TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

MLV-505LD86
SUGAR HOLLOW MAINLINE VALVE YARD

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

APRIL 2021

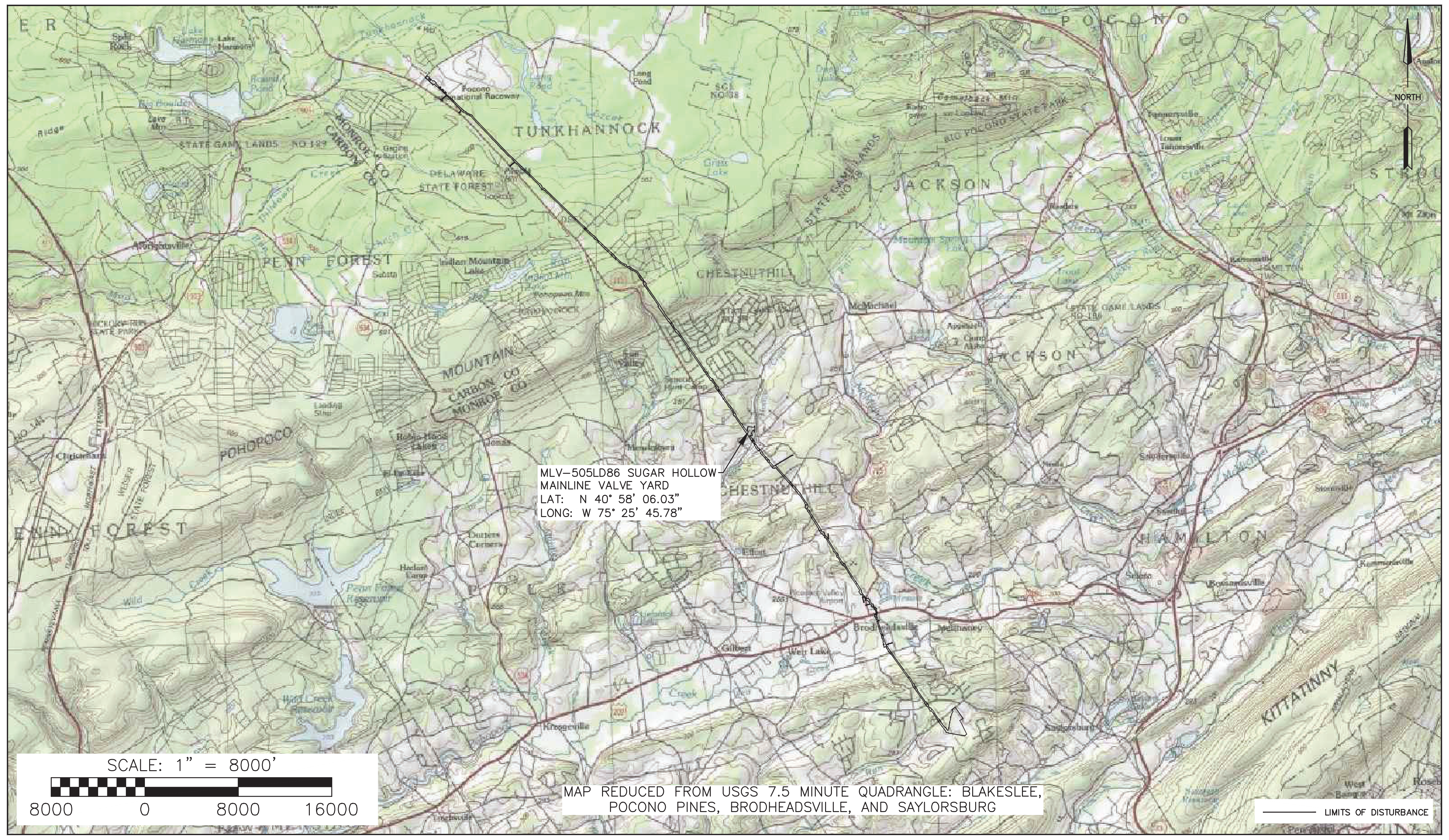
PROJECT OWNER/APPLICANT

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
2800 POST OAK BLVD, LEVEL 11
HOUSTON, TX 77056
CONTACT: JOSEPH DEAN, MANAGER PERMITTING

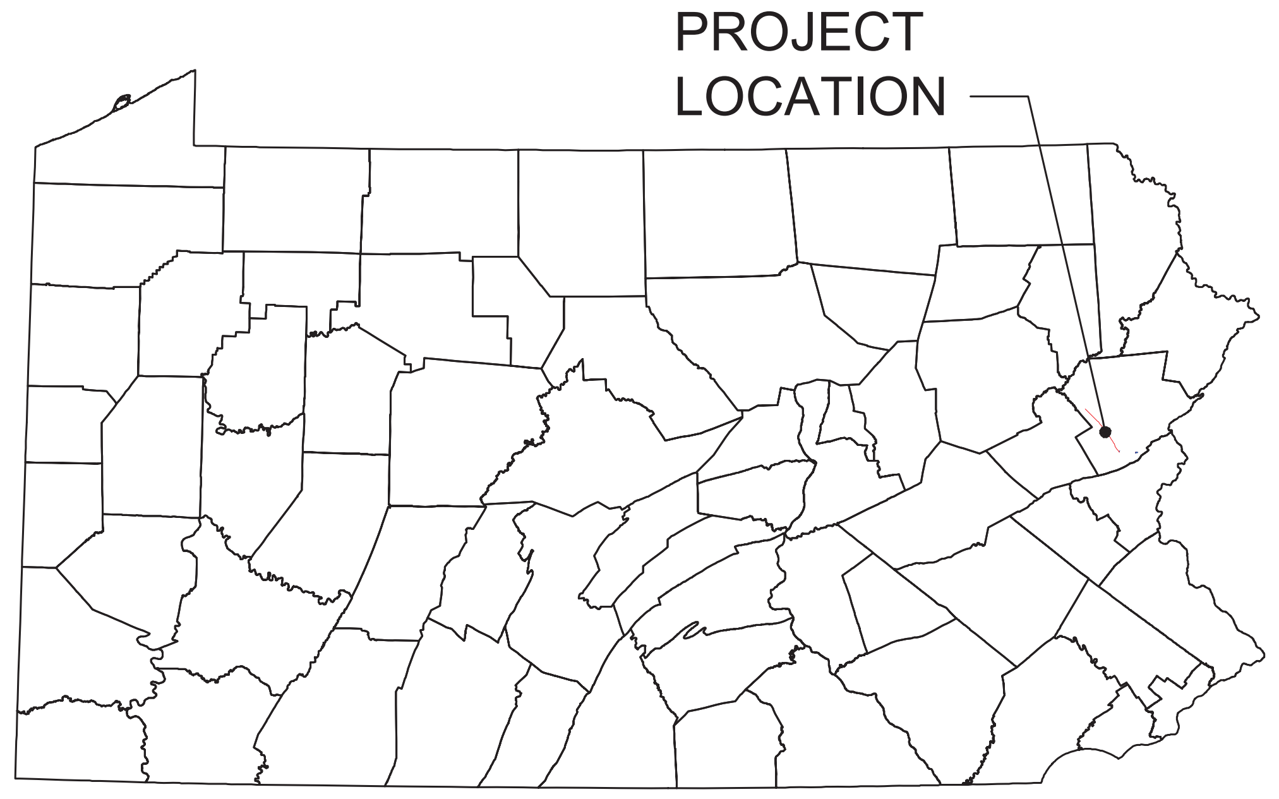
PLAN PREPARER / ENGINEER

WHM CONSULTING, LLC
2525 GREEN TECH DRIVE, SUITE B
STATE COLLEGE, PA 16803
PH: (814) 689-1650
CONTACT: RYAN NELSON, PROJECT MANAGER

BAI GROUP, LLC
2525 GREEN TECH DRIVE, SUITE D
STATE COLLEGE, PA 16803
PH: (814) 238-2060
CONTACT: KEVIN C. CLARK, P.E. PROJECT ENGINEER



LOCATION MAP



VICINITY MAP
N.T.S.

SHEET INDEX	
SHEET NUMBER	**DRAWING TITLE**
1 OF 8	COVER SHEET
2 OF 8	EXISTING CONDITIONS PLAN SHEET 1
3 OF 8	EXISTING CONDITIONS PLAN SHEET 2
4 OF 8	PROPOSED CONDITIONS PLAN SHEET 1
5 OF 8	PROPOSED CONDITIONS PLAN SHEET 2
6 OF 8	NOTES
7 OF 8	DETAILS SHEET 1
8 OF 8	DETAILS SHEET 2

RECEIVING WATERS			
NAME	**DESIGNATED USE**	**EXISTING USE**	**PFBC CLASSIFICATION**
SUGAR HOLLOW CREEK	CWF	N/A	CLASS A TROUT STREAM

Call before you dig.
1-800-242-1776 or 811

PENNSYLVANIA ACT 287 (1974) AS AMENDED BY PENNSYLVANIA LESS THAN THREE (3) WORKING DAYS AND NO MORE THAN (10) WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH.

KEVIN CLARK, P.E.
KEVIN C. CLARK
ENGINEER
041211-E
PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

COVER SHEET

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 1 OF 8
WO: 1211227	RID: 105		

LEGEND

	PROPERTY LINE
	EXISTING RIGHT-OF-WAY
ESCGP3	ESCGP-3 PERMIT BOUNDARY
	LIMITS OF DISTURBANCE
x x	EXISTING FENCE
	EXISTING STONE ROW
	EXISTING STRUCTURE
	EXISTING EDGE OF ROAD
	EXISTING GRAVEL AREAS
1250	EXISTING GRADE MAJOR CONTOURS (10' C.I.)
1244	EXISTING GRADE MINOR CONTOURS (2' C.I.)
> > >	EXISTING WATERBAR AND OUTLET STRUCTURE
	APPROX. ENVIRONMENTAL STUDY LIMITS
	DELINEATED WETLAND
	DELINEATED WATERWAY / STREAM (TOP OF BANK)
	STREAM FLOW DIRECTION
	RIPARIAN BUFFER
	50'/FEMA FLOODWAY
FEMA	FEMA 100-YEAR FLOODPLAIN
MrB2	SOIL BOUNDARY / TYPE
	EXISTING TREELINE / TREE/SHRUB
	EXISTING LEIDY / TGPL PIPELINES
	EXISTING FOREIGN PIPELINES
☒	EXISTING UTILITY POLE / TOWER
⋈	EXISTING VALVE
	EXISTING CULVERT
E	EXISTING ELECTRIC LINE
UE	EXISTING UNDERGROUND ELECTRIC LINE
G	EXISTING GAS LINE
W	EXISTING WATER LINE
SAN	EXISTING SANITARY LINE
ST	EXISTING STORM SEWER
T	EXISTING TELEPHONE LINE
FO	EXISTING FIBER OPTIC LINE
UC	EXISTING UNDERGROUND CABLE LINE
▨	EXISTING STORM INLET
○	EXISTING SANITARY MANHOLE
○	EXISTING COMMUNICATION/ELECTRIC MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING POWER POLE
WELL	EXISTING WELL
	PRE-CONSTRUCTION DRAINAGE AREA

SOIL LEGEND

LkB	LECK KILL CHANNERY SILT LOAM, 2 TO 8 PERCENT SLOPES
LkC	LECK KILL CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
KvB	KLINESVILLE CHANNERY SILT LOAM, 3 TO 8 PERCENT SLOPES
KvC	KLINESVILLE CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
WKE	WEIKERT AND KLINESVILLE SOILS, STEEP

EXISTING CONDITION NOTES/SOURCES

1. EXISTING ROADWAYS, CONTOURS, PROPERTY LINE, TREE LINE, ETC. ARE DERIVED FROM A FIELD SURVEY PERFORMED BY TRANSCO BETWEEN 2019 AND 2020.
2. PROPERTY BOUNDARIES BASED EITHER ON TAX PARCEL INFORMATION PROVIDED BY TRANSCO OR A COMBINATION OF DEED REFERENCE AND FIELD LOCATED EVIDENCE. PROPERTY BOUNDARY LOCATIONS BASED ON TAX PARCEL INFORMATION ARE APPROXIMATE.
3. PIPELINE ALIGNMENTS AND LIMITS OF DISTURBANCE PROVIDED BY TRANSCO.
4. STREAM AND WETLAND BOUNDARIES BASED ON SURVEYS CONDUCTED BY WHM CONSULTING FROM MARCH 2020 TO OCTOBER 2020.
5. DATUM BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM, NAD 83 NORTH ZONE, NAVD88, ELEVATION MSL, DERIVED FROM GPS OBSERVATION.

SCALE
40 20 0 40
SCALE 1" =40'

KEVIN CLARK, P.E.

