are identified	N
<u>D&N</u>	Directions for recycling /disposal of wastes	D or N

“An identification of naturally occurring geologic formations or soil conditions that may provide hazards to the project or surrounding environment or have the potential to cause or contribute to pollution after earth disturbance activities are completed and PCSM BMPs are operational and development of a management plan to avoid or minimize potential pollution and its impacts”

<u>N</u>	Potential for geologic or soil conditions to cause pollution during construction	N
<u>D&N</u>	Instructions for proper handling and/or disposal of all materials which could cause pollution are provided	D
<u>D</u>	Typical details are provided for proper handling and/or disposal of all such materials	D
<u>N/A</u>	The locations of all such materials are clearly shown on the plan maps	D

“An identification of potential thermal impacts from post construction stormwater to surface waters of this Commonwealth including BMPs to avoid, minimize or mitigate potential pollution from thermal impacts”

<u>N</u>	Applicant has described how thermal impacts of stormwater runoff from the project site were avoided	N
<u>D&N</u>	Applicant has described how thermal impacts were minimized and mitigated	D & N

“A riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

<u>D</u>	Existing and/or proposed buffers are shown on the plan drawings	D
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ATTACHMENT 3.6.2
REGIONAL ENERGY LATERAL –
MLV-515RA30

STANDARD PCSM TECHNICAL GUIDE

Regional Energy Lateral- MLV515RA30

Project: Regional Energy Access Expansion

Project Name: Regional Energy Lateral- MLV515RA30 Date: 4/01/21

Check that the following items are completed in the PCSM Plan. If an item is not applicable write N/A.

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“The existing topographic features of the project site and the immediate surrounding area”

<u>D</u>	Legible Mapping	D
<u>D</u>	Existing Contours	D
<u>D</u>	Type of Cover	D
<u>D</u>	Existing Improvements (i.e. roads, buildings, utilities, etc.)	D
<u>D</u>	Sufficient surrounding area	D
<u>D</u>	Complete mapping symbols and north arrow	D
<u>D&N</u>	Location Map (i.e. USGS)	D or N

“The types, depth, slope, locations and limitations of the soils and geologic formations”

<u>D&N</u>	Types, slopes and locations of soil types	D
<u>D&N</u>	Soil type use limitations and resolutions	N
<u>D&N</u>	Hydric Soils	N

“The characteristics of the project site, including the past, present and proposed land uses and the proposed alteration to the project site”

<u>D</u>	Proposed limits of construction	D
<u>D</u>	Proposed contours and grades	D
<u>D</u>	Proposed improvements (i.e. roads, buildings, utilities etc.)	D
<u>D&N</u>	Past, present and proposed land uses	N
<u>D</u>	Existing features	D
<u>D</u>	Proposed Impervious Areas	D

“An identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area”

<u>N</u>	The design storm used for calculations is identified	N
<u>N</u>	Preconstruction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	Post-construction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	The net change in runoff rate and volume are identified for the entire project site and each drainage area	N

“An identification of the location of surface waters of this Commonwealth, which may receive runoff within or from the project site and their classification under Chapter 93 (relating to water quality standards)”

<u>D</u>	Existing streams, wetlands, floodway, etc.	D
<u>D&N</u>	Receiving watercourses	D

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“A written description of the location and type of PCSM BMPs including construction details for permanent stormwater BMPs including permanent stabilization specifications and locations”

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N/A _____ Proprietary BMP systems are illustrated on the drawings in accordance with their manufacturer’s requirements D

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D&N _____ Complete and site specific sequence of BMP installations D & N

D&N _____ Activities planned to limit exposed areas D & N

D&N _____ Removal of temporary BMPs D & N

D&N _____ Critical stages of BMP installation are identified N

“Supporting calculations”

N _____ Calculations for all BMPs and points of interest are provided. N

N _____ Methodology used for all calculations is identified. N

N _____ The design storm used for each calculation is identified. N

N _____ Current (2005 or more recent) Act 167 plans are identified D or N

N _____ Act 167 plan consistency verification is provided N

N/A _____ All flowcharts from the Pennsylvania Stormwater BMP Manual with flow path highlighted have been provided N

N _____ All appropriate worksheets from the Pennsylvania Stormwater BMP Manual have been completed and are provided N

“Plan drawings”

D _____ Locations of BMPs are shown along with tributary drainage areas D

D&N _____ Construction details are included for all PCSM BMPs D

D _____ All easements and rights-of-way are shown on plan drawings. D

D _____ Sensitive resources are shown (i.e. steep slopes, riparian, etc.) D & N

D _____ Existing and proposed discharges & points of interest D

D _____ Floodplain and floodway delineations D

D _____ Locations and sufficient infiltration testing to represent proposed locations of volume and rate control BMPs D

D _____ PCSM Plan Drawings are consistent with E&S Plan in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, E&S BMPs, etc. D

Infiltration BMPs

D&N _____ All infiltration BMPs must have infiltration testing completed N

N _____ All infiltration BMPs must have soil testing completed N

D&N _____ All infiltration BMPs should be sited on un-compacted soils D & N

BMP 6.4.2 Infiltration Basins

_____ Maintain a minimum 2-foot separation to bedrock and high water table D & N

_____ Do not install on recently placed fill (<5 years) D & N

_____ Allow 2 foot buffer between bed bottom and seasonal high groundwater table D & N

BMP 6.4.4 Infiltration Trench

_____	Perforated pipe set at a minimum slope in a stone filled, level-bottomed trench	D & N
_____	Limited in width (3 to 8 feet) and depth of stone (6 feet max recommended)	D & N
_____	Trench is wrapped in nonwoven geotextile (top, sides, and bottom)	D & N
_____	A minimum of 6" of topsoil is placed over trench and vegetated	D & N

BMP 6.4.5 Bio-retention

_____	Ponding depths generally limited to 12 inches or less	D & N
_____	Native vegetation that is tolerant of variability, salts and stress	D & N
_____	Modify soil with compost	D & N

BMP 6.4.8 Vegetated swale

<u>D&N</u>	Longitudinal slopes range from 1 to 6 %	D & N
<u>D&N</u>	Side slopes range from 3:1 to 5:1	D & N
<u>D&N</u>		
<u>D&N</u>	Convey the 10-year storm event with a minimum of 6 inches of freeboard	D & N
<u>D&N</u>	Designed for non-erosive velocities up to the 10-year storm event	D & N

BMP 6.4.9 Vegetated Filter strip

_____	Filter Strip length is a function of the slope, vegetative cover, and soil type	D & N
_____	Minimum recommended length of filter strip is 25 feet	D & N
_____	Filter strip slope should never exceed 8%; less than 5% are preferred	D & N
_____	Level spreading devices are recommended to provide uniform sheet flow	D & N
_____	Maximum contributing drainage area slope is generally less than 5%	D & N
_____	Minimum filter strip width should equal the width of the drainage area	D & N

BMP 6.4.10 Infiltration Berm

_____	Maintain a minimum 2-foot separation to bedrock and high water table	D & N
_____	Berms should be relatively low, preferable no more than 24 inches in height	D & N
_____	If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1	D & N
_____	Berms should be vegetated with turf grass at a minimum	D & N

BMP 6.5.2 Runoff recapture and use

_____	Storage devices designed to capture a portion of small, frequent storm events	D & N
_____	Systems must provide for bypass or overflow of large storm events	D & N
_____	Water budget incorporating anticipated water inflow and usage required	D & N

Water Quality and Rate Control BMPs

BMP 6.6.1 Constructed Wetlands

_____	Adequate drainage area or proof of sustained base flow	D & N
_____	Maintenance of permanent water surface	D & N
_____	Relatively impermeable soils or engineered liner	D & N
_____	Sediment collection and removal	D & N
_____	Adjustable permanent pool and dewatering mechanism	D & N

BMP 6.6.2 Wet pond/Retention basin

_____	Adequate drainage area or proof of sustained baseflow	D & N
_____	Natural high groundwater table	D & N
_____	Maintenance of permanent water surface	D & N
_____	Should have at least 2 to 1 length to width ratio	D & N
_____	Forebay for sediment collection and removal	D & N
_____	Dewatering mechanism	D & N

BMP 6.6.3 Dry extended basin

_____	Hydraulic capacity controls effectiveness	D & N
_____	Ideal in combination with other BMPs	D & N

Restoration BMPs

BMP 6.7.1 Riparian buffer restoration

_____	Reestablish buffer areas along perennial, intermittent, and ephemeral streams	D & N
_____	Plant native, diverse tree and shrub vegetation	D & N
_____	Create a short-term maintenance and long-term maintenance plan	D & N
_____	Clear, well-marked boundary	D & N

BMP 6.7.2 Landscape restoration

_____	Minimize traditional turf lawn area	D & N
_____	Maximize landscape restoration area planted with native vegetation	D & N
_____	Protect landscape restoration area during construction	D & N
_____	Prevent post-construction erosion through adequate stabilization	D & N
_____	Minimize mowing (two times per year)	D & N

BMP 6.7.3 Soil amendment and restoration

_____	Physical loosening	D & N
_____	Compost amendments	D & N

BMP 6.7.4 Floodplain restoration

_____	Can prevent riparian problems from getting worse or can fix problems caused by historical practices	D & N
_____	Reattachment of root systems of floodplain vegetation/riparian areas connected to groundwater and/or base flow	D & N
_____	Removal of "legacy sediments" and associated nutrients stored within the stream corridors prior to release through bank erosion	D & N