KEVIN C. CLARK
ENGINEER
041211-E

PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

EXISTING CONDITIONS PLAN SHEET 1

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 2 OF 8
WO: 1211227	RID: 105		

LEGEND

	PROPERTY LINE
	EXISTING RIGHT-OF-WAY
ESCGP3	ESCGP-3 PERMIT BOUNDARY
	LIMITS OF DISTURBANCE
X X	EXISTING FENCE
	EXISTING STONE ROW
	EXISTING STRUCTURE
	EXISTING EDGE OF ROAD
	EXISTING GRAVEL AREAS
1250	EXISTING GRADE MAJOR CONTOURS (10' C.I.)
1244	EXISTING GRADE MINOR CONTOURS (2' C.I.)
> > >	EXISTING WATERBAR AND OUTLET STRUCTURE
	APPROX. ENVIRONMENTAL STUDY LIMITS
	DELINEATED WETLAND
	DELINEATED WATERWAY / STREAM (TOP OF BANK)
	STREAM FLOW DIRECTION
	RIPARIAN BUFFER
	50'/FEMA FLOODWAY
FEMA	FEMA 100-YEAR FLOODPLAIN
MrB2	SOIL BOUNDARY / TYPE
	EXISTING TREELINE / TREE/SHRUB
	EXISTING LEIDY / TGPL PIPELINES
	EXISTING FOREIGN PIPELINES
☒	EXISTING UTILITY POLE / TOWER
⋈	EXISTING VALVE
	EXISTING CULVERT
E	EXISTING ELECTRIC LINE
UE	EXISTING UNDERGROUND ELECTRIC LINE
G	EXISTING GAS LINE
W	EXISTING WATER LINE
SAN	EXISTING SANITARY LINE
ST	EXISTING STORM SEWER
T	EXISTING TELEPHONE LINE
FO	EXISTING FIBER OPTIC LINE
UC	EXISTING UNDERGROUND CABLE LINE
▨	EXISTING STORM INLET
●	EXISTING SANITARY MANHOLE
○	EXISTING COMMUNICATION/ELECTRIC MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING POWER POLE
PS WELL	EXISTING WELL
	PRE-CONSTRUCTION DRAINAGE AREA

SOIL LEGEND

LkB	LECK KILL CHANNERY SILT LOAM, 2 TO 8 PERCENT SLOPES
LkC	LECK KILL CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
KvB	KLINESVILLE CHANNERY SILT LOAM, 3 TO 8 PERCENT SLOPES
KvC	KLINESVILLE CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
WKE	WEIKERT AND KLINESVILLE SOILS, STEEP

EXISTING CONDITION NOTES/SOURCES

1. EXISTING ROADWAYS, CONTOURS, PROPERTY LINE, TREE LINE, ETC. ARE DERIVED FROM A FIELD SURVEY PERFORMED BY TRANSCO BETWEEN 2019 AND 2020.
2. PROPERTY BOUNDARIES BASED EITHER ON TAX PARCEL INFORMATION PROVIDED BY TRANSCO OR A COMBINATION OF DEED REFERENCE AND FIELD LOCATED EVIDENCE. PROPERTY BOUNDARY LOCATIONS BASED ON TAX PARCEL INFORMATION ARE APPROXIMATE.
3. PIPELINE ALIGNMENTS AND LIMITS OF DISTURBANCE PROVIDED BY TRANSCO.
4. STREAM AND WETLAND BOUNDARIES BASED ON SURVEYS CONDUCTED BY WHM CONSULTING FROM MARCH 2020 TO OCTOBER 2020.
5. DATUM BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM, NAD 83 NORTH ZONE, NAVD88, ELEVATION MSL, DERIVED FROM GPS OBSERVATION.

SCALE
40 20 0 40
SCALE 1" =40'

BA GROUP

WHM consulting, LLC

KEVIN CLARK, P.E.

KEVIN C. CLARK
ENGINEER
041211-E

PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

EXISTING CONDITIONS PLAN SHEET 2

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

Williams.

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 3 OF 8
WO: 1211227	RID: 105		

LEGEND

	PROPERTY LINE
	EXISTING RIGHT-OF-WAY
ESCGP3	ESCGP-3 PERMIT BOUNDARY
	LIMITS OF DISTURBANCE
— X — X —	EXISTING FENCE
	EXISTING STONE ROW
	EXISTING STRUCTURE
	EXISTING EDGE OF ROAD
	EXISTING GRAVEL AREAS
1250	EXISTING GRADE MAJOR CONTOURS (10' C.I.)
1244	EXISTING GRADE MINOR CONTOURS (2' C.I.)
— > - > - > —	EXISTING WATERBAR AND OUTLET STRUCTURE
	APPROX. ENVIRONMENTAL STUDY LIMITS
	DELINEATED WETLAND
	DELINEATED WATERWAY / STREAM (TOP OF BANK)
	STREAM FLOW DIRECTION
	RIPARIAN BUFFER
	50'/FEMA FLOODWAY
FEMA	FEMA 100-YEAR FLOODPLAIN
MrB2	SOIL BOUNDARY / TYPE
	EXISTING TREELINE / TREE/SHRUB
	EXISTING LEIDY / TGPL PIPELINES
	EXISTING FOREIGN PIPELINES
⊠	EXISTING UTILITY POLE / TOWER
⋈	EXISTING VALVE
	EXISTING CULVERT
E	EXISTING ELECTRIC LINE
UE	EXISTING UNDERGROUND ELECTRIC LINE
G	EXISTING GAS LINE
W	EXISTING WATER LINE
SAN	EXISTING SANITARY LINE
ST	EXISTING STORM SEWER
T	EXISTING TELEPHONE LINE
FO	EXISTING FIBER OPTIC LINE
UC	EXISTING UNDERGROUND CABLE LINE
▨	EXISTING STORM INLET
●	EXISTING SANITARY MANHOLE
○	EXISTING COMMUNICATION/ELECTRIC MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING POWER POLE
WELL	EXISTING WELL
🟥	PROPOSED PIPELINE
	PROPOSED PIPELINE GROUNDBED
— > - > - > —	PROPOSED WATERBAR AND OUTLET STRUCTURE
— > - > - > —	PROPOSED DIVERSION CHANNEL
— X —	PROPOSED FENCE
	PROPOSED GRAVEL
1250	PROPOSED GRADE MAJOR CONTOURS (10' C.I.)
1244	PROPOSED GRADE MINOR CONTOURS (2' C.I.)
☒	WETLAND REGRADING AREA
	POST-CONSTRUCTION DRAINAGE AREA

SOIL LEGEND

LkB	LECK KILL CHANNERY SILT LOAM, 2 TO 8 PERCENT SLOPES
LkC	LECK KILL CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
KvB	KLINESVILLE CHANNERY SILT LOAM, 3 TO 8 PERCENT SLOPES
KvC	KLINESVILLE CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
WKE	WEIKERT AND KLINESVILLE SOILS, STEEP

EXISTING CONDITION NOTES/SOURCES

1. EXISTING ROADWAYS, CONTOURS, PROPERTY LINE, TREE LINE, ETC. ARE DERIVED FROM A FIELD SURVEY PERFORMED BY TRANSCO BETWEEN 2019 AND 2020.
2. PROPERTY BOUNDARIES BASED EITHER ON TAX PARCEL INFORMATION PROVIDED BY TRANSCO OR A COMBINATION OF DEED REFERENCE AND FIELD LOCATED EVIDENCE. PROPERTY BOUNDARY LOCATIONS BASED ON TAX PARCEL INFORMATION ARE APPROXIMATE.
3. PIPELINE ALIGNMENTS AND LIMITS OF DISTURBANCE PROVIDED BY TRANSCO.
4. STREAM AND WETLAND BOUNDARIES BASED ON SURVEYS CONDUCTED BY WHM CONSULTING FROM MARCH 2020 TO OCTOBER 2020.
5. DATUM BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM, NAD 83 NORTH ZONE, NAVD88, ELEVATION MSL, DERIVED FROM GPS OBSERVATION.

SCALE
40 20 0 40
SCALE 1" =40'

WHM consulting, LLC

KEVIN CLARK, P.E.

KEVIN C. CLARK

PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

PROPOSED CONDITIONS PLAN SHEET 1

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 4 OF 8
WO: 1211227	RID: 105		

LEGEND

— — —	PROPERTY LINE
— - - - —	EXISTING RIGHT-OF-WAY
▬ ESCGP3 ▬	ESCGP-3 PERMIT BOUNDARY
▬ ▬	LIMITS OF DISTURBANCE
—X—X—	EXISTING FENCE
○○○○○○	EXISTING STONE ROW
☐	EXISTING STRUCTURE
═	EXISTING EDGE OF ROAD
▨	EXISTING GRAVEL AREAS
—1250—	EXISTING GRADE MAJOR CONTOURS (10' C.I.)
—1244—	EXISTING GRADE MINOR CONTOURS (2' C.I.)
—>->->—	EXISTING WATERBAR AND OUTLET STRUCTURE
— — —	APPROX. ENVIRONMENTAL STUDY LIMITS
▨	DELINEATED WETLAND
▭	DELINEATED WATERWAY / STREAM (TOP OF BANK)
→	STREAM FLOW DIRECTION
— — —	RIPARIAN BUFFER
— · · —	50'/FEMA FLOODWAY
— FEMA —	FEMA 100-YEAR FLOODPLAIN
—MrB2	SOIL BOUNDARY / TYPE
⌒⌒⌒ ●	EXISTING TREELINE / TREE/SHRUB
━	EXISTING LEIDY / TGPL PIPELINES
━‖━	EXISTING FOREIGN PIPELINES
☒	EXISTING UTILITY POLE / TOWER
⋈	EXISTING VALVE
◀- - -▶	EXISTING CULVERT
— E —	EXISTING ELECTRIC LINE
— UE —	EXISTING UNDERGROUND ELECTRIC LINE
— G —	EXISTING GAS LINE
— W —	EXISTING WATER LINE
— SAN —	EXISTING SANITARY LINE
— ST —	EXISTING STORM SEWER
— T —	EXISTING TELEPHONE LINE
— FO —	EXISTING FIBER OPTIC LINE
— UC —	EXISTING UNDERGROUND CABLE LINE
▨	EXISTING STORM INLET
○	EXISTING SANITARY MANHOLE
○	EXISTING COMMUNICATION/ELECTRIC MANHOLE
✱	EXISTING FIRE HYDRANT
⌀	EXISTING POWER POLE
PS WELL	EXISTING WELL
━	PROPOSED PIPELINE
━	PROPOSED PIPELINE GROUNDBED
—>->->—	PROPOSED WATERBAR AND OUTLET STRUCTURE
—>->->—	PROPOSED DIVERSION CHANNEL
—X—	PROPOSED FENCE
▨	PROPOSED GRAVEL
—1250—	PROPOSED GRADE MAJOR CONTOURS (10' C.I.)
—1244—	PROPOSED GRADE MINOR CONTOURS (2' C.I.)
☒	WETLAND REGRADING AREA
━	POST-CONSTRUCTION DRAINAGE AREA

SOIL LEGEND

LkB	LECK KILL CHANNERY SILT LOAM, 2 TO 8 PERCENT SLOPES
LkC	LECK KILL CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
KvB	KLINESVILLE CHANNERY SILT LOAM, 3 TO 8 PERCENT SLOPES
KvC	KLINESVILLE CHANNERY SILT LOAM, 8 TO 15 PERCENT SLOPES
WKE	WEIKERT AND KLINESVILLE SOILS, STEEP

EXISTING CONDITION NOTES/SOURCES

1. EXISTING ROADWAYS, CONTOURS, PROPERTY LINE, TREE LINE, ETC. ARE DERIVED FROM A FIELD SURVEY PERFORMED BY TRANSCO BETWEEN 2019 AND 2020.
2. PROPERTY BOUNDARIES BASED EITHER ON TAX PARCEL INFORMATION PROVIDED BY TRANSCO OR A COMBINATION OF DEED REFERENCE AND FIELD LOCATED EVIDENCE. PROPERTY BOUNDARY LOCATIONS BASED ON TAX PARCEL INFORMATION ARE APPROXIMATE.
3. PIPELINE ALIGNMENTS AND LIMITS OF DISTURBANCE PROVIDED BY TRANSCO.
4. STREAM AND WETLAND BOUNDARIES BASED ON SURVEYS CONDUCTED BY WHM CONSULTING FROM MARCH 2020 TO OCTOBER 2020.
5. DATUM BASED ON PENNSYLVANIA STATE PLANE COORDINATE SYSTEM, NAD 83 NORTH ZONE, NAVD88, ELEVATION MSL, DERIVED FROM GPS OBSERVATION.

SCALE
40 20 0 40
SCALE 1" =40'

KEVIN CLARK, P.E.

KEVIN C. CLARK
ENGINEER
041211-E

PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

PROPOSED CONDITIONS PLAN SHEET 2

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 5 OF 8
WO: 1211227	RID: 105		

RESOLUTION OF SOIL LIMITATIONS

TRANSCO PROPOSES THE FOLLOWING RESOLUTIONS TO COMPENSATE FOR SOIL LIMITATIONS SUMMARIZED IN TABLE 3 ABOVE:

1. TO OFFSET THE CAVING OF CUTBANKS, TRENCHING OPERATIONS WILL BE CONDUCTED IN ACCORDANCE WITH THE OSHA TECHNICAL MANUAL FOR TRENCHING.
2. PREVENTATIVE COATINGS SHALL BE USED TO PREVENT CORROSION OF CONCRETE AND/ OR STEEL.
3. WHEN BEDROCK IS ENCOUNTERED IT WILL BE REMOVED BY MECHANICAL METHODS OR BLASTING. BLASTING OPERATIONS WILL CONFORM WITH LOCAL, STATE, AND FEDERAL REGULATIONS.
4. PRECAUTIONS WILL BE TAKEN TO PREVENT SLOPE FAILURE WHEN WORKING WITHIN LOW STRENGTH SOILS BY FLATTENING CUT / FILL SLOPES, NOT OVERLOADING, MAINTAINING LATERAL SUPPORT, AND PREVENTING SATURATION OF SOILS. LOW STRENGTH SOILS WILL NOT BE USED FOR ROADWAY CONSTRUCTION.
5. EXCAVATION IN SOILS PRONE TO FLOODING, SLOW PERCOLATION, PONDING, WETNESS, LOCATED IN A SEASONAL HIGH WATER TABLE, OR WHICH ARE HYDRIC, WILL LIKELY ENCOUNTER WATER. COMPENSATION WILL INVOLVE DEWATERING WITH APPROPRIATE MEANS SUCH AS PUMP WATER FILTER BAGS, SEDIMENT TRAPS, ETC.
6. SOILS THAT HAVE THE POTENTIAL TO SWELL, SHRINK, OR HEAVE DUE TO FROST ACTION MAY CAUSE DAMAGE TO ROADWAYS OR PADS. WHERE FOUNDATIONS ARE CRITICAL, COMPENSATION MAY REQUIRE REMOVAL AND REPLACEMENT OF SOILS WITH SUITABLE MATERIAL.
7. IN CIRCUMSTANCES WHERE SOILS APPEAR TO BE A POOR SOURCE OF TOPSOIL, DROUGHTY OR PRONE TO WETNESS, SOIL TESTING WILL BE PERFORMED TO DETERMINE THE APPROPRIATE APPLICATIONS OF SOIL AMENDMENTS TO PROMOTE GROWTH. SOILS ONSITE THAT ARE FAIR SOURCES OF TOPSOIL, WILL BE IDENTIFIED, STRIPPED AND STOCKPILED FOR USE DURING RESTORATION.
8. IN ORDER TO MINIMIZE EROSION OF SOILS THAT ARE EASILY ERODIBLE, COMPENSATION MAY INVOLVE PROVIDING A PROTECTIVE LINING, TO APPLY SEED, MULCH, EROSION CONTROL BLANKETS (EITHER IN ROLLS OR HYDRAULICALLY APPLIED), TRACKING SLOPES, UPSTREAM DIVERSIONS, WATERBARS, ETC. TO MINIMIZE SOIL EROSION.

Table 2 - Soils mapping units within the LOD

Soil Mapping Unit	Soil Series
MLV-505LD86	
KvB	Klinesville channery silt loam, 3 to 8 percent slopes
KvD	Klinesville channery silt loam, 15 to 25 percent slopes
LkB	Leck kill channery silt loam, 2 to 8 percent slopes
LkC	Leck kill channery silt loam, 8 to 15 percent slopes
LkD	Leck kill channery silt loam, 15 to 25 percent slopes
WKE	Weikert and Klinesville soils, steep

TABLE 3 - LIMITATIONS OF PENNSYLVANIA SOILS PERTAINING TO EARTH DISTURBANCE PROJECTS
(EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE (BMP) MANUAL- TECHNICAL GUIDANCE NUMBER 363-3134-008/PAGE 401)

SOIL NAME	SOILS WITH SLOPE CLASS	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DROUGHTY	EASILY ERODIBLE	FLOODING	DEPTH TO SATURATED ZONE/SEASONAL HIGH WATER TABLE	HYDRIC/HYDRIC	LOW STRENGTH / LANDSLIDE PRONE	SLOW PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK - SWELL	POTENTIAL SINKHOLE	PONDING	WETNESS
KLINESVILLE	KvB, KvD	X	C/S	X	X			X		X		X	X				
LECK KILL	LkB, LkC, LkD	X	C						X	X	X	X	X				X
WEIKERT	WKE	X	C/S	X				X	X	X	X	X	X				

CHARACTERISTICS OF EARTH DISTURBANCE ACTIVITY, INCLUDING PAST, PRESENT, AND PROPOSED LAND USES AND PROPOSED ALTERATIONS TO THE AREA

TRANSCO WILL BE INSTALLING MLV-505LD86 NEAR THE EFFORT LOOP PIPELINE AS A MEANS TO ISOLATE GAS FLOWS. PIG LAUNCHERS/RECEIVERS, VALVES AND OTHER ANCILLARY FACILITIES WILL BE LOCATED AT THIS MLV FACILITY. THE WORK AND DISTURBED AREAS ARE LOCATED WITHIN TRANSCO PROPERTY, EXISTING EASEMENTS, OR LEGALLY OBTAINED WORKSPACE WHERE THE PAST, PRESENT, AND PROPOSED LAND USE IS PRIMARILY AN EXISTING PIPELINE ROW. DISTURBED AREAS WITHIN THE TEMPORARY WORKSPACES WILL BE RESTORED TO THE ORIGINAL CONTOURS. USING DATA TAKEN FROM GOOGLE EARTH AND MULTI-RESOLUTION LAND CHARACTERISTICS (MRLC) CONSORTIUM WEBSITE (HTTPS://WWW.MRLC.GOV/VIEWER/), IT APPEARS THAT A MAJOR PORTION OF THE EFFORT LOOP MLV WAS EXISTING AND MAINTAINED GAS PIPELINE RIGHT-OF-WAY FOR THE PAST 20 YEARS AND WILL CONTINUE TO BE AN EXISTING AND MAINTAINED GAS PIPELINE RIGHT-OF-WAY ONCE THE PROJECT IS COMPLETE. ALONG THE EDGES OF THE ROW LAND USE IS PRIMARILY FORESTED. BASED ON THE SURROUNDING LAND CHARACTERISTICS, LAND USE PRIOR TO ROW CONSTRUCTION WITHIN THE PAST 50 YEARS WOULD LIKELY HAVE BEEN EITHER FORESTED LAND OR MEADOW. A GRAVEL PAD AND ACCESS ROAD WILL BE CONSTRUCTED AT THE EFFORT LOOP MLV SITE. THE CONTRACTOR WILL CONSTRUCT STORMWATER BEST MANAGEMENT PRACTICES (BMPS) TO MITIGATE THE INCREASE IN VOLUME AND PEAK RATES ASSOCIATED WITH CONSTRUCTION. THE PROPOSED BMPS ARE DESIGNED TO EVAPORATE AND INFILTRATE THE NET INCREASE IN VOLUME BETWEEN THE PRE- AND POST-DEVELOPMENT 2-YEAR RAIN EVENTS.

BMP DESCRIPTION NARRATIVE

CONVEYANCE BMP'S, TWO INFILTRATION BERMS, AND AN INFILTRATION BASIN WILL BE INSTALLED ACROSS THE DEVELOPED AREA TO CONVEY THE NET INCREASE IN VOLUME BETWEEN THE PRE- AND POST-DEVELOPMENT 2-YEAR STORM EVENTS AND MITIGATE THE INCREASE (PRE-POST DEVELOPMENT) IN PEAK RUNOFF FOR THE 2-, 10-, 25-, 50-, AND 100-YEAR STORM EVENTS. A SUMMARY OF THE PROPOSED BMP'S IS INCLUDED BELOW:

- COLLECTION CHANNELS AND CULVERTS TO COLLECT AND CONVEY RUNOFF TO THE PROPOSED STORMWATER INFILTRATION BMP'S.
- TWO INFILTRATION BERMS WITH A HEIGHT OF 2 FEET AND OVERALL LENGTHS OF 41 AND 182 FEET, RESPECTIVELY.
- AN INFILTRATION BASIN WITH A DEPTH OF 3.5 FEET, 3:1 INSIDE SLOPES, 2:1 OUTSIDE SLOPES, A RISER PRINCIPAL SPILLWAY AND AN EMBANKMENT EMERGENCY SPILLWAY.

BMP INSTALLATION SEQUENCE

THE PCSM BMPS SHOULD BE INSTALLED IN A MANNER DESIGNED TO:

1. PROTECT BMP AREAS ASSOCIATED WITH INFILTRATION FROM COMPACTION PRIOR TO AND DURING INSTALLATION.
2. MAINTAIN PROPER EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
3. AS AREAS ARE COMPLETED, SEED AND MULCH IN ACCORDANCE WITH THE SECTION BELOW.
4. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
5. INSTALL BMPS AS FOLLOWS:
6. INFILTRATION BERMS
   a. COMPLETE SITE GRADING AND STABILIZE WITHIN THE LIMIT OF DISTURBANCE EXCEPT WHERE THE INFILTRATION BERMS WILL BE CONSTRUCTED. MAKE EVERY EFFORT TO MINIMIZE BERM FOOTPRINT AND NECESSARY ZONE OF DISTURBANCE (INCLUDING BOTH REMOVAL OF EXITING VEGETATION AND DISTURBANCE OF EMPTY SOIL).
   b. LIGHTLY SCARIFY THE SOIL IN THE AREA OF THE PROPOSED BERM BEFORE DELIVERING SOIL TO SITE.
   c. BRING IN FILL MATERIAL TO MAKE UP THE MAJOR PORTION OF THE BERM. SOIL SHOULD BE ADDED IN 8-INCH LIFTS AND COMPACTED AFTER EACH ADDITION ACCORDING TO DESIGN SPECIFICATIONS. THE SLOPE AND SHAPE OF THE BERM SHOULD BE GRADED OUT AS SOIL IS ADDED.
   d. PROTECT THE SURFACE PONDING AREA AT THE BASE OF THE BERM FROM COMPACTION. IF COMPACTION OF THIS AREA DOES OCCUR, SCARIFY THE SOIL TO A DEPTH OF AT LEAST 8 INCHES.
   e. COMPLETE FINAL GRADING OF THE BERM AFTER THE TOP LAYER OF SOIL IS ADDED. TAMP SOIL DOWN LIGHTLY AND SMOOTH SIDES OF THE BERM. THE CREST AND BASE OF THE BERM SHOULD BE AT LEVEL GRADE.
   f. PLANT BERM WITH TURF, MEADOW PLANTS, SHRUBS OR TREES, AS DESIRED.
   g. MULCH PLANTED AND DISTURBED AREAS WITH COMPOST MULCH TO PREVENT EROSION WHILE PLANTS BECOME ESTABLISHED.
7. INFILTRATION BASIN
   a. PROTECT INFILTRATION BASIN AREA FROM COMPACTION PRIOR TO INSTALLATION.
   b. EXCAVATE BASIN BOTTOM TO AN UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE.
   c. INSTALL OUTLET CONTROL STRUCTURES.
   d. DO NOT REMOVE INLET PROTECTION OR OTHER EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
8. COLLECTION CHANNELS/CULVERTS
   a. CONSTRUCT COLLECTION CHANNELS AS SHOWN IN THE PLAN.
   b. STABILIZE THE CHANNELS WITH SPECIFIED CHANNEL LININGS.
   c. INSTALL CULVERTS AS SHOWN ON THE PLAN.
9. SEDIMENT THAT ENTERS BMPS DURING CONSTRUCTION IS TO BE REMOVED WITHIN 24 HOURS.
10. SEED AND STABILIZE REMAINING TOPSOIL AS PER SEEDING AND MULCHING SPECIFICATIONS.
11. FOLLOW LONG TERM OPERATION AND MAINTENANCE GUIDELINE.

SEEDING AND MULCHING:

THE CONSTRUCTION SITE SHOULD BE STABILIZED AS SOON AS POSSIBLE AFTER CONSTRUCTION IS COMPLETED. ESTABLISHMENT OF TEMPORARY COVER MUST TAKE PLACE WITHIN 4 DAYS OF CESSATION OF WORK. TEMPORARY EROSION AND SEDIMENTATION CONTROL BMPS CAN BE REMOVED WHEN THE SITE MEETS FINAL STABILIZATION. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT HARD COVER SUCH AS PAVEMENT OR BUILDINGS HAS STABILIZED THE SURFACE. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE. NO HAY OR STRAW MULCH SHALL BE PLACED ON WATERBODY BANKS. AT A MINIMUM, ALL WATERBODY BANKS SHALL BE COVERED WITH EROSION CONTROL BLANKET. IN ADDITION, ONLY STRAW MULCH SHALL BE USED IN AREAS ADJACENT TO WETLANDS.

TEMPORARY REVEGETATION

AFTER GRADING AND EXCAVATION IS COMPLETED WITHIN AN AREA, VEGETATION WILL BE SOWN PROMPTLY AFTER CEASING EARTHWORK IN THOSE AREAS. HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL WILL BE APPLIED TO NEWLY SEEDED AREAS TO PROTECT AGAINST EROSION UNTIL THE VEGETATION IS ESTABLISHED. HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL SHALL BE APPLIED AT A RATE OF AT LEAST 3 TONS PER ACRE. EROSION CONTROL BLANKET SHALL BE USED ON STREAM BANKS. NO HAY OR STRAW, MULCH OR BLANKET SHALL BE UTILIZED IN WETLAND AREAS.

PERMANENT SEEDING AND MULCHING

TOPSOIL WILL BE REPLACED PRIOR TO STABILIZATION. DISTURBED AREAS SHALL BE SEEDED WITH A MIXTURE AS OUTLINED IN THE DETAILS PAGES OF THE EROSION AND SEDIMENT CONTROL PLAN SET. APPLY LIME AND FERTILIZER IN ACCORDANCE WITH SOIL TEST RECOMMENDATIONS OR AS OUTLINED IN THE BELOW TABLE. HAY, STRAW MULCH, OR OTHER SIMILAR MATERIAL SHALL BE APPLIED AT A RATE OF AT LEAST 3 TONS PER ACRE.

TABLE 11.2
Soil Amendment Application Rate Equivalents

Soil Amendment	Permanent Seeding Application Rate			Notes
	Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	
Agricultural lime	6 tons	240 lb.	2,480 lb.	Or as per soil test; may not be required in agricultural fields
10-20-20 **fertilizer**	1,000 lb.	25 lb.	210 lb.	Or as per soil test; may not be required in agricultural fields
	Temporary Seeding Application Rate			
Agricultural lime	1 ton	40 lb.	410 lb.	Typically not required for topsoil stockpiles
10-10-10 fertilizer	500 lb.	12.5 lb.	100 lb.	Typically not required for topsoil stockpiles

Adapted from Penn State, "Erosion Control and Conservation Plantings on Noncropland"

NOTE: A compost blanket which meets the standards of this chapter may be substituted for the soil amendments shown in Table 11.2.