Other BMPs and related structural measures

BMP 6.8.1 Level spreaders

_____	Must be level	D & N
_____	Are not applicable in areas with easily erodible soils and/or little vegetation	D & N
_____	Should safely diffuse at least the 10-year storm peak rate	D & N
_____	Bypassed flows should be stabilized in a sufficient manner	D & N

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<u>D&N</u>	Directions for sediment disposal	N
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<u>N</u>	Potential for geologic or soil conditions to cause pollution during construction	N
<u>D&N</u>	Instructions for proper handling and/or disposal of all materials which could cause pollution are provided	D
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“A riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

<u>D</u>	Existing and/or proposed buffers are shown on the plan drawings	D
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ATTACHMENT 3.6.3
REGIONAL ENERGY LATERAL –
CARVERTON TIE-IN

STANDARD PCSM TECHNICAL GUIDE

Regional Energy Lateral- Carverton Tie-in

Project: Regional Energy Access Expansion

Project Name: Regional Energy Lateral- Carverton Tie-In Date: 4/01/21

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 N/A _____ Proprietary BMP systems are illustrated on the drawings in accordance with their manufacturer’s requirements D
 D&N _____ Infiltration BMPs are provided with overflows and/or underdrains as needed to meet site and soil limitations D & N

“A sequence of PCSM BMP implementation or installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of PCSM BMP installation”

D&N _____ Complete and site specific sequence of BMP installations D & N
 D&N _____ Activities planned to limit exposed areas D & N
 D&N _____ Removal of temporary BMPs D & N
 D&N _____ Critical stages of BMP installation are identified N

“Supporting calculations”

N _____ Calculations for all BMPs and points of interest are provided. N
 N _____ Methodology used for all calculations is identified. N
 N _____ The design storm used for each calculation is identified. N
 N _____ Current (2005 or more recent) Act 167 plans are identified D or N
 N _____ Act 167 plan consistency verification is provided N
 N/A _____ All flowcharts from the Pennsylvania Stormwater BMP Manual with flow path highlighted have been provided N
 N _____ All appropriate worksheets from the Pennsylvania Stormwater BMP Manual have been completed and are provided N

“Plan drawings”

D _____ Locations of BMPs are shown along with tributary drainage areas D
 D&N _____ Construction details are included for all PCSM BMPs D
 D _____ All easements and rights-of-way are shown on plan drawings. D
 D _____ Sensitive resources are shown (i.e. steep slopes, riparian, etc.) D & N
 D _____ Existing and proposed discharges & points of interest D
 D _____ Floodplain and floodway delineations D
 D _____ Locations and sufficient infiltration testing to represent proposed locations of volume and rate control BMPs D
 D _____ PCSM Plan Drawings are consistent with E&S Plan in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, E&S BMPs, etc. D

Infiltration BMPs

D&N _____ All infiltration BMPs must have infiltration testing completed N
 N _____ All infiltration BMPs must have soil testing completed N
 D&N _____ All infiltration BMPs should be sited on un-compacted soils D & N

BMP 6.4.2 Infiltration Basins

_____ Maintain a minimum 2-foot separation to bedrock and high water table D & N
 _____ Do not install on recently placed fill (<5 years) D & N
 _____ Allow 2 foot buffer between bed bottom and seasonal high groundwater table D & N

BMP 6.4.4 Infiltration Trench

_____	Perforated pipe set at a minimum slope in a stone filled, level-bottomed trench	D & N
_____	Limited in width (3 to 8 feet) and depth of stone (6 feet max recommended)	D & N
_____	Trench is wrapped in nonwoven geotextile (top, sides, and bottom)	D & N
_____	A minimum of 6" of topsoil is placed over trench and vegetated	D & N

BMP 6.4.5 Bio-retention

_____	Ponding depths generally limited to 12 inches or less	D & N
_____	Native vegetation that is tolerant of variability, salts and stress	D & N
_____	Modify soil with compost	D & N

BMP 6.4.8 Vegetated swale

_____	Longitudinal slopes range from 1 to 6 %	D & N
_____	Side slopes range from 3:1 to 5:1	D & N
_____	Bottom width of 2 to 8 feet	D & N
_____	Convey the 10-year storm event with a minimum of 6 inches of freeboard	D & N
_____	Designed for non-erosive velocities up to the 10-year storm event	D & N

BMP 6.4.9 Vegetated Filter strip

_____	Filter Strip length is a function of the slope, vegetative cover, and soil type	D & N
_____	Minimum recommended length of filter strip is 25 feet	D & N
_____	Filter strip slope should never exceed 8%; less than 5% are preferred	D & N
_____	Level spreading devices are recommended to provide uniform sheet flow	D & N
_____	Maximum contributing drainage area slope is generally less than 5%	D & N
_____	Minimum filter strip width should equal the width of the drainage area	D & N

BMP 6.4.10 Infiltration Berm

D&N	Maintain a minimum 2-foot separation to bedrock and high water table	D & N
D&N	Berms should be relatively low, preferable no more than 24 inches in height	D & N
D&N	If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1	D & N
D&N	Berms should be vegetated with turf grass at a minimum	D & N

BMP 6.5.2 Runoff recapture and use

_____	Storage devices designed to capture a portion of small, frequent storm events	D & N
_____	Systems must provide for bypass or overflow of large storm events	D & N
_____	Water budget incorporating anticipated water inflow and usage required	D & N

Water Quality and Rate Control BMPs

BMP 6.6.1 Constructed Wetlands

_____	Adequate drainage area or proof of sustained base flow	D & N
_____	Maintenance of permanent water surface	D & N
_____	Relatively impermeable soils or engineered liner	D & N
_____	Sediment collection and removal	D & N
_____	Adjustable permanent pool and dewatering mechanism	D & N

BMP 6.6.2 Wet pond/Retention basin

_____	Adequate drainage area or proof of sustained baseflow	D & N
_____	Natural high groundwater table	D & N
_____	Maintenance of permanent water surface	D & N
_____	Should have at least 2 to 1 length to width ratio	D & N
_____	Forebay for sediment collection and removal	D & N
_____	Dewatering mechanism	D & N

BMP 6.6.3 Dry extended basin

_____	Hydraulic capacity controls effectiveness	D & N
_____	Ideal in combination with other BMPs	D & N

Restoration BMPs

BMP 6.7.1 Riparian buffer restoration

_____	Reestablish buffer areas along perennial, intermittent, and ephemeral streams	D & N
_____	Plant native, diverse tree and shrub vegetation	D & N
_____	Create a short-term maintenance and long-term maintenance plan	D & N
_____	Clear, well-marked boundary	D & N

BMP 6.7.2 Landscape restoration

_____	Minimize traditional turf lawn area	D & N
_____	Maximize landscape restoration area planted with native vegetation	D & N
_____	Protect landscape restoration area during construction	D & N
_____	Prevent post-construction erosion through adequate stabilization	D & N
_____	Minimize mowing (two times per year)	D & N

BMP 6.7.3 Soil amendment and restoration

_____	Physical loosening	D & N
_____	Compost amendments	D & N

BMP 6.7.4 Floodplain restoration

_____	Can prevent riparian problems from getting worse or can fix problems caused by historical practices	D & N
_____	Reattachment of root systems of floodplain vegetation/riparian areas connected to groundwater and/or base flow	D & N
_____	Removal of "legacy sediments" and associated nutrients stored within the stream corridors prior to release through bank erosion	D & N

Other BMPs and related structural measures

BMP 6.8.1 Level spreaders

_____	Must be level	D & N
_____	Are not applicable in areas with easily erodible soils and/or little vegetation	D & N
_____	Should safely diffuse at least the 10-year storm peak rate	D & N
_____	Bypassed flows should be stabilized in a sufficient manner	D & N

"A long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation"

<u>D&N</u>	Inspection schedule of each permanent BMP is provided	N
<u>D&N</u>	Directions for maintenance and/or replacement of each BMP	N
<u>D&N</u>	Directions for sediment disposal	N
<u>D&N</u>	Responsible party (owner, operator, inspector) has been identified	N

"Procedures which ensure that the proper measures for recycling or disposal of materials associated with or from the PCSM BMPs are in accordance with DEP laws, regulations and requirements"

<u>D&N</u>	Project wastes are identified	N
<u>D&N</u>	Directions for recycling /disposal of wastes	D or N

“An identification of naturally occurring geologic formations or soil conditions that may provide hazards to the project or surrounding environment or have the potential to cause or contribute to pollution after earth disturbance activities are completed and PCSM BMPs are operational and development of a management plan to avoid or minimize potential pollution and its impacts”

<u>N</u>	Potential for geologic or soil conditions to cause pollution during construction	N
<u>D&N</u>	Instructions for proper handling and/or disposal of all materials which could cause pollution are provided	D
<u>D</u>	Typical details are provided for proper handling and/or disposal of all such materials	D
<u>N/A</u>	The locations of all such materials are clearly shown on the plan maps	D

“An identification of potential thermal impacts from post construction stormwater to surface waters of this Commonwealth including BMPs to avoid, minimize or mitigate potential pollution from thermal impacts”

<u>N</u>	Applicant has described how thermal impacts of stormwater runoff from the project site were avoided	N
<u>D&N</u>	Applicant has described how thermal impacts were minimized and mitigated	D & N

“A riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

<u>D</u>	Existing and/or proposed buffers are shown on the plan drawings	D
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ATTACHMENT 3.6.4
REGIONAL ENERGY LATERAL –
LOWER DEMUNDS REL TIE-IN

STANDARD PCSM TECHNICAL GUIDE

Regional Energy Lateral- Lower Demunds Tie-in

Project: Regional Energy Access Expansion

Project Name: Regional Energy Lateral- Lower Demunds Tie-in Date: 4/01/21

Check that the following items are completed in the PCSM Plan. If an item is not applicable write N/A.

Item Location: D = E&S Drawings, N = E&S Narrative, D&N = Drawings and Narrative

“The PCSM Plan shall be prepared by a person trained and experienced in PCSM design methods and techniques applicable to the size and scope of the project being designed”

Name Kevin C. Clark Address 2525 Green Tech Drive, Suite D, State College, PA-16803

Telephone No. (814)-238-2060

“The existing topographic features of the project site and the immediate surrounding area”

<u>D</u>	Legible Mapping	D
<u>D</u>	Existing Contours	D
<u>D</u>	Type of Cover	D
<u>D</u>	Existing Improvements (i.e. roads, buildings, utilities, etc.)	D
<u>D</u>	Sufficient surrounding area	D
<u>D</u>	Complete mapping symbols and north arrow	D
<u>D&N</u>	Location Map (i.e. USGS)	D or N

“The types, depth, slope, locations and limitations of the soils and geologic formations”

<u>D&N</u>	Types, slopes and locations of soil types	D
<u>D&N</u>	Soil type use limitations and resolutions	N
<u>D&N</u>	Hydric Soils	N

“The characteristics of the project site, including the past, present and proposed land uses and the proposed alteration to the project site”

<u>D</u>	Proposed limits of construction	D
<u>D</u>	Proposed contours and grades	D
<u>D</u>	Proposed improvements (i.e. roads, buildings, utilities etc.)	D
<u>D&N</u>	Past, present and proposed land uses	N
<u>D</u>	Existing features	D
<u>D</u>	Proposed Impervious Areas	D

“An identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area”

<u>N</u>	The design storm used for calculations is identified	N
<u>N</u>	Preconstruction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	Post-construction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	The net change in runoff rate and volume are identified for the entire project site and each drainage area	N

“An identification of the location of surface waters of this Commonwealth, which may receive runoff within or from the project site and their classification under Chapter 93 (relating to water quality standards)”

<u>D</u>	Existing streams, wetlands, floodway, etc.	D
<u>D&N</u>	Receiving watercourses	D

D&N _____ Chapter 93 classification streams or other water bodies N

“A written description of the location and type of PCSM BMPs including construction details for permanent stormwater BMPs including permanent stabilization specifications and locations”

D&N _____ All permanent PCSM BMPs are identified in the narrative and shown in the plan drawings D & N

D&N _____ Construction details are included for all permanent PCSM BMPs N

D&N _____ Permanent stabilization specifications for all permanent PCSM BMPs are included N

N/A _____ Proprietary BMP systems are illustrated on the drawings in accordance with their manufacturer’s requirements D

D&N _____ Infiltration BMPs are provided with overflows and/or underdrains as needed to meet site and soil limitations D & N

“A sequence of PCSM BMP implementation or installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of PCSM BMP installation”

D&N _____ Complete and site specific sequence of BMP installations D & N

D&N _____ Activities planned to limit exposed areas D & N

D&N _____ Removal of temporary BMPs D & N

D&N _____ Critical stages of BMP installation are identified N

“Supporting calculations”

N _____ Calculations for all BMPs and points of interest are provided. N

N _____ Methodology used for all calculations is identified. N

N _____ The design storm used for each calculation is identified. N

N _____ Current (2005 or more recent) Act 167 plans are identified D or N

N _____ Act 167 plan consistency verification is provided N

N/A _____ All flowcharts from the Pennsylvania Stormwater BMP Manual with flow path highlighted have been provided N

N _____ All appropriate worksheets from the Pennsylvania Stormwater BMP Manual have been completed and are provided N

“Plan drawings”

D _____ Locations of BMPs are shown along with tributary drainage areas D

D&N _____ Construction details are included for all PCSM BMPs D

D _____ All easements and rights-of-way are shown on plan drawings. D

D _____ Sensitive resources are shown (i.e. steep slopes, riparian, etc.) D & N

D _____ Existing and proposed discharges & points of interest D

D _____ Floodplain and floodway delineations D

D _____ Locations and sufficient infiltration testing to represent proposed locations of volume and rate control BMPs D

D _____ PCSM Plan Drawings are consistent with E&S Plan in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, E&S BMPs, etc. D

Infiltration BMPs

D&N _____ All infiltration BMPs must have infiltration testing completed N

N _____ All infiltration BMPs must have soil testing completed N

D&N _____ All infiltration BMPs should be sited on un-compacted soils D & N

BMP 6.4.2 Infiltration Basins

_____ Maintain a minimum 2-foot separation to bedrock and high water table D & N

_____ Do not install on recently placed fill (<5 years) D & N

_____ Allow 2 foot buffer between bed bottom and seasonal high groundwater table D & N

BMP 6.4.4 Infiltration Trench

_____	Perforated pipe set at a minimum slope in a stone filled, level-bottomed trench	D & N
_____	Limited in width (3 to 8 feet) and depth of stone (6 feet max recommended)	D & N
_____	Trench is wrapped in nonwoven geotextile (top, sides, and bottom)	D & N
_____	A minimum of 6" of topsoil is placed over trench and vegetated	D & N

BMP 6.4.5 Bio-retention

_____	Ponding depths generally limited to 12 inches or less	D & N
_____	Native vegetation that is tolerant of variability, salts and stress	D & N
_____	Modify soil with compost	D & N

BMP 6.4.8 Vegetated swale

_____	Longitudinal slopes range from 1 to 6 %	D & N
_____	Side slopes range from 3:1 to 5:1	D & N
_____	Bottom width of 2 to 8 feet	D & N
_____	Convey the 10-year storm event with a minimum of 6 inches of freeboard	D & N
_____	Designed for non-erosive velocities up to the 10-year storm event	D & N

BMP 6.4.9 Vegetated Filter strip

_____	Filter Strip length is a function of the slope, vegetative cover, and soil type	D & N
_____	Minimum recommended length of filter strip is 25 feet	D & N
_____	Filter strip slope should never exceed 8%; less than 5% are preferred	D & N
_____	Level spreading devices are recommended to provide uniform sheet flow	D & N
_____	Maximum contributing drainage area slope is generally less than 5%	D & N
_____	Minimum filter strip width should equal the width of the drainage area	D & N

BMP 6.4.10 Infiltration Berm

_____	Maintain a minimum 2-foot separation to bedrock and high water table	D & N
_____	Berms should be relatively low, preferable no more than 24 inches in height	D & N
_____	If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1	D & N
_____	Berms should be vegetated with turf grass at a minimum	D & N

BMP 6.5.2 Runoff recapture and use

_____	Storage devices designed to capture a portion of small, frequent storm events	D & N
_____	Systems must provide for bypass or overflow of large storm events	D & N
_____	Water budget incorporating anticipated water inflow and usage required	D & N

Water Quality and Rate Control BMPs

BMP 6.6.1 Constructed Wetlands

_____	Adequate drainage area or proof of sustained base flow	D & N
_____	Maintenance of permanent water surface	D & N
_____	Relatively impermeable soils or engineered liner	D & N
_____	Sediment collection and removal	D & N
_____	Adjustable permanent pool and dewatering mechanism	D & N

BMP 6.6.2 Wet pond/Retention basin

_____	Adequate drainage area or proof of sustained baseflow	D & N
_____	Natural high groundwater table	D & N
_____	Maintenance of permanent water surface	D & N
_____	Should have at least 2 to 1 length to width ratio	D & N
_____	Forebay for sediment collection and removal	D & N
_____	Dewatering mechanism	D & N

BMP 6.6.3 Dry extended basin

_____	Hydraulic capacity controls effectiveness	D & N
_____	Ideal in combination with other BMPs	D & N

Restoration BMPs

BMP 6.7.1 Riparian buffer restoration

_____	Reestablish buffer areas along perennial, intermittent, and ephemeral streams	D & N
_____	Plant native, diverse tree and shrub vegetation	D & N
_____	Create a short-term maintenance and long-term maintenance plan	D & N
_____	Clear, well-marked boundary	D & N

BMP 6.7.2 Landscape restoration

_____	Minimize traditional turf lawn area	D & N
_____	Maximize landscape restoration area planted with native vegetation	D & N
_____	Protect landscape restoration area during construction	D & N
_____	Prevent post-construction erosion through adequate stabilization	D & N
_____	Minimize mowing (two times per year)	D & N

BMP 6.7.3 Soil amendment and restoration

_____	Physical loosening	D & N
_____	Compost amendments	D & N

BMP 6.7.4 Floodplain restoration

_____	Can prevent riparian problems from getting worse or can fix problems caused by historical practices	D & N
_____	Reattachment of root systems of floodplain vegetation/riparian areas connected to groundwater and/or base flow	D & N
_____	Removal of "legacy sediments" and associated nutrients stored within the stream corridors prior to release through bank erosion	D & N

Other BMPs and related structural measures

BMP 6.8.1 Level spreaders

<u>D&N</u> _____	Must be level	D & N
<u>D&N</u> _____	Are not applicable in areas with easily erodible soils and/or little vegetation	D & N
<u>D&N</u> _____	Should safely diffuse at least the 10-year storm peak rate	D & N
<u>D&N</u> _____	Bypassed flows should be stabilized in a sufficient manner	D & N