TABLE 11.3
Plant Tolerances of Soil Limitation Factors

Species	Growth Habit[1]	Tolerates: Wet Soil	Dry Site	Low Fertility	Acid Soil (pH 5-5.5)[2]	Minimum Seed Specifications[3]: Purity (%)	Ready Germ (%)	Hard Seed (%)	Total Germ (%)	Seeds/lb (1,000s)
Warm-Season Grasses										
Deertongue	bunch	yes	yes	yes	yes	95	75		75	250
Weeping lovegrass	bunch	no	yes	yes	yes	97	75		75	1,500
Switchgrass[4]	bunch	yes	yes	yes	yes	(60 PLS)				390
Big bluestem	bunch	no	yes	yes	yes	(60 PLS)				150
Cool-Season Grasses										
Tall Fescue	bunch	yes	no	yes	no	95	80		80	227
Redtop	sod	yes	yes	yes	yes	92	80		80	5,000
Fine fescues	sod	no	no	yes	no	95	80		80	400
Perennial ryegrass	bunch	yes	no	no	no	95	85		85	227
Annual ryegrass	bunch	yes	no	yes	no	95	85		85	227
Kentucky bluegrass	sod	no	no	no	no	85	75		75	2,200
Reed canarygrass	sod	yes	yes	yes	no	95	70		70	520
Orchardgrass	bunch	yes	yes	yes	yes	95	80		80	654
Timothy	bunch	yes	no	yes	yes	95	80		80	1,230
Smooth bromegrass	sod	no	yes	yes	no	95	80		80	136
Legumes[5]										
Birdsfoot trefoil[6]	bunch	yes	no	yes	yes	98	60	20	80	400
Flatpea	sod	no	no	yes	yes	98	55	20	75	10
Serecia lespedeza	bunch	no	yes	yes	yes	98	60	20	80	335
Cereals										
Winter wheat	bunch	no	no	no	no	98	85		85	15
Winter rye	bunch	no	no	yes	yes	98	85		85	18
Spring oats	bunch	no	no	no	no	98	85		85	13
Sundangrass	bunch	no	yes	no	no	98	85		85	55
Japanese millet	bunch	yes	no	yes	yes	98	80		80	155

[1] Growth habit refers to the ability of the species to either form a dense sod by vegetative means (stolons, rhizomes, or roots) or remain in a bunch or single plant form. If seeded heavily enough, even bunch formers can produce a very dense stand. This is sometimes called a sod, but not in the sense of a sod formed by vegetative means.

[2] Once established, plants may grow at a somewhat lower pH, but cover generally is only adequate at pH 6.0 or above.

[3] *Minimum seed lots are truly minimum, and seed lots to be used for revegetation purposes should equal or exceed these standards.* Thus, deertongue grass should germinate 75% or better. Crownvetch should have at least 40% readily germinable seed and 30% hard seed. Commonly, seed lots are available that equal or exceed minimum specifications. Remember that disturbed sites are adverse for plant establishment. Ready germination refers to seed that germinates during the period of the germination test and that would be expected, if conditions are favorable, to germinate rapidly when planted. The opposite of ready germination is dormant seed, of which hard seed is one type.

[4] Switchgrass seed is sold only on the basis of PLS.

[5] Need specific legume inoculant. Inoculant suitable for garden peas and sweetpeas usually is satisfactory for flatpea.

[6] Birdsfoot trefoil is adapted over the entire state, except in the extreme southeast where crown and root rots may injure stands.

Penn State, "Erosion Control and Conservation Plantings on Noncropland,"

ERNST RIPARIAN BUFFER MIX - ERNMX 178

PERCENTAGE OF MIX COMPOSITION	SCIENTIFIC NAME	COMMON NAME
30.0%	*PANICUM CLANDESTINUM*	DEERTONGUE
20.0%	*ELYMUS VIRGINICUS*	VIRGINIA WILDRYE
11.8%	*ANDROPOGON GERARDII*	BIG BLUESTEM
10.5%	*SORGHASTRUM NUTANS*	INDIANAGRASS
5.0%	*PANICUM VIRGATUM*	SWITCHGRASS
4.0%	*CHAMAECRISTA FASCICULATA*	PARTRIDGE PEA
4.0%	*VERBENA HASTATA*	BLUE VERVAIN
3.0%	*JUNCUS EFFUSUS*	SOFT RUSH
3.0%	*RUDBECKIA HIRTA*	BLACKEYED SUSAN
2.0%	*HELIOPSIS HELIANTHOIDES*	OXEYE SUNFLOWER
1.0%	*ASCLEPIAS INCARNATA*	SWAMP MILKWEED
0.7%	*ASTER NOVAE-ANGLIAE*	NEW ENGLAND ASTER
0.7%	*ASTER UMBELLATUS*	FLAT TOPPED WHITE ASTER
0.7%	*EUPATORIUM PERFOLIATUM*	BONESET
0.5%	*AGROSTIS PERENNANS*	AUTUMN BENTGRASS
0.5%	*HELENIUM AUTUMNALE*	COMMON SNEEZEWEED
0.5%	*MONARDA FISTULOSA*	WILD BERGAMOT
0.5%	*VERNONIA NOVEBORACENSIS*	NEW YORK IRONWEED
0.4%	*PYCNANTHEMUM TENUIFOLIUM*	NARROWLEAF MOUNTAINMINT
0.4%	*SOLIDAGO PATULA*	ROUGHLEAF GOLDENROD
0.3%	*EUPATORIUM FISTULOSUM*	JOE PYE WEED
0.3%	*LOBELIA SIPHILITICA*	GREAT BLUE LOBELIA
0.2%	*ASTER PUNICEUS*	PURPLESTEM ASTER

1. SEEDING RATE: 20 LBS/ACRE WITH A COVER CROP AT 30 LBS/ACRE
2. THIS SEED MIX IS TO BE USED TO REVEGETATE WORKSPACE WITHIN THE DESIGNATED 150' RIPARIAN BUFFER AREA WHERE SLOPES ARE LESS THAN 10%. IF THE SLOPE EXCEEDS 10%, A STANDARD UPLAND ROW MIX SHOULD BE USED.
3. AN ALTERNATIVE SEED MIXTURE THAT CONTAINS SIMILAR SPECIES IS ACCEPTABLE.

TABLE 11.4
Recommended Seed Mixtures

Mixture Number	Species	Seeding Rate-Pure Live Seed[1]: Most Sites	Adverse Sites
1 [2]	Spring oats (spring), or Annual ryegrass (spring or fall), or Winter Wheat (fall), or Winter rye (fall)	64 10 90 56	96 15 120 112
2 [3]	Tall fescue, or Fine fescue, or Kentucky bluegrass, plus Redtop[4], or Perennial ryegrass	60 35 25 3 15	75 40 30 3 20
3	Birdsfoot trefoil, plus Tall fescue	6 30	10 35
4	Birdsfoot trefoil, plus Reed canarygrass	6 10	10 15
8	Flatpea, plus Tall fescue, plus Perennial ryegrass	20 20 20	30 30 25
9 [6]	Serecia lespedeza, plus Tall fescue, plus Redtop[4]	10 20 3	20 25 3
10	Tall fescue, plus Fine fescue	40 10	60 15
11	Deertongue, plus Birdsfoot trefoil	15 6	20 10
12 [7]	Switchgrass, or big Bluestem, plus Birdsfoot trefoil	15 15 6	20 20 10
13	Orchardgrass, plus Smooth bromegrass, plus Birdsfoot trefoil	20 25 6	30 35 10

PENN STATE, "EROSION CONTROL AND CONSERVATION PLANTINGS ON NONCROPLAND"

[1] PLS IS THE PRODUCT OF THE PERCENTAGE OF PURE SEED TIMES PERCENTAGE GERMINATION DIVIDED BY 100. FOR EXAMPLE, TO SECURE THE ACTUAL PLANTING RATE FOR SWITCHGRASS, DIVIDE 12 POUNDS PLS SHOWN ON THE SEED TAG. THUS, IF THE PLS CONTENT OF A GIVEN SEED LOT IS 35%, DIVIDE 12 PLS BY 0.35 TO OBTAIN 34.3 POUNDS OF SEED REQUIRED TO PLANT ONE ACRE. ALL MIXTURES IN THIS TABLE ARE SHOWN IN TERMS OF PLS.

[2] IF HIGH-QUALITY SEED IS USED, FOR MOST SITES SEED SPRING OATS AT A RATE OF 2 BUSHELS PER ACRE, WINTER WHEAT AT 11.5 BUSHELS PER ACRE, AND WINTER RYE AT 1 BUSHEL PER ACRE. IF GERMINATION IS BELOW 90%, INCREASE THESE SUGGESTED SEEDING RATES BY 0.5 BUSHEL PER ACRE.

[3] THIS MIXTURE IS SUITABLE FOR FREQUENT MOWING. DO NOT CUT SHORTER THAN 4 INCHES.

[4] KEEP SEEDING RATE TO THAT RECOMMENDED IN TABLE. THESE SPECIES HAVE MANY SEEDS PER OOUND AND ARE VERY COMPETITIVE. TO SEED SMALL QUANTITIES OF SMALL SEEDS SUCH ASX WEEPING LOVEGRASS AND REDTOP, DILUTE WITH DRY SAWDUST, SAND, RICE HULLS, BUCKWHEAT HULLS, ETC.

[5] USE FOR HIGHWAY SLOPES AND SIMILAR SITES WHERE THE DESIRED SPECIES AFTER ESTABLISHMENT IS CROWNVETCH.

[6] USE ONLY IN EXTREME SOUTHEASTERN OR EXTREME SOUTHWESTERN PENNSYLVANIA. SERECIA IESPEDEZA IS NOT WELL ADAPTED TO MOST OF PA.

[7] DO NOT MOW SHORTER THAN 9 TO 10 INCHES.

[8] SEE MIXTURES CONTAINING CROWN VETCH SHOULD NOT BE USED IN AREAS ADJACENT TO WETLANDS OR STREAM CHANNELS DUE TO THE NATURE OF THIS SPECIES.

PCSM CRITICAL STAGES

CRITICAL POINTS REQUIRING VISITS BY THE LICENSED PROFESSIONAL OR DELEGATE ARE AS FOLLOWS:

1. PRIOR TO CONSTRUCTION TO ENSURE THE AREAS OF THE INFILTRATION BERMS AND INFILTRATION BASIN HAVE BEEN PROPERLY SECURED WITH FENCING OR OTHER METHODS TO PREVENT COMPACTION OF THE INFILTRATION AREAS.
2. FOR THE FINAL GRADING OF THE ACCESS ROAD, ENSURING IT IS CONSTRUCTED ACCORDING TO THE PLAN DETAILS FOR PROPER CONVEYANCE OF RUNOFF.
3. FOLLOWING FINAL GRADING AND SEEDING OF THE COLLECTION CHANNELS IN ORDER TO CONFIRM THEY HAVE BEEN CONSTRUCTED ACCORDING TO THE PLAN DETAILS FOR PROPER COLLECTION AND CONVEYANCE OF RUNOFF. PERIODIC ASSESSMENTS WILL NEED TO BE MADE TO ENSURE ACCUMULATED SEDIMENT HAVE BEEN CLEANED OUT SO THE CHANNELS MAINTAIN THE NECESSARY DESIGN VOLUMES.
4. AT THE START OF CONSTRUCTION OF THE INFILTRATION BERMS AND INFILTRATION BASIN TO ASCERTAIN THE INFILTRATION AREAS HAVE NOT BEEN COMPACTED.
5. DURING THE LAYOUT AND EXCAVATION OF THE OUTLET CONTROL STRUCTURES FOR THE INFILTRATION BASIN, THE PROFESSIONAL OR DELEGATE WILL ENSURE SIZING, MATERIALS SPECIFICATIONS, AND CONSTRUCTION PROCEDURES ARE FOLLOWED TO ENABLE PROPER STORAGE IN THE BASIN.
6. FOLLOWING FINAL GRADING AND SEEDING OF THE INFILTRATION BERMS AND INFILTRATION BASIN IN ORDER TO CONFIRM THEY HAVE BEEN CONSTRUCTED ACCORDING TO THE PLAN DETAILS FOR PROPER COLLECTION, INFILTRATION, AND CONVEYANCE OF RUNOFF. PERIODIC ASSESSMENT WILL NEED TO BE MADE TO ENSURE THAT ACCUMULATED SEDIMENT HAVE BEEN CLEANED OUT SO THE BMPS MAINTAIN THE NECESSARY DESIGN VOLUMES.
7. FOR FINAL INSPECTION OF CONSTRUCTED CHANNELS, CULVERTS, BASIN AND BERMS.
8. AT THE ESTABLISHMENT OF HARD SURFACE STABILIZATION OR 70% VEGETATION COVERS TO ALLOW REMOVAL OF E&S CONTROLS.

LONG TERM OPERATION AND MAINTENANCE SCHEDULE

PCSM BMPS SHOULD BE PROPERLY MAINTAINED TO ENSURE THEIR EFFECTIVENESS. SHEET FLOW CONDITIONS AND INFILTRATION MUST BE SUSTAINED THROUGHOUT THE LIFE OF THE BMP. BMPS SHOULD BE INSPECTED FOR CLOGGING FROM SEDIMENT OF DEBRIS, DAMAGE BY FOOT OR VEHICULAR TRAFFIC, AND FLOW CHANNELIZATION. INSPECTIONS SHOULD BE MADE ON A QUARTERLY BASIS FOR THE FIRST TWO YEARS FOLLOWING INSTALLATION, AND THEN TWICE PER YEAR THEREAFTER. INSPECTIONS SHOULD ALSO BE MADE AFTER EVERY STORM EVENT GREATER THAN 1 INCH DURING THE ESTABLISHMENT PERIOD.