"A long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation"

<u>D&N</u> _____	Inspection schedule of each permanent BMP is provided	N
<u>D&N</u> _____	Directions for maintenance and/or replacement of each BMP	N
<u>D&N</u> _____	Directions for sediment disposal	N
<u>D&N</u> _____	Responsible party (owner, operator, inspector) has been identified	N

"Procedures which ensure that the proper measures for recycling or disposal of materials associated with or from the PCSM BMPs are in accordance with DEP laws, regulations and requirements"

<u>D&N</u> _____	Project wastes are identified	N
<u>D&N</u> _____	Directions for recycling /disposal of wastes	D or N

“An identification of naturally occurring geologic formations or soil conditions that may provide hazards to the project or surrounding environment or have the potential to cause or contribute to pollution after earth disturbance activities are completed and PCSM BMPs are operational and development of a management plan to avoid or minimize potential pollution and its impacts”

<u>N</u>	Potential for geologic or soil conditions to cause pollution during construction	N
<u>D&N</u>	Instructions for proper handling and/or disposal of all materials which could cause pollution are provided	D
<u>D</u>	Typical details are provided for proper handling and/or disposal of all such materials	D
<u>N/A</u>	The locations of all such materials are clearly shown on the plan maps	D

“An identification of potential thermal impacts from post construction stormwater to surface waters of this Commonwealth including BMPs to avoid, minimize or mitigate potential pollution from thermal impacts”

<u>N</u>	Applicant has described how thermal impacts of stormwater runoff from the project site were avoided	N
<u>D&N</u>	Applicant has described how thermal impacts were minimized and mitigated	D & N

“A riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

<u>D</u>	Existing and/or proposed buffers are shown on the plan drawings	D
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ATTACHMENT 3.6.5
REGIONAL ENERGY LATERAL –
HILDEBRANDT TIE-IN/MLV-515RA40

STANDARD PCSM TECHNICAL GUIDE

Regional Energy Lateral- Hildebrandt Tie-in/ MLV-515RA40

Project: Regional Energy Access Expansion

Project Name: Regional Energy Lateral- Hildebrandt Tie-in/ MLV-515RA40 Date: 4/01/21

Check that the following items are completed in the PCSM Plan. If an item is not applicable write N/A.

Item Location: D = E&S Drawings, N = E&S Narrative, D&N = Drawings and Narrative

“The PCSM Plan shall be prepared by a person trained and experienced in PCSM design methods and techniques applicable to the size and scope of the project being designed”

Name Kevin C. Clark Address 2525 Green Tech Drive, Suite D, State College, PA-16803

Telephone No. (814)-238-2060

“The existing topographic features of the project site and the immediate surrounding area”

<u>D</u>	Legible Mapping	D
<u>D</u>	Existing Contours	D
<u>D</u>	Type of Cover	D
<u>D</u>	Existing Improvements (i.e. roads, buildings, utilities, etc.)	D
<u>D</u>	Sufficient surrounding area	D
<u>D</u>	Complete mapping symbols and north arrow	D
<u>D&N</u>	Location Map (i.e. USGS)	D or N

“The types, depth, slope, locations and limitations of the soils and geologic formations”

<u>D&N</u>	Types, slopes and locations of soil types	D
<u>D&N</u>	Soil type use limitations and resolutions	N
<u>D&N</u>	Hydric Soils	N

“The characteristics of the project site, including the past, present and proposed land uses and the proposed alteration to the project site”

<u>D</u>	Proposed limits of construction	D
<u>D</u>	Proposed contours and grades	D
<u>D</u>	Proposed improvements (i.e. roads, buildings, utilities etc.)	D
<u>D&N</u>	Past, present and proposed land uses	N
<u>D</u>	Existing features	D
<u>D</u>	Proposed Impervious Areas	D

“An identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area”

<u>N</u>	The design storm used for calculations is identified	N
<u>N</u>	Preconstruction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	Post-construction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	The net change in runoff rate and volume are identified for the entire project site and each drainage area	N

“An identification of the location of surface waters of this Commonwealth, which may receive runoff within or from the project site and their classification under Chapter 93 (relating to water quality standards)”

<u>D</u>	Existing streams, wetlands, floodway, etc.	D
<u>D&N</u>	Receiving watercourses	D

D&N _____ Chapter 93 classification streams or other water bodies N

“A written description of the location and type of PCSM BMPs including construction details for permanent stormwater BMPs including permanent stabilization specifications and locations”

D&N _____ All permanent PCSM BMPs are identified in the narrative and shown in the plan drawings D & N
 D&N _____ Construction details are included for all permanent PCSM BMPs N
 D&N _____ Permanent stabilization specifications for all permanent PCSM BMPs are included N
 N/A _____ Proprietary BMP systems are illustrated on the drawings in accordance with their manufacturer’s requirements D
 D&N _____ Infiltration BMPs are provided with overflows and/or underdrains as needed to meet site and soil limitations D & N

“A sequence of PCSM BMP implementation or installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of PCSM BMP installation”

D&N _____ Complete and site specific sequence of BMP installations D & N
 D&N _____ Activities planned to limit exposed areas D & N
 D&N _____ Removal of temporary BMPs D & N
 D&N _____ Critical stages of BMP installation are identified N

“Supporting calculations”

N _____ Calculations for all BMPs and points of interest are provided. N
 N _____ Methodology used for all calculations is identified. N
 N _____ The design storm used for each calculation is identified. N
 N _____ Current (2005 or more recent) Act 167 plans are identified D or N
 N _____ Act 167 plan consistency verification is provided N
 N/A _____ All flowcharts from the Pennsylvania Stormwater BMP Manual with flow path highlighted have been provided N
 N _____ All appropriate worksheets from the Pennsylvania Stormwater BMP Manual have been completed and are provided N

“Plan drawings”

D _____ Locations of BMPs are shown along with tributary drainage areas D
 D&N _____ Construction details are included for all PCSM BMPs D
 D _____ All easements and rights-of-way are shown on plan drawings. D
 D _____ Sensitive resources are shown (i.e. steep slopes, riparian, etc.) D & N
 D _____ Existing and proposed discharges & points of interest D
 D _____ Floodplain and floodway delineations D
 D _____ Locations and sufficient infiltration testing to represent proposed locations of volume and rate control BMPs D
 D _____ PCSM Plan Drawings are consistent with E&S Plan in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, E&S BMPs, etc. D

Infiltration BMPs

D&N _____ All infiltration BMPs must have infiltration testing completed N
 N _____ All infiltration BMPs must have soil testing completed N
 D&N _____ All infiltration BMPs should be sited on un-compacted soils D & N

BMP 6.4.2 Infiltration Basins

_____ Maintain a minimum 2-foot separation to bedrock and high water table D & N
 _____ Do not install on recently placed fill (<5 years) D & N
 _____ Allow 2 foot buffer between bed bottom and seasonal high groundwater table D & N

BMP 6.4.4 Infiltration Trench

_____	Perforated pipe set at a minimum slope in a stone filled, level-bottomed trench	D & N
_____	Limited in width (3 to 8 feet) and depth of stone (6 feet max recommended)	D & N
_____	Trench is wrapped in nonwoven geotextile (top, sides, and bottom)	D & N
_____	A minimum of 6" of topsoil is placed over trench and vegetated	D & N

BMP 6.4.5 Bio-retention

_____	Ponding depths generally limited to 12 inches or less	D & N
_____	Native vegetation that is tolerant of variability, salts and stress	D & N
_____	Modify soil with compost	D & N

BMP 6.4.8 Vegetated swale

_____	Longitudinal slopes range from 1 to 6 %	D & N
_____	Side slopes range from 3:1 to 5:1	D & N
_____	Bottom width of 2 to 8 feet	D & N
_____	Convey the 10-year storm event with a minimum of 6 inches of freeboard	D & N
_____	Designed for non-erosive velocities up to the 10-year storm event	D & N

BMP 6.4.9 Vegetated Filter strip

_____	Filter Strip length is a function of the slope, vegetative cover, and soil type	D & N
_____	Minimum recommended length of filter strip is 25 feet	D & N
_____	Filter strip slope should never exceed 8%; less than 5% are preferred	D & N
_____	Level spreading devices are recommended to provide uniform sheet flow	D & N
_____	Maximum contributing drainage area slope is generally less than 5%	D & N
_____	Minimum filter strip width should equal the width of the drainage area	D & N

BMP 6.4.10 Infiltration Berm

_____	Maintain a minimum 2-foot separation to bedrock and high water table	D & N
_____	Berms should be relatively low, preferable no more than 24 inches in height	D & N
_____	If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1	D & N
_____	Berms should be vegetated with turf grass at a minimum	D & N

BMP 6.5.2 Runoff recapture and use

_____	Storage devices designed to capture a portion of small, frequent storm events	D & N
_____	Systems must provide for bypass or overflow of large storm events	D & N
_____	Water budget incorporating anticipated water inflow and usage required	D & N

Water Quality and Rate Control BMPs

BMP 6.6.1 Constructed Wetlands

_____	Adequate drainage area or proof of sustained base flow	D & N
_____	Maintenance of permanent water surface	D & N
_____	Relatively impermeable soils or engineered liner	D & N
_____	Sediment collection and removal	D & N
_____	Adjustable permanent pool and dewatering mechanism	D & N

BMP 6.6.2 Wet pond/Retention basin

_____	Adequate drainage area or proof of sustained baseflow	D & N
_____	Natural high groundwater table	D & N
_____	Maintenance of permanent water surface	D & N
_____	Should have at least 2 to 1 length to width ratio	D & N
_____	Forebay for sediment collection and removal	D & N
_____	Dewatering mechanism	D & N

BMP 6.6.3 Dry extended basin

_____	Hydraulic capacity controls effectiveness	D & N
_____	Ideal in combination with other BMPs	D & N

Restoration BMPs

BMP 6.7.1 Riparian buffer restoration

_____	Reestablish buffer areas along perennial, intermittent, and ephemeral streams	D & N
_____	Plant native, diverse tree and shrub vegetation	D & N
_____	Create a short-term maintenance and long-term maintenance plan	D & N
_____	Clear, well-marked boundary	D & N

BMP 6.7.2 Landscape restoration

_____	Minimize traditional turf lawn area	D & N
_____	Maximize landscape restoration area planted with native vegetation	D & N
_____	Protect landscape restoration area during construction	D & N
_____	Prevent post-construction erosion through adequate stabilization	D & N
_____	Minimize mowing (two times per year)	D & N

BMP 6.7.3 Soil amendment and restoration

_____	Physical loosening	D & N
_____	Compost amendments	D & N

BMP 6.7.4 Floodplain restoration

_____	Can prevent riparian problems from getting worse or can fix problems caused by historical practices	D & N
_____	Reattachment of root systems of floodplain vegetation/riparian areas connected to groundwater and/or base flow	D & N
_____	Removal of "legacy sediments" and associated nutrients stored within the stream corridors prior to release through bank erosion	D & N

Other BMPs and related structural measures

BMP 6.8.1 Level spreaders

<u>D&N</u> _____	Must be level	D & N
<u>D&N</u> _____	Are not applicable in areas with easily erodible soils and/or little vegetation	D & N
<u>D&N</u> _____	Should safely diffuse at least the 10-year storm peak rate	D & N
<u>D&N</u> _____	Bypassed flows should be stabilized in a sufficient manner	D & N

"A long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation"

<u>D&N</u> _____	Inspection schedule of each permanent BMP is provided	N
<u>D&N</u> _____	Directions for maintenance and/or replacement of each BMP	N
<u>D&N</u> _____	Directions for sediment disposal	N
<u>D&N</u> _____	Responsible party (owner, operator, inspector) has been identified	N

"Procedures which ensure that the proper measures for recycling or disposal of materials associated with or from the PCSM BMPs are in accordance with DEP laws, regulations and requirements"

<u>D&N</u> _____	Project wastes are identified	N
<u>D&N</u> _____	Directions for recycling /disposal of wastes	D or N

“An identification of naturally occurring geologic formations or soil conditions that may provide hazards to the project or surrounding environment or have the potential to cause or contribute to pollution after earth disturbance activities are completed and PCSM BMPs are operational and development of a management plan to avoid or minimize potential pollution and its impacts”

<u>N</u>	Potential for geologic or soil conditions to cause pollution during construction	N
<u>D&N</u>	Instructions for proper handling and/or disposal of all materials which could cause pollution are provided	D
<u>D</u>	Typical details are provided for proper handling and/or disposal of all such materials	D
<u>N/A</u>	The locations of all such materials are clearly shown on the plan maps	D

“An identification of potential thermal impacts from post construction stormwater to surface waters of this Commonwealth including BMPs to avoid, minimize or mitigate potential pollution from thermal impacts”

<u>N</u>	Applicant has described how thermal impacts of stormwater runoff from the project site were avoided	N
<u>D&N</u>	Applicant has described how thermal impacts were minimized and mitigated	D & N

“A riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

<u>D</u>	Existing and/or proposed buffers are shown on the plan drawings	D
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ATTACHMENT 3.6.6
EFFORT LOOP –
MLV-505LD86

STANDARD PCSM TECHNICAL GUIDE

Effort Loop- MLV-505LD86

Project: Regional Energy Access Expansion

Project Name: Effort Loop- MLV-505LD86 Date: 4/01/21

Check that the following items are completed in the PCSM Plan. If an item is not applicable write N/A.

Item Location: D = E&S Drawings, N = E&S Narrative, D&N = Drawings and Narrative

“The PCSM Plan shall be prepared by a person trained and experienced in PCSM design methods and techniques applicable to the size and scope of the project being designed”

Name Kevin C. Clark Address 2525 Green Tech Drive, Suite D, State College, PA-16803

Telephone No. (814)-238-2060

“The existing topographic features of the project site and the immediate surrounding area”

<u>D</u>	Legible Mapping	D
<u>D</u>	Existing Contours	D
<u>D</u>	Type of Cover	D
<u>D</u>	Existing Improvements (i.e. roads, buildings, utilities, etc.)	D
<u>D</u>	Sufficient surrounding area	D
<u>D</u>	Complete mapping symbols and north arrow	D
<u>D&N</u>	Location Map (i.e. USGS)	D or N

“The types, depth, slope, locations and limitations of the soils and geologic formations”

<u>D&N</u>	Types, slopes and locations of soil types	D
<u>D&N</u>	Soil type use limitations and resolutions	N
<u>D&N</u>	Hydric Soils	N

“The characteristics of the project site, including the past, present and proposed land uses and the proposed alteration to the project site”

<u>D</u>	Proposed limits of construction	D
<u>D</u>	Proposed contours and grades	D
<u>D</u>	Proposed improvements (i.e. roads, buildings, utilities etc.)	D
<u>D&N</u>	Past, present and proposed land uses	N
<u>D</u>	Existing features	D
<u>D</u>	Proposed Impervious Areas	D

“An identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area”

<u>N</u>	The design storm used for calculations is identified	N
<u>N</u>	Preconstruction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	Post-construction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	The net change in runoff rate and volume are identified for the entire project site and each drainage area	N

“An identification of the location of surface waters of this Commonwealth, which may receive runoff within or from the project site and their classification under Chapter 93 (relating to water quality standards)”

<u>D</u>	Existing streams, wetlands, floodway, etc.	D
<u>D&N</u>	Receiving watercourses	D

D&N _____ Chapter 93 classification streams or other water bodies N

“A written description of the location and type of PCSM BMPs including construction details for permanent stormwater BMPs including permanent stabilization specifications and locations”

D&N _____ All permanent PCSM BMPs are identified in the narrative and shown in the plan drawings D & N
D&N _____ Construction details are included for all permanent PCSM BMPs N
D&N _____ Permanent stabilization specifications for all permanent PCSM BMPs are included N
N/A _____ Proprietary BMP systems are illustrated on the drawings in accordance with their manufacturer’s requirements D
D&N _____ Infiltration BMPs are provided with overflows and/or underdrains as needed to meet site and soil limitations D & N

“A sequence of PCSM BMP implementation or installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of PCSM BMP installation”

D&N _____ Complete and site specific sequence of BMP installations D & N
D&N _____ Activities planned to limit exposed areas D & N
D&N _____ Removal of temporary BMPs D & N
D&N _____ Critical stages of BMP installation are identified N

“Supporting calculations”

N _____ Calculations for all BMPs and points of interest are provided. N
N _____ Methodology used for all calculations is identified. N
N _____ The design storm used for each calculation is identified. N
N _____ Current (2005 or more recent) Act 167 plans are identified D or N
N _____ Act 167 plan consistency verification is provided N
N/A _____ All flowcharts from the Pennsylvania Stormwater BMP Manual with flow path highlighted have been provided N
N _____ All appropriate worksheets from the Pennsylvania Stormwater BMP Manual have been completed and are provided N

“Plan drawings”

D _____ Locations of BMPs are shown along with tributary drainage areas D
D&N _____ Construction details are included for all PCSM BMPs D
D _____ All easements and rights-of-way are shown on plan drawings. D
D _____ Sensitive resources are shown (i.e. steep slopes, riparian, etc.) D & N
D _____ Existing and proposed discharges & points of interest D
D _____ Floodplain and floodway delineations D
D _____ Locations and sufficient infiltration testing to represent proposed locations of volume and rate control BMPs D
D _____ PCSM Plan Drawings are consistent with E&S Plan in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, E&S BMPs, etc. D

Infiltration BMPs

D&N _____ All infiltration BMPs must have infiltration testing completed N
N _____ All infiltration BMPs must have soil testing completed N
D&N _____ All infiltration BMPs should be sited on un-compacted soils D & N

BMP 6.4.2 Infiltration Basins

D&N _____ Maintain a minimum 2-foot separation to bedrock and high water table D & N
D&N _____ Do not install on recently placed fill (<5 years) D & N
D&N _____ Allow 2 foot buffer between bed bottom and seasonal high groundwater table D & N

BMP 6.4.4 Infiltration Trench

_____	Perforated pipe set at a minimum slope in a stone filled, level-bottomed trench	D & N
_____	Limited in width (3 to 8 feet) and depth of stone (6 feet max recommended)	D & N
_____	Trench is wrapped in nonwoven geotextile (top, sides, and bottom)	D & N
_____	A minimum of 6" of topsoil is placed over trench and vegetated	D & N

BMP 6.4.5 Bio-retention

_____	Ponding depths generally limited to 12 inches or less	D & N
_____	Native vegetation that is tolerant of variability, salts and stress	D & N
_____	Modify soil with compost	D & N