CHANNEL LININGS SHOULD BE INSPECTED FOR SIGNS OF EROSION OR DISLODGING, AS APPLICABLE. CHANNELS SHOULD BE INSPECTED FOR DEBRIS, OVERGROWN VEGETATION, AND OTHER BLOCKAGES. CHANNELS SHOULD BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT LOCATION. VEGETATED AREAS WILL BE INSPECTED WEEKLY AND AFTER RUNOFF EVENTS UNTIL PERMANENT VEGETATION IS ACHIEVED. ONCE THE VEGETATION IS ESTABLISHED, INSPECTIONS OF HEALTH, DIVERSITY, AND DENSITY SHOULD BE PERFORMED AT LEAST TWICE PER YEAR, DURING BOTH THE GROWING AND NON-GROWING SEASON. VEGETATIVE COVER SHOULD BE SUSTAINED AT 85% AND REESTABLISHED IF DAMAGE GREATER THAN 50% IS OBSERVED. DAMAGED BMPS WILL BE REPAIRED AS SOON AS POSSIBLE UPON DISCOVERY. REPAIRS WILL BE MADE TO RESTORE TO BMPS TO THE ORIGINAL DESIGN CONDITION.

OPERATION AND MAINTENANCE GUIDELINES SHOULD BE PROVIDED TO FACILITY OWNERS AND TENANTS. SEDIMENT AND DEBRIS SHOULD BE ROUTINELY REMOVED UPON OBSERVATION. IF EROSION IS OBSERVED, MEASURES SHOULD BE TAKEN TO IMPROVE THE DISPERSION METHOD TO ADDRESS THE SOURCE OF EROSION. SEDIMENT SHOULD BE REMOVED WHEN THE BMP IS THOROUGHLY DRY. TRASH AND DEBRIS REMOVED FROM THE SITE SHOULD BE DEPOSITED ONLY AT SUITABLE DISPOSAL/RECYCLING SITES AND MUST COMPLY WITH APPLICABLE LOCAL, STATE, AND FEDERAL WASTE REGULATIONS. GRASS COVER SHOULD BE MOWED WITH LOW GROUND PRESSURE EQUIPMENT AS NEEDED TO CONTROL NOXIOUS WEEDS. MOWING SHOULD BE DONE ONLY WHEN THE SOIL IS DRY IN ORDER TO PREVENT TRACKING DAMAGE TO VEGETATION, SOIL COMPACTION, AND FLOW CONCENTRATIONS. IF VEGETATIVE COVER IS NOT FULLY ESTABLISHED WITHIN THE DESIGNATED TIME, IT SHOULD BE REPLACED WITH AN ALTERNATIVE SPECIES. UNWANTED OR INVASIVE GROWTH SHOULD BE REMOVED ON AN ANNUAL BASIS.

VEGETATED AREAS WILL BE INSPECTED WEEKLY AND AFTER RUNOFF EVENTS UNTIL PERMANENT VEGETATION IS ACHIEVED. ONCE THE VEGETATION IS ESTABLISHED, INSPECTIONS OF HEALTH, DIVERSITY, AND DENSITY SHOULD BE PERFORMED AT LEAST TWICE PER YEAR, DURING BOTH THE GROWING AND NON-GROWING SEASON. VEGETATIVE COVER SHOULD BE SUSTAINED AT 85% AND REESTABLISHED IF DAMAGE GREATER THAN 50% IS OBSERVED. DAMAGED BMPS WILL BE REPAIRED AS SOON AS POSSIBLE UPON DISCOVERY. REPAIRS WILL BE MADE TO RESTORE DAMAGED BMPS TO THE ORIGINAL DESIGN CONDITION.

MAINTENANCE ACTIVITIES ON THE INFILTRATION BERMS AND BASIN SHOULD BE DONE TWICE ANNUALLY AND WITHIN 72 HOURS AFTER EVERY MAJOR STORM EVENT (> 1-INCH RAINFALL DEPTH). EROSION PROBLEMS, DAMAGE TO VEGETATION, SEDIMENT AND DEBRIS ACCUMULATION, UNIFORMITY OF IN CROSS-SECTION AND POOLS OF STANDING WATER SHOULD BE INSPECTED.

MATERIAL RECYCLING AND DISPOSAL

IF THE SITE WILL NEED TO HAVE FILL IMPORTED FROM AN OFF-SITE LOCATION, THE RESPONSIBILITY FOR PERFORMING ENVIRONMENTAL DUE DILIGENCE AND THE DETERMINATION OF CLEAN FILL WILL IN MOST CASES RESIDE WITH THE OPERATOR.

IF THE SITE WILL HAVE EXCESS FILL THAT WILL NEED TO BE EXPORTED TO AN OFF-SITE LOCATION, THE RESPONSIBILITY OF CLEAN FILL DETERMINATION AND ENVIRONMENTAL DUE DILIGENCE RESTS ON THE APPLICANT.

IF ALL CUT AND FILL MATERIALS WILL BE USED ON THE SITE, A CLEAN FILL DETERMINATION IS NOT REQUIRED BY THE OPERATOR UNLESS THERE IS A BELIEF THAT A SPILL OR RELEASE OF A REGULATED SUBSTANCE OCCURRED ON SITE.

APPLICANTS AND/OR OPERATORS MUST USE ENVIRONMENTAL DUE DILIGENCE TO ENSURE THAT THE FILL MATERIAL ASSOCIATED WITH THIS PROJECT QUALIFIES AS CLEAN FILL. DEFINITIONS OF CLEAN FILL AND ENVIRONMENTAL DUE DILIGENCE ARE PROVIDED BELOW. ALL FILL MATERIAL MUST BE USED IN ACCORDANCE WITH THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL", DOCUMENT NUMBER 258 2182 773. A COPY OF THIS POLICY IS AVAILABLE ONLINE AT WWW.DEPWEB.STATE.PA.US.

CLEAN FILL IS DEFINED AS: UNCONTAMINATED, NON-WATER SOLUBLE, NON-DECOMPOSABLE, INERT, SOLID MATERIAL. THE TERM INCLUDES SOIL, ROCK, STONE, DREDGED MATERIAL, USED ASPHALT, AND BRICK, BLOCK OR CONCRETE FROM CONSTRUCTION AND DEMOLITION ACTIVITIES THAT IS SEPARATE FROM OTHER WASTE AND IS RECOGNIZABLE AS SUCH. THE TERM DOES NOT INCLUDE MATERIALS PLACED IN OR ON THE WATERS OF THE COMMONWEALTH UNLESS OTHERWISE AUTHORIZED. (THE TERM "USED ASPHALT" DOES NOT INCLUDE MILLED ASPHALT OR ASPHALT THAT HAS BEEN PROCESSED FOR RE-USE.).

ENVIRONMENTAL DUE DILIGENCE: INVESTIGATIVE TECHNIQUES, INCLUDING, BUT NOT LIMITED TO, VISUAL PROPERTY INSPECTIONS, ELECTRONIC DATA BASE SEARCHES, REVIEW OF PROPERTY OWNERSHIP, REVIEW OF PROPERTY USE HISTORY, SANBORN MAPS, ENVIRONMENTAL QUESTIONNAIRES, TRANSACTION SCREENS, ANALYTICAL TESTING, ENVIRONMENTAL ASSESSMENTS OR AUDITS. ANALYTICAL TESTING IS NOT A REQUIRED PART OF DUE DILIGENCE UNLESS VISUAL INSPECTION AND/OR REVIEW OF THE PAST LAND USE OF THE PROPERTY INDICATES THAT THE FILL MAY HAVE BEEN SUBJECTED TO A SPILL OR RELEASE OF REGULATED SUBSTANCE. IF THE FILL MAY HAVE BEEN AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE, IT MUST BE TESTED TO DETERMINE IF IT QUALIFIES AS CLEAN FILL. TESTING SHOULD BE PERFORMED IN ACCORDANCE WITH APPENDIX A OF THE DEPARTMENT'S POLICY "MANAGEMENT OF FILL".

FILL MATERIAL THAT DOES NOT QUALIFY AS CLEAN FILL IS REGULATED FILL. REGULATED FILL IS WASTE AND MUST BE MANAGED IN ACCORDANCE WITH THE DEPARTMENT'S MUNICIPAL OR RESIDUAL WASTE REGULATIONS BASED ON 25 PA. CODE CHAPTERS 287 RESIDUAL WASTE MANAGEMENT OR 271 MUNICIPAL WASTE MANAGEMENT, WHICHEVER IS APPLICABLE.

THERMAL IMPACTS

DUE TO THE OVERALL NATURE OF THE PROJECT, THERMAL IMPACTS TO SURFACE WATERS ARE NOT ANTICIPATED. THE PIPELINE INSTALLATION ACTIVITIES WILL PRIMARILY TAKE PLACE WITHIN AN EXISTING CLEARED AND MAINTAINED PIPELINE RIGHT-OF-WAY. THERE WILL BE NO INCREASE IN STORMWATER DISCHARGE. THE PRIMARY MEANS TO ADDRESS THERMAL IMPACTS ON THIS PROJECT IS TO LIMIT THE SIZE AND DURATION OF EXPOSED EARTH. REVEGETATION PROCEDURES AND THE SEQUENCE OF CONSTRUCTION OUTLINE DISTURBED AREAS BEING IMMEDIATELY REVEGETATED.

STORMWATER RUNOFF ASSOCIATED WITH THE INSTALLATION OF THE MLV'S WILL BE ROUTED THROUGH THE STORMWATER BMP'S DESIGNED TO RETAIN AND INFILTRATE THE FIRST SURGE OF WATER FROM THE SITE. THE FIRST SURGE OF WATER WILL BE THE WARMEST WATER FOR THE DURATION OF THE STORM EVENT AND WILL QUICKLY COOL AS THE STORM EVENT PROGRESSES. THE BMPS ARE DESIGNED TO CAPTURE AND INFILTRATE THIS WARMEST SURGE OF STORMWATER. BASED ON ROUTING CALCULATIONS, STORMWATER IS NOT DISCHARGED FROM THE BMPS FOR THE FIRST 12 HOURS DURING A 100-YEAR/24-HOUR STORM EVENT. THE RETENTION PERIOD IS LONGER FOR LESS INTENSE STORMS. THEREFORE, AS A RESULT OF THESE MEASURES, NO SIGNIFICANT THERMAL IMPACT TO THE RECEIVING WATERS IS ANTICIPATED.

ANTIDEGRADATION REQUIREMENTS

TRANSCO EVALUATED THE FEASIBILITY OF NON-DISCHARGE ALTERNATIVES THAT WOULD BE LOCATED OUTSIDE OF EXCEPTIONAL VALUE (EV) OR HIGH-QUALITY (HQ) WATERSHEDS. HYDRAULIC MODELS WERE ANALYZED FROM AN EFFICIENCY AND EFFECTIVENESS POINT OF VIEW TO CONFIRM AND MINIMIZE THE NECESSARY PIPELINE LENGTHS AND DIAMETERS TO MEET THE PROJECT PURPOSE AND NEED. THE HYDRAULIC MODEL DETERMINED THE SIZING OF THE MLV-505LD86 SITE ON THE EFFORT LOOP PIPELINE. IN ORDER FOR THE PROJECT TO MEET THE REQUIRED PURPOSE AND NEED, SITING THE EFFORT LOOP PIPELINE OUTSIDE OF EV AND HQ WATERSHEDS, IS NOT FEASIBLE.

THEREFORE, TRANSCO DETERMINED THAT THERE ARE NO COST-EFFECTIVE AND ENVIRONMENTAL SOUND VIABLE NON-DISCHARGE ALTERNATIVES FOR THE PROJECT. TRANSCO HAS MINIMIZED PROJECT IMPACTS TO EV AND HQ WATERSHEDS THROUGH THE USE OF CO-LOCATION WITH EXISTING PIPELINES AND PROTECTING RIPARIAN BUFFERS WITHIN THE PROJECT WORKSPACE. EARTH DISTURBANCE WILL BE MINIMIZED TO THE EXTENT PRACTICAL AND WILL BE PHASED OR SEQUENCED TO ONLY DISTURBED PORTIONS THAT ARE NECESSARY FOR THE SPECIFIC SCOPE OF WORK. WHEREVER POSSIBLE, THE LOD WAS DECREASED TO AVOID DISTURBING ADDITIONAL GROUND AND WILL BE KEPT TO THE MINIMUM WIDTH AND DEPTH NECESSARY TO SAFELY COMPLETE CONSTRUCTION ACTIVITIES.

ANTI-DEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES (ABACT) STANDARDS HAVE BEEN PROPOSED FOR THE MLV-505LD86 SITE BECAUSE THERE ARE NO VIABLE NON-DISCHARGE ALTERNATIVES. THE EROSION AND SEDIMENT CONTROL PLAN PREPARED FOR THE PROJECT OUTLINES A MORE STRINGENT DESIGN AND E&S BMPS THAT MEET ABACT STANDARDS.

THE MLV-505LD86 SITE WILL RESULT IN INCREASED DISCHARGE OF STORMWATER TO SURFACE WATERS WHICH WILL BE MITIGATED BY THE IMPLEMENTATION OF POST-CONSTRUCTION STORMWATER MANAGEMENT (PCSM) BMP'S. PROPOSED PCSM BMPS ARE DESIGNED WITH STORMWATER VOLUME REDUCTION AND WATER QUALITY TREATMENT MAXIMIZED TO THE EXTENT PRACTICABLE WITHIN THE SITE CONSTRAINTS TO MAINTAIN AND PROTECT EXISTING WATER QUALITY AND EXISTING AND DESIGNATED USES.

RIPARIAN BUFFERS

NO EXISTING RIPARIAN BUFFERS HAVE BEEN IDENTIFIED WITHIN OR NEAR THE MLV-505LD86 LOCATION.