BMP 6.4.8 Vegetated swale

_____	Longitudinal slopes range from 1 to 6 %	D & N
_____	Side slopes range from 3:1 to 5:1	D & N
_____	Bottom width of 2 to 8 feet	D & N
_____	Convey the 10-year storm event with a minimum of 6 inches of freeboard	D & N
_____	Designed for non-erosive velocities up to the 10-year storm event	D & N

BMP 6.4.9 Vegetated Filter strip

_____	Filter Strip length is a function of the slope, vegetative cover, and soil type	D & N
_____	Minimum recommended length of filter strip is 25 feet	D & N
_____	Filter strip slope should never exceed 8%; less than 5% are preferred	D & N
_____	Level spreading devices are recommended to provide uniform sheet flow	D & N
_____	Maximum contributing drainage area slope is generally less than 5%	D & N
_____	Minimum filter strip width should equal the width of the drainage area	D & N

BMP 6.4.10 Infiltration Berm

D&N	Maintain a minimum 2-foot separation to bedrock and high water table	D & N
D&N	Berms should be relatively low, preferable no more than 24 inches in height	D & N
D&N	If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1	D & N
D&N	Berms should be vegetated with turf grass at a minimum	D & N

BMP 6.5.2 Runoff recapture and use

_____	Storage devices designed to capture a portion of small, frequent storm events	D & N
_____	Systems must provide for bypass or overflow of large storm events	D & N
_____	Water budget incorporating anticipated water inflow and usage required	D & N

Water Quality and Rate Control BMPs

BMP 6.6.1 Constructed Wetlands

_____	Adequate drainage area or proof of sustained base flow	D & N
_____	Maintenance of permanent water surface	D & N
_____	Relatively impermeable soils or engineered liner	D & N
_____	Sediment collection and removal	D & N
_____	Adjustable permanent pool and dewatering mechanism	D & N

BMP 6.6.2 Wet pond/Retention basin

_____	Adequate drainage area or proof of sustained baseflow	D & N
_____	Natural high groundwater table	D & N
_____	Maintenance of permanent water surface	D & N
_____	Should have at least 2 to 1 length to width ratio	D & N
_____	Forebay for sediment collection and removal	D & N
_____	Dewatering mechanism	D & N

BMP 6.6.3 Dry extended basin

_____	Hydraulic capacity controls effectiveness	D & N
_____	Ideal in combination with other BMPs	D & N

Restoration BMPs

BMP 6.7.1 Riparian buffer restoration

_____	Reestablish buffer areas along perennial, intermittent, and ephemeral streams	D & N
_____	Plant native, diverse tree and shrub vegetation	D & N
_____	Create a short-term maintenance and long-term maintenance plan	D & N
_____	Clear, well-marked boundary	D & N

BMP 6.7.2 Landscape restoration

_____	Minimize traditional turf lawn area	D & N
_____	Maximize landscape restoration area planted with native vegetation	D & N
_____	Protect landscape restoration area during construction	D & N
_____	Prevent post-construction erosion through adequate stabilization	D & N
_____	Minimize mowing (two times per year)	D & N

BMP 6.7.3 Soil amendment and restoration

_____	Physical loosening	D & N
_____	Compost amendments	D & N

BMP 6.7.4 Floodplain restoration

_____	Can prevent riparian problems from getting worse or can fix problems caused by historical practices	D & N
_____	Reattachment of root systems of floodplain vegetation/riparian areas connected to groundwater and/or base flow	D & N
_____	Removal of "legacy sediments" and associated nutrients stored within the stream corridors prior to release through bank erosion	D & N

Other BMPs and related structural measures

BMP 6.8.1 Level spreaders

_____	Must be level	D & N
_____	Are not applicable in areas with easily erodible soils and/or little vegetation	D & N
_____	Should safely diffuse at least the 10-year storm peak rate	D & N
_____	Bypassed flows should be stabilized in a sufficient manner	D & N

"A long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation"

<u>D&N</u> _____	Inspection schedule of each permanent BMP is provided	N
<u>D&N</u> _____	Directions for maintenance and/or replacement of each BMP	N
<u>D&N</u> _____	Directions for sediment disposal	N
<u>D&N</u> _____	Responsible party (owner, operator, inspector) has been identified	N

"Procedures which ensure that the proper measures for recycling or disposal of materials associated with or from the PCSM BMPs are in accordance with DEP laws, regulations and requirements"

<u>D&N</u> _____	Project wastes are identified	N
<u>D&N</u> _____	Directions for recycling /disposal of wastes	D or N

“An identification of naturally occurring geologic formations or soil conditions that may provide hazards to the project or surrounding environment or have the potential to cause or contribute to pollution after earth disturbance activities are completed and PCSM BMPs are operational and development of a management plan to avoid or minimize potential pollution and its impacts”

<u>N</u>	Potential for geologic or soil conditions to cause pollution during construction	N
<u>D&N</u>	Instructions for proper handling and/or disposal of all materials which could cause pollution are provided	D
<u>D</u>	Typical details are provided for proper handling and/or disposal of all such materials	D
<u>N/A</u>	The locations of all such materials are clearly shown on the plan maps	D

“An identification of potential thermal impacts from post construction stormwater to surface waters of this Commonwealth including BMPs to avoid, minimize or mitigate potential pollution from thermal impacts”

<u>N</u>	Applicant has described how thermal impacts of stormwater runoff from the project site were avoided	N
<u>D&N</u>	Applicant has described how thermal impacts were minimized and mitigated	D & N

“A riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

<u>D</u>	Existing and/or proposed buffers are shown on the plan drawings	D
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ATTACHMENT 3.6.7
COMPRESSOR STATION 200

STANDARD PCSM TECHNICAL GUIDE

Compressor Station 200

Project: Regional Energy Access Expansion

Project Name: Compressor Station 200 Date: 4/01/21

Check that the following items are completed in the PCSM Plan. If an item is not applicable write N/A.

Item Location: D = E&S Drawings, N = E&S Narrative, D&N = Drawings and Narrative

“The PCSM Plan shall be prepared by a person trained and experienced in PCSM design methods and techniques applicable to the size and scope of the project being designed”

Name Kevin C. Clark Address 2525 Green Tech Drive, Suite D, State College, PA-16803

Telephone No. (814)-238-2060

“The existing topographic features of the project site and the immediate surrounding area”

<u>D</u>	Legible Mapping	D
<u>D</u>	Existing Contours	D
<u>D</u>	Type of Cover	D
<u>D</u>	Existing Improvements (i.e. roads, buildings, utilities, etc.)	D
<u>D</u>	Sufficient surrounding area	D
<u>D</u>	Complete mapping symbols and north arrow	D
<u>D&N</u>	Location Map (i.e. USGS)	D or N

“The types, depth, slope, locations and limitations of the soils and geologic formations”

<u>D&N</u>	Types, slopes and locations of soil types	D
<u>D&N</u>	Soil type use limitations and resolutions	N
<u>D&N</u>	Hydric Soils	N

“The characteristics of the project site, including the past, present and proposed land uses and the proposed alteration to the project site”

<u>D</u>	Proposed limits of construction	D
<u>D</u>	Proposed contours and grades	D
<u>D</u>	Proposed improvements (i.e. roads, buildings, utilities etc.)	D
<u>D&N</u>	Past, present and proposed land uses	N
<u>D</u>	Existing features	D
<u>D</u>	Proposed Impervious Areas	D

“An identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area”

<u>N</u>	The design storm used for calculations is identified	N
<u>N</u>	Preconstruction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	Post-construction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	The net change in runoff rate and volume are identified for the entire project site and each drainage area	N

“An identification of the location of surface waters of this Commonwealth, which may receive runoff within or from the project site and their classification under Chapter 93 (relating to water quality standards)”

<u>D</u>	Existing streams, wetlands, floodway, etc.	D
<u>D&N</u>	Receiving watercourses	D

D&N _____ Chapter 93 classification streams or other water bodies N

“A written description of the location and type of PCSM BMPs including construction details for permanent stormwater BMPs including permanent stabilization specifications and locations”

D&N _____ All permanent PCSM BMPs are identified in the narrative and shown in the plan drawings D & N
D&N _____ Construction details are included for all permanent PCSM BMPs N
D&N _____ Permanent stabilization specifications for all permanent PCSM BMPs are included N
N/A _____ Proprietary BMP systems are illustrated on the drawings in accordance with their manufacturer’s requirements D
D&N _____ Infiltration BMPs are provided with overflows and/or underdrains as needed to meet site and soil limitations D & N

“A sequence of PCSM BMP implementation or installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of PCSM BMP installation”

D&N _____ Complete and site specific sequence of BMP installations D & N
D&N _____ Activities planned to limit exposed areas D & N
D&N _____ Removal of temporary BMPs D & N
D&N _____ Critical stages of BMP installation are identified N

“Supporting calculations”

N _____ Calculations for all BMPs and points of interest are provided. N
N _____ Methodology used for all calculations is identified. N
N _____ The design storm used for each calculation is identified. N
N _____ Current (2005 or more recent) Act 167 plans are identified D or N
N _____ Act 167 plan consistency verification is provided N
N/A _____ All flowcharts from the Pennsylvania Stormwater BMP Manual with flow path highlighted have been provided N
N _____ All appropriate worksheets from the Pennsylvania Stormwater BMP Manual have been completed and are provided N

“Plan drawings”

D _____ Locations of BMPs are shown along with tributary drainage areas D
D&N _____ Construction details are included for all PCSM BMPs D
D _____ All easements and rights-of-way are shown on plan drawings. D
D _____ Sensitive resources are shown (i.e. steep slopes, riparian, etc.) D & N
D _____ Existing and proposed discharges & points of interest D
D _____ Floodplain and floodway delineations D
D _____ Locations and sufficient infiltration testing to represent proposed locations of volume and rate control BMPs D
D _____ PCSM Plan Drawings are consistent with E&S Plan in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, E&S BMPs, etc. D

Infiltration BMPs

D&N _____ All infiltration BMPs must have infiltration testing completed N
N _____ All infiltration BMPs must have soil testing completed N
D&N _____ All infiltration BMPs should be sited on un-compacted soils D & N

BMP 6.4.2 Infiltration Basins

_____ Maintain a minimum 2-foot separation to bedrock and high water table D & N
_____ Do not install on recently placed fill (<5 years) D & N
_____ Allow 2 foot buffer between bed bottom and seasonal high groundwater table D & N

BMP 6.4.4 Infiltration Trench

_____	Perforated pipe set at a minimum slope in a stone filled, level-bottomed trench	D & N
_____	Limited in width (3 to 8 feet) and depth of stone (6 feet max recommended)	D & N
_____	Trench is wrapped in nonwoven geotextile (top, sides, and bottom)	D & N
_____	A minimum of 6" of topsoil is placed over trench and vegetated	D & N

BMP 6.4.5 Bio-retention

_____	Ponding depths generally limited to 12 inches or less	D & N
_____	Native vegetation that is tolerant of variability, salts and stress	D & N
_____	Modify soil with compost	D & N

BMP 6.4.8 Vegetated swale

_____	Longitudinal slopes range from 1 to 6 %	D & N
_____	Side slopes range from 3:1 to 5:1	D & N
_____	Bottom width of 2 to 8 feet	D & N
_____	Convey the 10-year storm event with a minimum of 6 inches of freeboard	D & N
_____	Designed for non-erosive velocities up to the 10-year storm event	D & N

BMP 6.4.9 Vegetated Filter strip

_____	Filter Strip length is a function of the slope, vegetative cover, and soil type	D & N
_____	Minimum recommended length of filter strip is 25 feet	D & N
_____	Filter strip slope should never exceed 8%; less than 5% are preferred	D & N
_____	Level spreading devices are recommended to provide uniform sheet flow	D & N
_____	Maximum contributing drainage area slope is generally less than 5%	D & N
_____	Minimum filter strip width should equal the width of the drainage area	D & N

BMP 6.4.10 Infiltration Berm

D&N	Maintain a minimum 2-foot separation to bedrock and high water table	D & N
D&N	Berms should be relatively low, preferable no more than 24 inches in height	D & N
D&N	If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1	D & N
D&N	Berms should be vegetated with turf grass at a minimum	D & N

BMP 6.5.2 Runoff recapture and use

_____	Storage devices designed to capture a portion of small, frequent storm events	D & N
_____	Systems must provide for bypass or overflow of large storm events	D & N
_____	Water budget incorporating anticipated water inflow and usage required	D & N

Water Quality and Rate Control BMPs

BMP 6.6.1 Constructed Wetlands

_____	Adequate drainage area or proof of sustained base flow	D & N
_____	Maintenance of permanent water surface	D & N
_____	Relatively impermeable soils or engineered liner	D & N
_____	Sediment collection and removal	D & N
_____	Adjustable permanent pool and dewatering mechanism	D & N

BMP 6.6.2 Wet pond/Retention basin

_____	Adequate drainage area or proof of sustained baseflow	D & N
_____	Natural high groundwater table	D & N
_____	Maintenance of permanent water surface	D & N
_____	Should have at least 2 to 1 length to width ratio	D & N
_____	Forebay for sediment collection and removal	D & N
_____	Dewatering mechanism	D & N

BMP 6.6.3 Dry extended basin

_____	Hydraulic capacity controls effectiveness	D & N
_____	Ideal in combination with other BMPs	D & N

Restoration BMPs

BMP 6.7.1 Riparian buffer restoration

_____	Reestablish buffer areas along perennial, intermittent, and ephemeral streams	D & N
_____	Plant native, diverse tree and shrub vegetation	D & N
_____	Create a short-term maintenance and long-term maintenance plan	D & N
_____	Clear, well-marked boundary	D & N

BMP 6.7.2 Landscape restoration

_____	Minimize traditional turf lawn area	D & N
_____	Maximize landscape restoration area planted with native vegetation	D & N
_____	Protect landscape restoration area during construction	D & N
_____	Prevent post-construction erosion through adequate stabilization	D & N
_____	Minimize mowing (two times per year)	D & N

BMP 6.7.3 Soil amendment and restoration

_____	Physical loosening	D & N
_____	Compost amendments	D & N

BMP 6.7.4 Floodplain restoration

_____	Can prevent riparian problems from getting worse or can fix problems caused by historical practices	D & N
_____	Reattachment of root systems of floodplain vegetation/riparian areas connected to groundwater and/or base flow	D & N
_____	Removal of "legacy sediments" and associated nutrients stored within the stream corridors prior to release through bank erosion	D & N

Other BMPs and related structural measures

BMP 6.8.1 Level spreaders

<u>D&N</u> _____	Must be level	D & N
<u>D&N</u> _____	Are not applicable in areas with easily erodible soils and/or little vegetation	D & N
<u>D&N</u> _____	Should safely diffuse at least the 10-year storm peak rate	D & N
<u>D&N</u> _____	Bypassed flows should be stabilized in a sufficient manner	D & N

"A long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation"

<u>D&N</u> _____	Inspection schedule of each permanent BMP is provided	N
<u>D&N</u> _____	Directions for maintenance and/or replacement of each BMP	N
<u>D&N</u> _____	Directions for sediment disposal	N
<u>D&N</u> _____	Responsible party (owner, operator, inspector) has been identified	N

"Procedures which ensure that the proper measures for recycling or disposal of materials associated with or from the PCSM BMPs are in accordance with DEP laws, regulations and requirements"

<u>D&N</u> _____	Project wastes are identified	N
<u>D&N</u> _____	Directions for recycling /disposal of wastes	D or N

“An identification of naturally occurring geologic formations or soil conditions that may provide hazards to the project or surrounding environment or have the potential to cause or contribute to pollution after earth disturbance activities are completed and PCSM BMPs are operational and development of a management plan to avoid or minimize potential pollution and its impacts”

<u>N</u>	Potential for geologic or soil conditions to cause pollution during construction	N
<u>D&N</u>	Instructions for proper handling and/or disposal of all materials which could cause pollution are provided	D
<u>D</u>	Typical details are provided for proper handling and/or disposal of all such materials	D
<u>N/A</u>	The locations of all such materials are clearly shown on the plan maps	D

“An identification of potential thermal impacts from post construction stormwater to surface waters of this Commonwealth including BMPs to avoid, minimize or mitigate potential pollution from thermal impacts”

<u>N</u>	Applicant has described how thermal impacts of stormwater runoff from the project site were avoided	N
<u>D&N</u>	Applicant has described how thermal impacts were minimized and mitigated	D & N

“A riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

<u>D</u>	Existing and/or proposed buffers are shown on the plan drawings	D
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ATTACHMENT 3.6.8
COMPRESSOR STATION 515

STANDARD PCSM TECHNICAL GUIDE

Compressor Station 515

Project: Regional Energy Access Expansion

Project Name: Compressor Station 515 Date: 4/01/21

Check that the following items are completed in the PCSM Plan. If an item is not applicable write N/A.

Item Location: D = E&S Drawings, N = E&S Narrative, D&N = Drawings and Narrative

“The PCSM Plan shall be prepared by a person trained and experienced in PCSM design methods and techniques applicable to the size and scope of the project being designed”

Name Kevin C. Clark Address 2525 Green Tech Drive, Suite D, State College, PA-16803

Telephone No. (814)-238-2060

“The existing topographic features of the project site and the immediate surrounding area”

<u>D</u>	Legible Mapping	D
<u>D</u>	Existing Contours	D
<u>D</u>	Type of Cover	D
<u>D</u>	Existing Improvements (i.e. roads, buildings, utilities, etc.)	D
<u>D</u>	Sufficient surrounding area	D
<u>D</u>	Complete mapping symbols and north arrow	D
<u>D&N</u>	Location Map (i.e. USGS)	D or N

“The types, depth, slope, locations and limitations of the soils and geologic formations”

<u>D&N</u>	Types, slopes and locations of soil types	D
<u>D&N</u>	Soil type use limitations and resolutions	N
<u>D&N</u>	Hydric Soils	N

“The characteristics of the project site, including the past, present and proposed land uses and the proposed alteration to the project site”

<u>D</u>	Proposed limits of construction	D
<u>D</u>	Proposed contours and grades	D
<u>D</u>	Proposed improvements (i.e. roads, buildings, utilities etc.)	D
<u>D&N</u>	Past, present and proposed land uses	N
<u>D</u>	Existing features	D
<u>D</u>	Proposed Impervious Areas	D

“An identification of the net change in volume and rate of stormwater from preconstruction hydrology to post construction hydrology for the entire project site and each drainage area”