NON-STRUCTURAL AND STRUCTURAL WATER QUALITY BMP DESCRIPTION

LIMIT OF DISTURBANCE WILL BE MINIMIZED TO THE MAXIMUM EXTENT POSSIBLE BY DISTURBING ONLY THOSE AREAS NECESSARY TO COMPLETE THE PROPOSED EARTHWORK AND BMP INSTALLATIONS.

SENSITIVE FEATURES SUCH AS WETLANDS WILL BE PROTECTED TO THE MAXIMUM EXTENT POSSIBLE. THESE AREAS WILL BE CLEARLY DELINEATED IN THE FIELD AND PROTECTED PRIOR TO CONSTRUCTION ACTIVITIES TAKING PLACE. EXISTING VEGETATION IS NOT TO BE REMOVED FROM THE PROTECTED AREA AND THE AREAS SHALL NOT BE SUBJECT TO GRADING OR MOVEMENT OF EXISTING SOILS. PROTECTED AREAS THAT HAVE BEEN DISTURBED/COMPACTED DURING CONSTRUCTION WILL BE RESTORED USING SOIL AMENDMENT AND RESTORATION.

DISTURBED AREAS THAT ARE NOT PROPOSED TO BE IMPERVIOUS WILL BE REVEGETATED AS PER THE SEEDING AND MULCHING NOTES PROVIDED IN PCSM PLAN NOTES. WHEREVER POSSIBLE, EXISTING NATURAL DRAINAGE PATTERNS WILL BE UTILIZED TO DIVERT FLOW TO THE PROPOSED BMPS.

THE PCSM PLAN SHALL BE PREPARED BY A PERSON TRAINED AND EXPERIENCED IN PCSM METHODS AND TECHNIQUES

THESE PLANS AND NARRATIVE WERE PREPARED BY KEVIN C. CLARK, PE (BAI GROUP, LLC) OF STATE COLLEGE, PA IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION STORMWATER BMP MANUAL, DECEMBER 2006. PLAN PREPARER'S RESUME IS PROVIDED IN THE PERMIT APPLICATION.

KEVIN CLARK, P.E.
KEVIN C. CLARK
PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

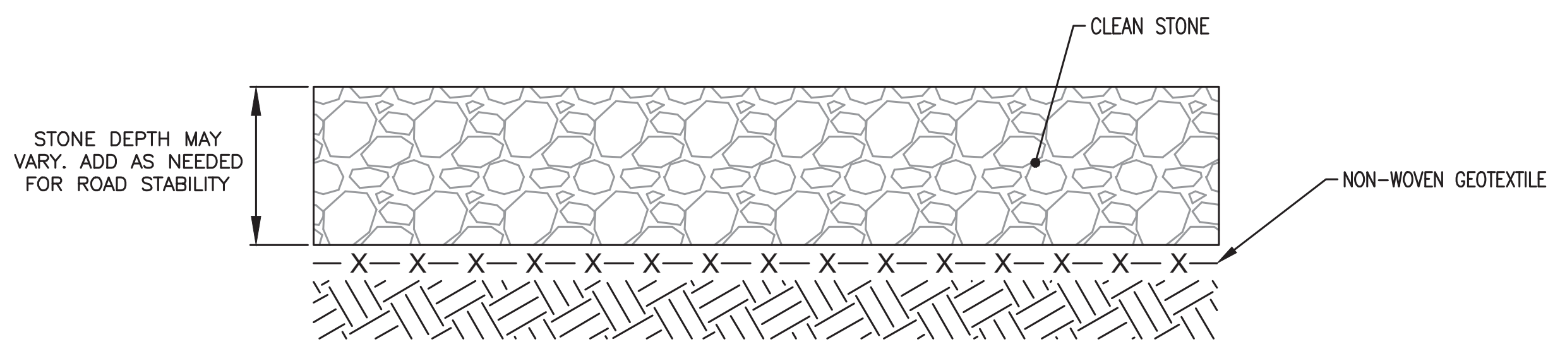
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

NOTES

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21		SHEET 6 OF 8
WO: 1211227	RID: 105	DRAWING NUMBER: 26-1000-70-28-D	



NOTES:

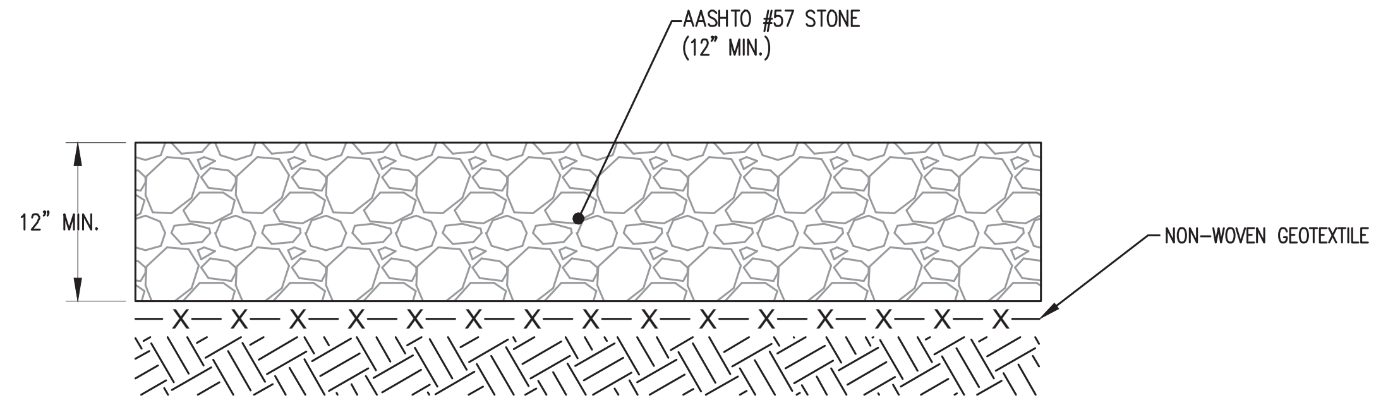
1. CROSS SECTION TO BE APPLIED TO DRY AREAS WITHOUT DRAINAGE CONCERNS.
2. EXISTING MATERIAL TO BE REMOVED AND STOCKPILED IN AN APPROVED LOCATION ONLY.
3. EXISTING DRAINAGE PATTERNS SHALL BE MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION & SEDIMENT POLLUTION CONTROL PLAN FOR THE PROJECT.
4. GRADING AND CROSS SLOPES VARY BY EXISTING CONDITIONS; SEE SPECIFIC DESIGN AND PROFILE FOR MORE DETAIL.
5. WITHIN EXTENTS OF GRADING FOR PERMANENT ACCESS ROADS AND VALVE SITES, COMPACT ALL SOIL FILL/BACKFILL AND COARSE AGGREGATE WITH FINES TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557. CONTRACTOR SHALL UTILIZE ADEQUATELY SIZED AND CONFIGURED EQUIPMENT TO ACHIEVE SPECIFIED COMPACTION.
6. AS DIRECTED BY ENGINEER AND APPROVED BY OWNER, EXCAVATE AND STABILIZE SOFT SPOTS, UNSATISFACTORY SOILS AND AREAS OF EXCESSIVE PUMPING OR RUTTING.
7. PROOF-ROLLING OF SUBGRADE MAY BE REQUIRED TO DETERMINE PROPER COMPACTION BY OWNER.
8. TEMPORARILY WIDENED ROAD SHOULD FOLLOW THE SAME SPECIFICATION FOR WIDENED ROADS. THE EXISTING ROAD SHALL BE MAINTAINED.

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
AR PERMANENT/TEMPORARY STONE ACCESS ROAD

Williams.



NOTES:

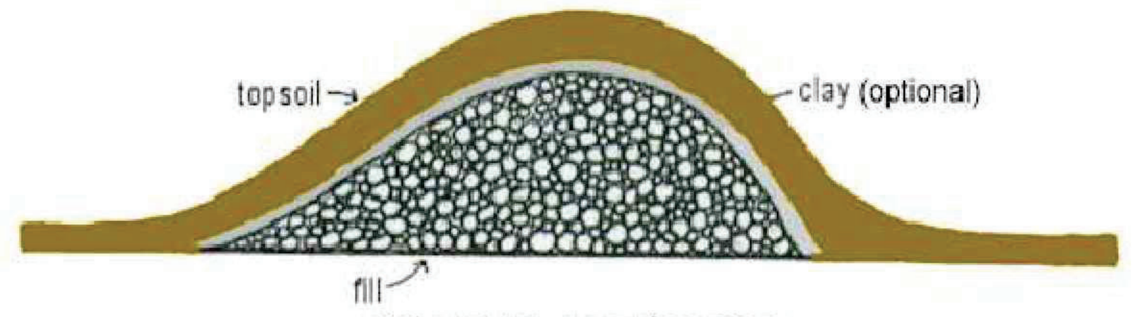
1. CROSS SECTION TO BE APPLIED TO DRY AREAS WITHOUT DRAINAGE CONCERNS.
2. EXISTING MATERIAL TO BE REMOVED AND STOCKPILED IN AN APPROVED LOCATION ONLY.
3. EXISTING DRAINAGE PATTERNS SHALL BE MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION & SEDIMENT POLLUTION CONTROL PLAN FOR THE PROJECT.
4. GRADING AND CROSS SLOPES VARY BY EXISTING CONDITIONS; SEE SPECIFIC DESIGN AND PROFILE FOR MORE DETAIL.
5. WITHIN EXTENTS OF GRADING FOR PERMANENT ACCESS ROADS AND VALVE SITES, COMPACT ALL SOIL FILL/BACKFILL AND COARSE AGGREGATE WITH FINES TO 95% OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557. CONTRACTOR SHALL UTILIZE ADEQUATELY SIZED AND CONFIGURED EQUIPMENT TO ACHIEVE SPECIFIED COMPACTION.
6. AS DIRECTED BY ENGINEER AND APPROVED BY OWNER, EXCAVATE AND STABILIZE SOFT SPOTS, UNSATISFACTORY SOILS AND AREAS OF EXCESSIVE PUMPING OR RUTTING.
7. PROOF-ROLLING OF SUBGRADE MAY BE REQUIRED TO DETERMINE PROPER COMPACTION BY OWNER.

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
MLV-P MAIN LINE VALVE PAD

Williams.



ideal substrate layers for a berm

INFILTRATION BERM NO.	BOT. ELEV. (ft)	TOP ELEV. (ft)	HEIGHT (ft)	OVERALL LENGTH (ft)	SHWT (in BELOW GROUND)	BEDROCK (in BELOW GROUND)
1	923	925	2	182	NOT ENCOUNTERED	NOT ENCOUNTERED
2	913	915	2	41	NOT ENCOUNTERED	NOT ENCOUNTERED

NOTES:

AN INFILTRATION BERM IS A MOUND OF COMPACTED EARTH WITH SLOPING SIDES THAT IS USUALLY LOCATED ALONG A CONTOUR ON RELATIVELY GENTLY SLOPING SITES.

MAINTAIN A MINIMUM 2-FOOT SEPARATION TO BEDROCK AND SEASONALLY HIGH WATER TABLE, PROVIDE DISTRIBUTED INFILTRATION AREA (5:1 IMPERVIOUS AREA TO INFILTRATION AREA - MAXIMUM), SITE ON NATURAL, UNCOMPACTED SOILS WITH ACCEPTABLE INFILTRATION CAPACITY.

BERMS SHOULD BE RELATIVELY LOW, PREFERABLY NO MORE THAN 24 INCHES IN HEIGHT.

BERMS SHALL HAVE SIDE SLOPES OF 2:1 AND ARE NOT TO BE MOWED.

THE CREST OF THE BERM SHOULD BE LOCATED NEAR ON EDGE OF THE BERM, RATHER THAN IN THE MIDDLE, TO ALLOW FOR A MORE NATURAL, ASYMMETRICAL SHAPE.

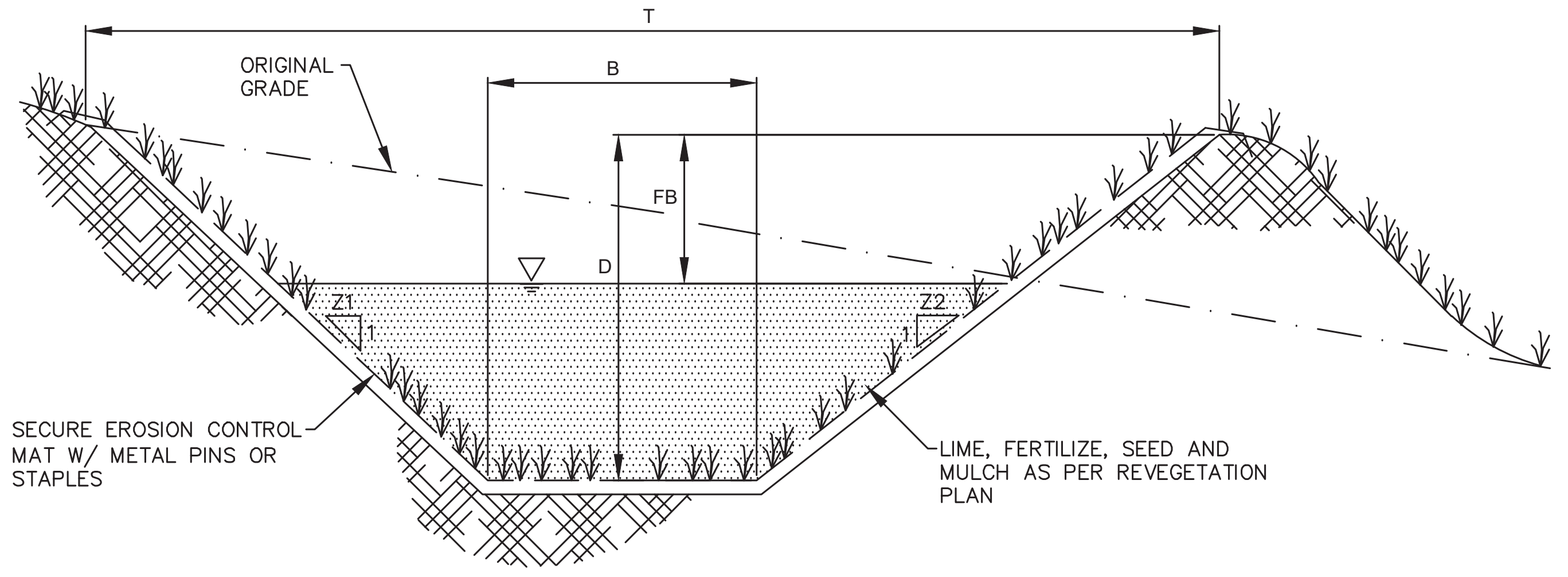
BERMS SHOULD BE VEGETATED USING SEED MIXTURE 1 PLUS 3 FROM TABLE 11.5.

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
IB INFILTRATION BERM

Williams.



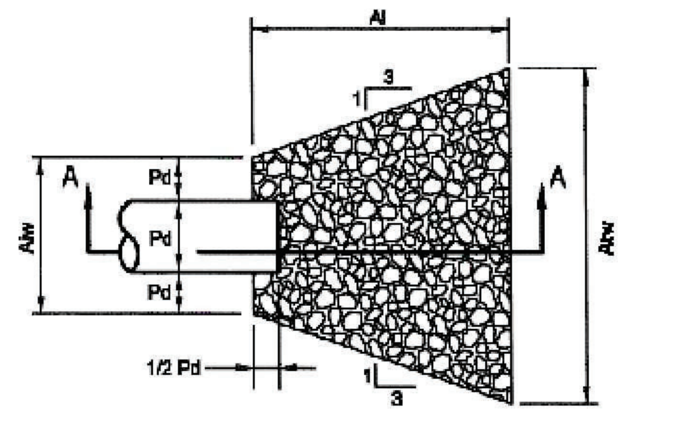
Channel ID.	LENGTH [FT]	SLOPE [%]	BASE WIDTH [FT]	DEPTH [FT]	SIDE SLOPES [Z1/Z2]	TOP WIDTH [FT]	LINING	OUTLET
SH-CC-002	112	1.9	2.0	2.00	2/2	10.0	GRASS/SC150BN	Culvert #1
SH-CC-003	346	4.4	2.0	1.50	2/2	8.0	GRASS/SC150BN	Culvert #1
SH-CC-004	69	8.4	2.0	1.50	2/2	8.0	GRASS/SC150BN	Rip-Rap Apron #1
SH-CC-005	198	9.6	2.0	1.50	2/2	8.0	GRASS/SC150BN	Culvert #3
SH-CC-006	131	16.8	1.0	1.00	2/2	5.0	R-4 Riprap	SH-CC-008
SH-CC-007	329	12.4	1.0	1.00	2/2	5.0	R-3 Riprap	Culvert #2
SH-CC-008	92	2.9	2.0	1.50	2/2	8.0	GRASS/SC150BN	Infiltration Basin #1
SH-CC-009	99	13.8	1.0	1.00	2/2	5.0	GRASS/SC150BN	Culvert #4
SH-CC-010	99	13.8	1.0	1.50	2/2	7.0	GRASS/SC150BN	Culvert #5

PENNSYLVANIA

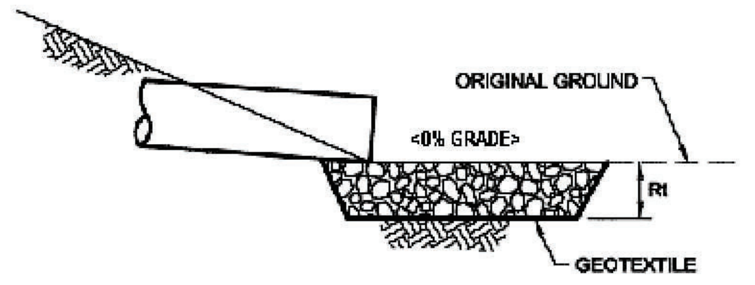
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
DC/CC TYPICAL COLLECTION AND DIVERSION CHANNEL (GRASS-LINED)

Williams.



PLAN VIEW



SECTION A - A

NO.	PIPE/CH DIA. Do (in)	TAILWATER COND. (MAX OR MIN)	MANNINGS "n"	SLOPE (ft/ft)	Q (cfs)	V* (fps)	RIPRAP SIZE (R-_)	Rt (in)	Al (ft)	Aiw (ft)	Atw (ft)
1	24	MIN	0.50	0.084	3.03	4.21	R-3	9	10	6.00	16.00
2	24	MIN	0.50	0.330	4.87	7.93	R-4	18	10	6.00	16.00
3	24	MIN	0.012	0.020	0.43	4.44	R-3	9	10	6.00	16.00

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL
OP RIPRAP APRON OUTLET PROTECTION

Williams.

BA GROUP
WHM consulting, LLC

KEVIN CLARK, P.E.
COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
KEVIN C. CLARK
ENGINEER
041211-E
PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

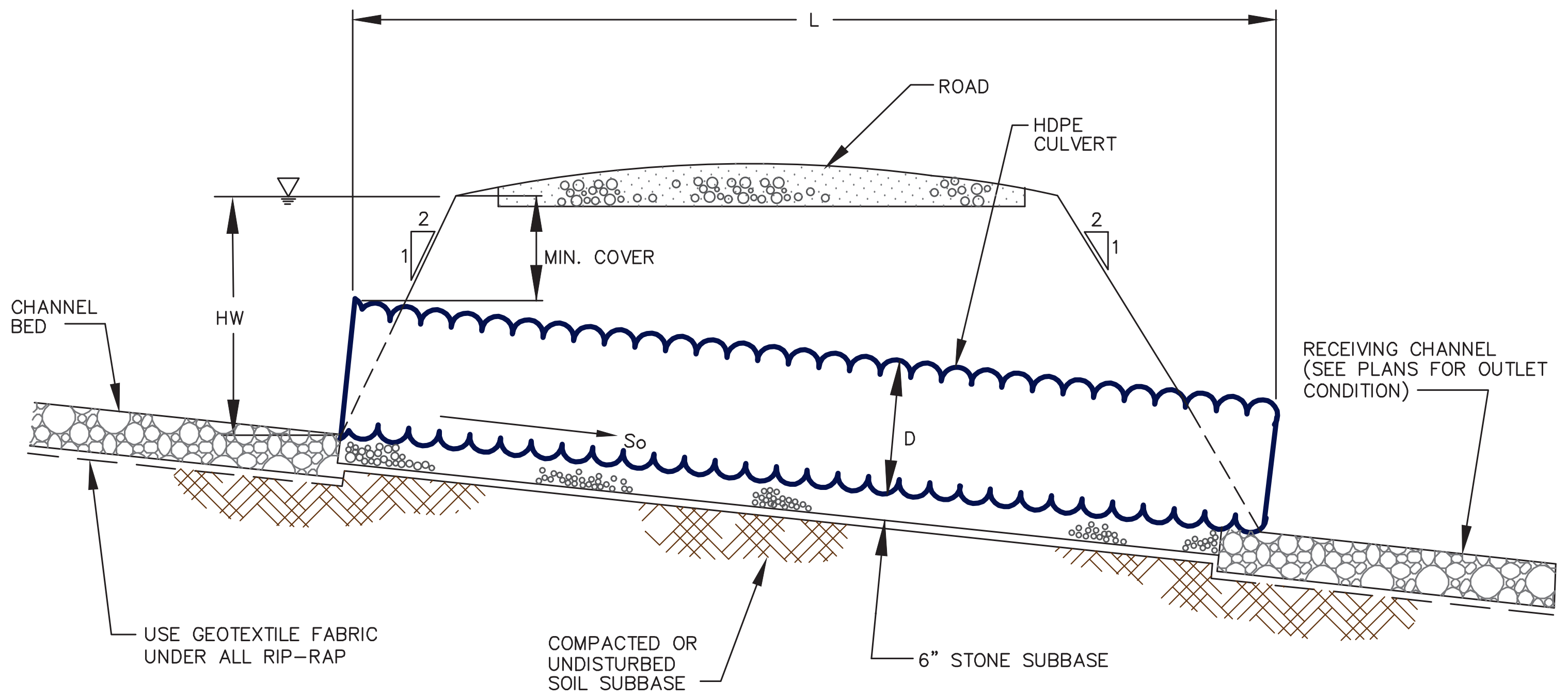
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

DETAILS SHEET 1

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

Williams.

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 7 OF 8
WO: 1211227	RID: 105		



NOTES:

1. BARRELS SHALL BE PLACED AT THE MINIMUM SLOPE INDICATED FOR THE CHANNEL.
2. AN ADDITIONAL 0.5 OF FREEBOARD SHALL BE PROVIDED IN THE CHANNEL ON THE INVERT SIDE OF THE CULVERT.
3. IF MULTIPLE BARRELS ARE USED, THEY SHALL BE PLACED SUCH THAT THERE IS A MINIMUM OF 1 BARREL WIDTH BETWEEN.
4. CORRUGATED METAL OR HDPE MAY BE USED UPON EVALUATION BY AN ENGINEER.

CULVERT ID	DRAINAGE AREA (Ac)	REQ'D FLOW (cfs)	LENGTH (ft)	INLET INVERT (ft)	OUTLET INVERT (ft)	SLOPE (FT/FT)	No. OF PIPES	PIPE DIA (in.)
CULVERT 1	0.58	3.76	22.0	972.0	971.0	0.0455	1	12
CULVERT 2	1.20	5.16	50.0	952.0	951.0	0.0200	1	12
CULVERT 3	0.13	0.49	21.0	932.0	930.5	0.0714	1	12
CULVERT 4	0.05	0.27	30.0	913.0	912.5	0.0167	1	12
CULVERT 5	0.06	0.34	32.0	916.0	912.5	0.1094	1	12
CULVERT 6	2.85	1.00	68.0	926.5	912.0	0.2131	1	12
CULVERT 7	10.26	1.34	38.0	912.0	911.5	0.0132	1	18
CULVERT 8	17.98	2.21	40.0	911.5	906.0	0.0455	1	18

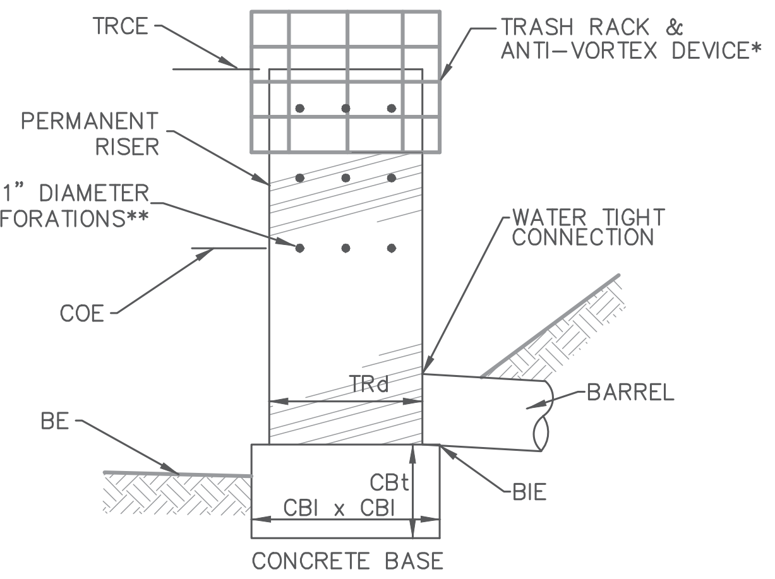
PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

RC TYPICAL ACCESS ROAD CULVERT

Williams.



* SEE STANDARD CONSTRUCTION DETAIL #7-5, TRASH RACK AND ANTI-VORTEX DEVICE
** LOWEST ROW OF HOLES AT SEDIMENT CLEAN-OUT ELEVATION

BASIN NO.	PERMANENT RISER			PERFORATIONS				CONCRETE BASE		BARREL
	DIA TRd (IN)	CREST ELEV TRCE (FT)	MAT'L	LOWEST ROW OF HOLES ELEV (FT)	NO. ROWS**	NO. HOLES PER ROW	VERT. SPACING OF ROWS (FT)	LENGTH AND WIDTH CBI (IN)	THICKNESS CBt (IN)	INLET ELEV BIE (FT)
1	12	926.5	CPP	N/A	N/A	N/A	N/A	24	12	924.5

NOTES:

*SEE STANDARD CONSTRUCTION DETAIL #7–5, TRASH RACK AND ANTI–VORTEX DEVICE
**LOWEST ROW OF HOLES AT SEDIMENT CLEAN–OUT ELEVATION.

A MINIMUM 2 #8 REBAR SHALL BE PLACED AT RIGHT ANGLES AND PROJECTING THROUGH SIDES OF RISER TO ANCHOR IT TO CONCRETE BASE. REBAR SHALL PROJECT A MINIMUM OF $\frac{1}{4}$ RISER DIAMETER BEYOND OUTSIDE OF RISER.

CONCRETE BASE SHALL BE POURED IN SUCH A MANNER SO AS TO INSURE THAT CONCRETE FILLS BOTTOM OF RISER TO INVERT OF THE OUTLET PIPE TO PREVENT RISER FROM BREAKING AWAY FROM THE BASE. MINIMUM BASE WIDTH EQUALS 2 TIMES RISER DIAMETER.