<u>N</u>	The design storm used for calculations is identified	N
<u>N</u>	Preconstruction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	Post-construction hydrology runoff rate and volume are identified for the entire project site and each drainage area	N
<u>N</u>	The net change in runoff rate and volume are identified for the entire project site and each drainage area	N

“An identification of the location of surface waters of this Commonwealth, which may receive runoff within or from the project site and their classification under Chapter 93 (relating to water quality standards)”

<u>D</u>	Existing streams, wetlands, floodway, etc.	D
<u>D&N</u>	Receiving watercourses	D

D&N Chapter 93 classification streams or other water bodies N

“A written description of the location and type of PCSM BMPs including construction details for permanent stormwater BMPs including permanent stabilization specifications and locations”

D&N All permanent PCSM BMPs are identified in the narrative and shown in the plan drawings D & N
D&N Construction details are included for all permanent PCSM BMPs N
D&N Permanent stabilization specifications for all permanent PCSM BMPs are included N
N/A Proprietary BMP systems are illustrated on the drawings in accordance with their manufacturer’s requirements D
D&N Infiltration BMPs are provided with overflows and/or underdrains as needed to meet site and soil limitations D & N

“A sequence of PCSM BMP implementation or installation in relation to earth disturbance activities of the project site and a schedule of inspections for critical stages of PCSM BMP installation”

D&N Complete and site specific sequence of BMP installations D & N
D&N Activities planned to limit exposed areas D & N
D&N Removal of temporary BMPs D & N
D&N Critical stages of BMP installation are identified N

“Supporting calculations”

N Calculations for all BMPs and points of interest are provided. N
N Methodology used for all calculations is identified. N
N The design storm used for each calculation is identified. N
N Current (2005 or more recent) Act 167 plans are identified D or N
N Act 167 plan consistency verification is provided N
N/A All flowcharts from the Pennsylvania Stormwater BMP Manual with flow path highlighted have been provided N
N All appropriate worksheets from the Pennsylvania Stormwater BMP Manual have been completed and are provided N

“Plan drawings”

D Locations of BMPs are shown along with tributary drainage areas D
D&N Construction details are included for all PCSM BMPs D
D All easements and rights-of-way are shown on plan drawings. D
D Sensitive resources are shown (i.e. steep slopes, riparian, etc.) D & N
D Existing and proposed discharges & points of interest D
D Floodplain and floodway delineations D
D Locations and sufficient infiltration testing to represent proposed locations of volume and rate control BMPs D
D PCSM Plan Drawings are consistent with E&S Plan in relation to proposed contours, improvements, soils, wetlands, floodways, streams, discharge locations, E&S BMPs, etc. D

Infiltration BMPs

D&N All infiltration BMPs must have infiltration testing completed N
N All infiltration BMPs must have soil testing completed N
D&N All infiltration BMPs should be sited on un-compacted soils D & N

BMP 6.4.2 Infiltration Basins

_____ Maintain a minimum 2-foot separation to bedrock and high water table D & N
_____ Do not install on recently placed fill (<5 years) D & N
_____ Allow 2 foot buffer between bed bottom and seasonal high groundwater table D & N

BMP 6.4.4 Infiltration Trench

_____	Perforated pipe set at a minimum slope in a stone filled, level-bottomed trench	D & N
_____	Limited in width (3 to 8 feet) and depth of stone (6 feet max recommended)	D & N
_____	Trench is wrapped in nonwoven geotextile (top, sides, and bottom)	D & N
_____	A minimum of 6" of topsoil is placed over trench and vegetated	D & N

BMP 6.4.5 Bio-retention

_____	Ponding depths generally limited to 12 inches or less	D & N
_____	Native vegetation that is tolerant of variability, salts and stress	D & N
_____	Modify soil with compost	D & N

BMP 6.4.8 Vegetated swale

_____	Longitudinal slopes range from 1 to 6 %	D & N
_____	Side slopes range from 3:1 to 5:1	D & N
_____	Bottom width of 2 to 8 feet	D & N
_____	Convey the 10-year storm event with a minimum of 6 inches of freeboard	D & N
_____	Designed for non-erosive velocities up to the 10-year storm event	D & N

BMP 6.4.9 Vegetated Filter strip

_____	Filter Strip length is a function of the slope, vegetative cover, and soil type	D & N
_____	Minimum recommended length of filter strip is 25 feet	D & N
_____	Filter strip slope should never exceed 8%; less than 5% are preferred	D & N
_____	Level spreading devices are recommended to provide uniform sheet flow	D & N
_____	Maximum contributing drainage area slope is generally less than 5%	D & N
_____	Minimum filter strip width should equal the width of the drainage area	D & N

BMP 6.4.10 Infiltration Berm

D&N	Maintain a minimum 2-foot separation to bedrock and high water table	D & N
D&N	Berms should be relatively low, preferable no more than 24 inches in height	D & N
D&N	If berms are to be mowed, the berm side slopes should not exceed a ratio of 4:1	D & N
D&N	Berms should be vegetated with turf grass at a minimum	D & N

BMP 6.5.2 Runoff recapture and use

_____	Storage devices designed to capture a portion of small, frequent storm events	D & N
_____	Systems must provide for bypass or overflow of large storm events	D & N
_____	Water budget incorporating anticipated water inflow and usage required	D & N

Water Quality and Rate Control BMPs

BMP 6.6.1 Constructed Wetlands

_____	Adequate drainage area or proof of sustained base flow	D & N
_____	Maintenance of permanent water surface	D & N
_____	Relatively impermeable soils or engineered liner	D & N
_____	Sediment collection and removal	D & N
_____	Adjustable permanent pool and dewatering mechanism	D & N

BMP 6.6.2 Wet pond/Retention basin

_____	Adequate drainage area or proof of sustained baseflow	D & N
_____	Natural high groundwater table	D & N
_____	Maintenance of permanent water surface	D & N
_____	Should have at least 2 to 1 length to width ratio	D & N
_____	Forebay for sediment collection and removal	D & N
_____	Dewatering mechanism	D & N

BMP 6.6.3 Dry extended basin

_____	Hydraulic capacity controls effectiveness	D & N
_____	Ideal in combination with other BMPs	D & N

Restoration BMPs

BMP 6.7.1 Riparian buffer restoration

D&N _____	Reestablish buffer areas along perennial, intermittent, and ephemeral streams	D & N
D&N _____	Plant native, diverse tree and shrub vegetation	D & N
D&N _____	Create a short-term maintenance and long-term maintenance plan	D & N
D&N _____	Clear, well-marked boundary	D & N

BMP 6.7.2 Landscape restoration

_____	Minimize traditional turf lawn area	D & N
_____	Maximize landscape restoration area planted with native vegetation	D & N
_____	Protect landscape restoration area during construction	D & N
_____	Prevent post-construction erosion through adequate stabilization	D & N
_____	Minimize mowing (two times per year)	D & N

BMP 6.7.3 Soil amendment and restoration

_____	Physical loosening	D & N
_____	Compost amendments	D & N

BMP 6.7.4 Floodplain restoration

_____	Can prevent riparian problems from getting worse or can fix problems caused by historical practices	D & N
_____	Reattachment of root systems of floodplain vegetation/riparian areas connected to groundwater and/or base flow	D & N
_____	Removal of "legacy sediments" and associated nutrients stored within the stream corridors prior to release through bank erosion	D & N

Other BMPs and related structural measures

BMP 6.8.1 Level spreaders

D&N _____	Must be level	D & N
D&N _____	Are not applicable in areas with easily erodible soils and/or little vegetation	D & N
D&N _____	Should safely diffuse at least the 10-year storm peak rate	D & N
D&N _____	Bypassed flows should be stabilized in a sufficient manner	D & N

"A long-term operation and maintenance schedule, which provides for inspection of PCSM BMPs, including the repair, replacement, or other routine maintenance of the PCSM BMPs to ensure proper function and operation"

D&N _____	Inspection schedule of each permanent BMP is provided	N
D&N _____	Directions for maintenance and/or replacement of each BMP	N
D&N _____	Directions for sediment disposal	N
D&N _____	Responsible party (owner, operator, inspector) has been identified	N

"Procedures which ensure that the proper measures for recycling or disposal of materials associated with or from the PCSM BMPs are in accordance with DEP laws, regulations and requirements"

D&N _____	Project wastes are identified	N
D&N _____	Directions for recycling /disposal of wastes	D or N

“An identification of naturally occurring geologic formations or soil conditions that may provide hazards to the project or surrounding environment or have the potential to cause or contribute to pollution after earth disturbance activities are completed and PCSM BMPs are operational and development of a management plan to avoid or minimize potential pollution and its impacts”

<u>N</u>	Potential for geologic or soil conditions to cause pollution during construction	N
<u>D&N</u>	Instructions for proper handling and/or disposal of all materials which could cause pollution are provided	D
<u>D</u>	Typical details are provided for proper handling and/or disposal of all such materials	D
<u>N/A</u>	The locations of all such materials are clearly shown on the plan maps	D

“An identification of potential thermal impacts from post construction stormwater to surface waters of this Commonwealth including BMPs to avoid, minimize or mitigate potential pollution from thermal impacts”

<u>N</u>	Applicant has described how thermal impacts of stormwater runoff from the project site were avoided	N
<u>D&N</u>	Applicant has described how thermal impacts were minimized and mitigated	D & N

“A riparian forest buffer management plan when required under § 102.14 (relating to riparian buffer requirements)”

<u>D</u>	Existing and/or proposed buffers are shown on the plan drawings	D
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