EMBEDDED SECTION OF ALUMINUM OR ALUMINIZED PIPE SHALL BE PAINTED WITH ZINC CHROMATE OR EQUIVALENT.

CLOGGED OR DAMAGED SPILLWAYS SHALL BE REPAIRED IMMEDIATELY. TRASH AND OTHER DEBRIS SHALL BE REMOVED FROM THE BASIN AND RISER.

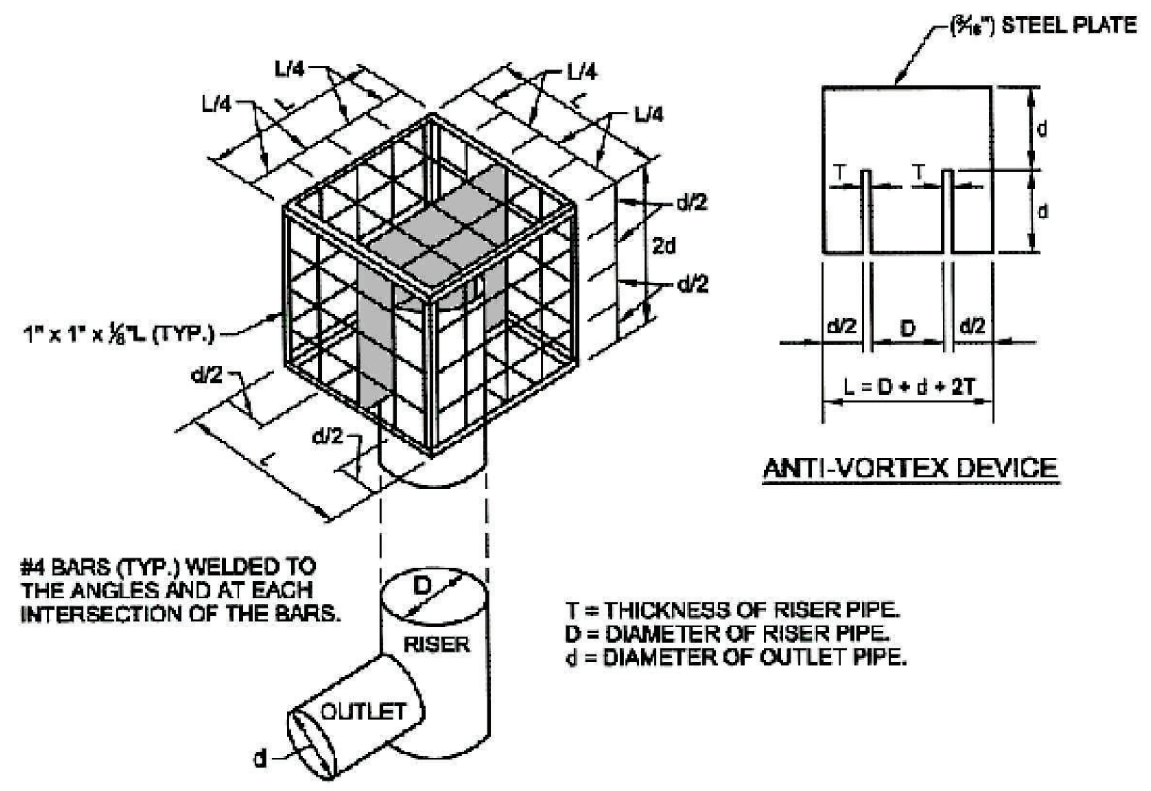
PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

PR INFILTRATION BASIN RISER

Williams.



ANTI-VORTEX DEVICE

#4 BARS (TYP.) WELDED TO THE ANGLES AND AT EACH INTERSECTION OF THE BARS.

T = THICKNESS OF RISER PIPE.
D = DIAMETER OF RISER PIPE.
d = DIAMETER OF OUTLET PIPE.

RISER DIAMETER (IN)	OUTLET PIPE DIAMETER (IN) (D)	RISER PIPE THICKNESS (IN) (T)	RISER PIPE THICKNESS (IN) (L)
12	12	0.035	25

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TR TRASH RACK AND ANTI–VORTEX DEVICE

Williams.

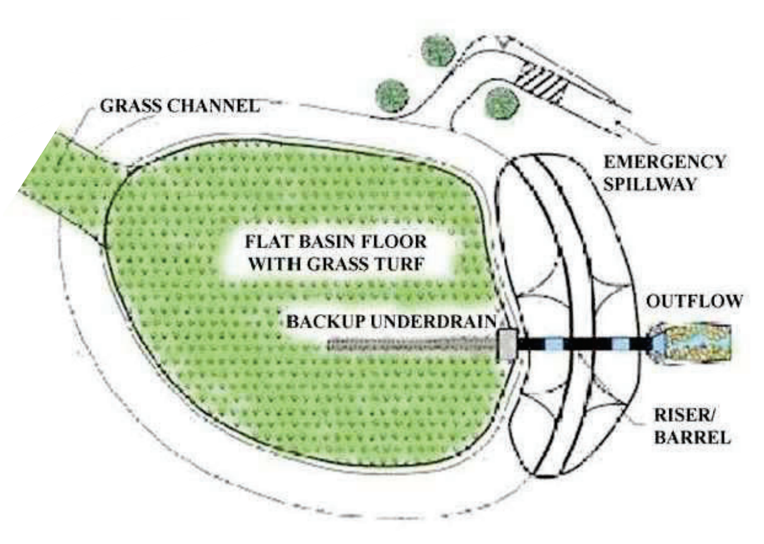


Figure 6.2-1. Schematic design of constructed infiltration basin with concrete level spreader (Schueler)

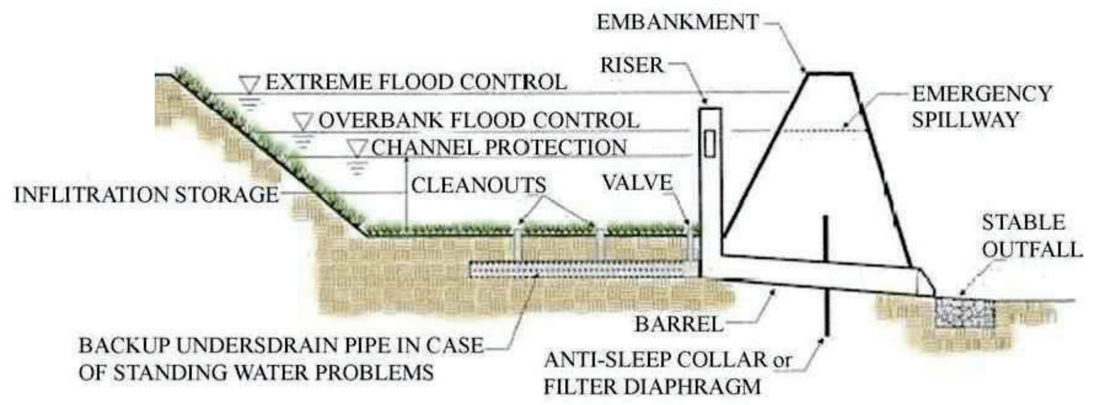


Figure 6.2-2. Cross section schematic of infiltration basin (Schueler)

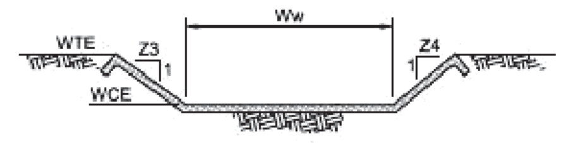
NO.	INSIDE SLOPE	OUTSIDE SLOPE	BASE ELEV. (ft)	RISER CREST ELEV. (ft)	TOTAL BASIN DEPTH (ft)	RISER PIPE DIA. (in)	SPWY BASE WIDTH (ft)	SHWT (in BELOW GROUND)	BEDROCK (in BELOW GROUND)
1	3:1	3:1	924.5	926.5	3.5	12	20	NOT ENCOUNTERED	NOT ENCOUNTERED

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

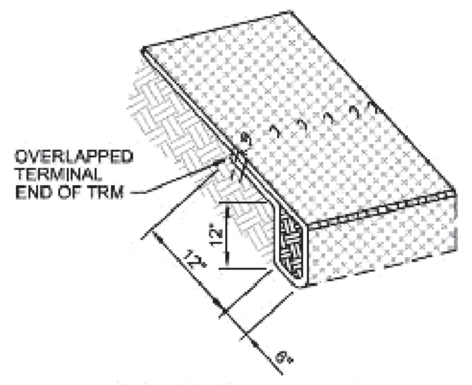
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

IFB INFILTRATION BASIN

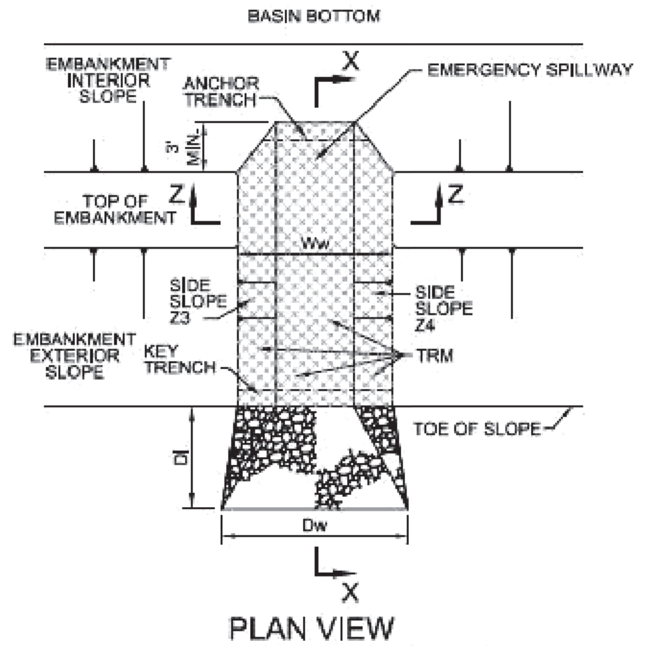
Williams.



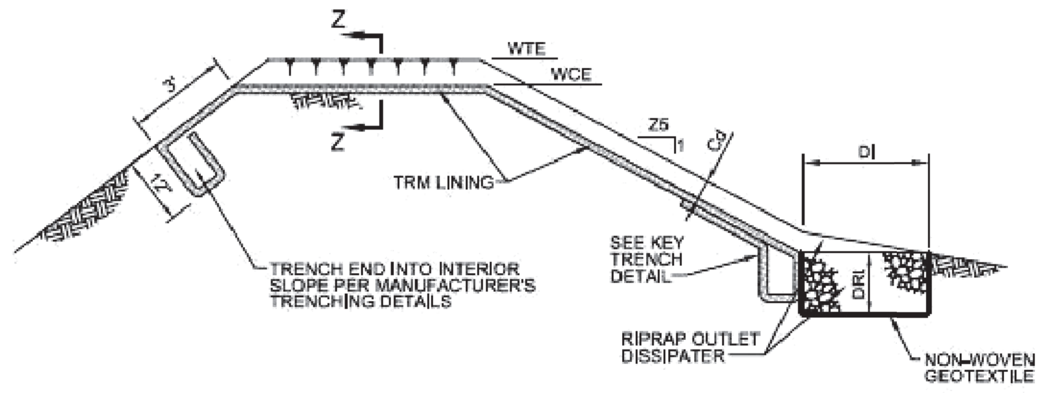
WEIR
SECTION Z - Z



KEY TRENCH AT TOE
OF SLOPE OF SPILLWAY



PLAN VIEW
RIPRAP OUTLET DISSIPATOR



EMBANKMENT SECTION ALONG EMERGENCY SPILLWAY
SECTION X-X

HEAVY EQUIPMENT SHALL NOT CROSS OVER SPILLWAY WITHOUT PRECAUTIONS TAKEN TO PROTECT TRM LINING.

DISPLACED LINER WITHIN SPILLWAY AND/OR OUTLET CHANNEL SHALL BE REPLACED IMMEDIATELY.

BASIN NO.	WEIR					LINING	CHANNEL		DISSIPATER			
	Z3 (FT)	Z4 (FT)	TOP ELEV WCE (FT)	CREST ELEV WCE (FT)	WIDTH W w (FT)	TRM TYPE	Z5 (FT)	DEPTH C d (FT)	LENGTH DI (FT)	WIDTH D w (FT)	RIPRAP SIZE (R-__)	RIPRAP THICK. DRt (IN)
1	3	3	928	926.5	20	SC250BN	3	1	5	5	3	9

PENNSYLVANIA

NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE CORPORATION
STANDARD ENVIRONMENTAL DETAIL

IFB–1 INFILTRATION BASIN EMERGENCY SPILLWAY DETAIL

Williams.

BA GROUP

WHM consulting, LLC

KEVIN CLARK, P.E.

KEVIN C. CLARK
ENGINEER 041211-E

PENNSYLVANIA PROFESSIONAL ENGINEER

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
REGIONAL ENERGY ACCESS EXPANSION PROJECT
MLV-505LD86
POST CONSTRUCTION STORMWATER MANAGEMENT PLAN

DETAILS 2

CHESTNUTHILL TOWNSHIP, MONROE COUNTY, PENNSYLVANIA

Williams.

DRAWN BY: RHM	DATE: 03/31/21	ISSUED FOR BID:	SCALE: AS NOTED
CHECKED BY: RJN	DATE: 03/31/21	ISSUED FOR CONSTRUCTION:	REVISION:
APPROVED BY: KCC	DATE: 03/31/21	DRAWING NUMBER: 26-1000-70-28-D	SHEET 8 OF 8
WO: 1211227	RID: 105		