TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
ATLANTIC SUNRISE PROJECT
PROPOSED 42" CENTRAL PENN LINE SOUTH

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

DRUMORE, MARTIC, CONESTOGA, MANOR, WEST HEMPFIELD, RAPHO, MT. JOY BOROUGH, MT. JOY, PEQUEA, EAST DONEGAL, EDEN TOWNSHIPS

LANCASTER COUNTY

BMP DETAIL SUMMARY

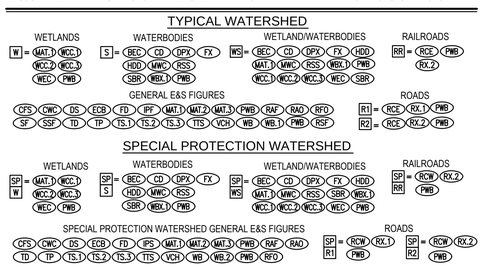
FIGURE	FIGURE TITLE	SHEET NO.
ARF	ABACT ROCK FILTER	1
BBD	BROAD-BASED DIP	
BEC	BRIDGE EQUIPMENT CROSSING	
CD	COFFERDAM STREAM CROSSING	
CDM	CHECK DAM	
CFS	COMPOST FILTER SOCK	2
CS	CLEANOUT STAKE	
CST	COMPOST SOCK SEDIMENT TRAP	
CWC	CLEAN WATER CROSSING (FLUME CROSSING)	
DPX	DAM AND PUMP STREAM CROSSING	3
DS	HYDROSTATIC DEWATERING STRUCTURE	
ECB	EROSION CONTROL BLANKET	
FD	FILTER SOCK DIVERSION	
FEN	CONSTRUCTION FENCE	
FX	FLUME STREAM CROSSING	4
HDD	HORIZONTAL DIRECTIONAL DRILL	
~~IPF~~	~~FILTER BAG INLET PROTECTION - TYPE M~~	
~~IPS~~	~~STONE AND CONCRETE INLET PROTECTION - TYPE M~~	
MAT.1	TIMBER MATTING IN WETLANDS OR AT LOW POINTS	5
MAT.2	TIMBER MATTING WITH FILL OVER EXISTING PIPELINES	
MAT.3	TIMBER MATTING AIR BRIDGE	
MWC	WET MINOR WATERBODY CROSSING	
PWB	PUMP WATER FILTER BAG	
RAO	RIP RAP APRON AT PIPE OUTLET WITHOUT FLARED END SECTION	
RAP	RIP RAP GRADATION	6
RCE	ROCK CONSTRUCTION ENTRANCE	
RCW	ROCK CONSTRUCTION ENTRANCE WITH WASH RACK	
RFO	ROCK FILTER OUTLET	
RSF	REINFORCED SILT FENCE (30" HIGH)	
RSS	RIP RAP STREAM BANK STABILIZATION	7
RX.1	TRENCHED ROAD CROSSING	
RX.2	BORED ROAD/RAILROAD CROSSING	
SBR	STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET	
SF	STANDARD SILT FENCE (18" HIGH)	8
SSF	SUPER SILT FENCE (33" HIGH)	
TD	TRENCH DEWATERING	
TP	TRENCH PLUG INSTALLATION	
~~TRV~~	~~TRASH RACK AND ANTI VORTEX DEVICE~~	
TS.1	TOPSOIL SEGREGATION (1)	9
TS.2	TOPSOIL SEGREGATION (2)	
TS.3	TOPSOIL SEGREGATION (3)	
TTS	SIDE SLOPE (TWO-TONE) CONSTRUCTION PROCEDURE	
VCH	VEGETATED CHANNEL	10
WB	WATERBAR	
WB.1	WATERBAR END TREATMENT NON-SPECIAL PROTECTION WATERSHED	
WB.2	COMPOST FILTER SOCK AND SUMP (PADEP APPROVED ALTERNATE DETAIL) AT WATERBAR DISCHARGE	
WBX.1	BORED WATERBODY CROSSING	
WCC.1	"UNSATURATED WETLAND" INSTALLATION PROCEDURE	11
WCC.2	"SATURATED WETLAND" INSTALLATION PROCEDURE	
WCC.3	"INUNDATED WETLAND" INSTALLATION PROCEDURE	
WD	WATER DEFLECTOR	
WEC	WETLAND EQUIPMENT	

DETAILS THAT ARE NOT UTILIZED IN THIS COUNTY ARE STRUCK THROUGH IN THIS TABLE. THESE DETAILS ARE ALSO CROSSED OUT WITH A NOTE THAT READS "DETAILS ARE NOT UTILIZED IN THIS COUNTY" ON THEIR RESPECTIVE SHEET.

DRAWING INDEX

DRAWING NUMBER	SHEET NO.	DRAWING NAME
24-1600-70-28-A/LL113_9-BMP	1-1	COVER SHEET
ASR-BMP-GN	1-3	GENERAL NOTES
ASR-BMP	1-11	BEST MANAGEMENT PRACTICES STANDARD CONSTRUCTION DETAILS
24-1601-70-28-A/LL113_9-BMP-LA-TB	1-3	QUANTITY, CROSSING, AND ACIDIC SOIL TABLES

E&S DETAIL GROUP LEGEND FOR PIPELINE CROSSINGS



DETAILS IN THIS LEGEND ARE NOT COMPREHENSIVE AND ONLY REFER TO BMPS RELATED TO PIPELINE CROSSINGS. ADDITIONAL BMPS ARE PROVIDED FOR ACCESS ROADS.

E&S DETAIL GROUP LEGEND IS ALSO PROVIDED ON THE PINELINE E&S PLANS. LEGEND IS SHOWN HERE FOR COORDINATION PURPOSES.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL Engineer PE082757 SUZANNE MARIE KING

SUZANNE KING REG NO. PE 082757

BLE Corporation ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	WO572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	SMK
3	3/28/2016	BL	ISSUED FOR PADEP RESUBMITTAL	WO572385	JLK	AJB
4	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*WO572385*	*JLK*	*AJB*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

ATLANTIC SUNRISE PROJECT

PROPOSED 42" CENTRAL PENN LINE SOUTH
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
LANCASTER COUNTY, PENNSYLVANIA

COVER SHEET

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: 4
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: 24-1600-70-28-A/LL113_9-BMP	SHEET 1 OF 1
WO:					

Drawn By & Date/Time: cmastriano Nov 13, 2016 - 1:07pm
Drawing Location & Name: G:\WBS14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(01)_CV-01.dwg

STANDARD EROSION & SEDIMENTATION CONTROL PLAN NOTES

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL CONSERVATION DISTRICT OR BY THE DEPARTMENT PRIOR TO IMPLEMENTATION.
5. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
6. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
7. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
8. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
9. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL CONSERVATION DISTRICT AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
10. ALL BUILDING MATERIALS AND WASTES SHALL BE REMOVED FROM THE SITE AND RECYCLED OR DISPOSED OF IN ACCORDANCE WITH THE DEPARTMENT'S SOLID WASTE MANAGEMENT REGULATIONS AT 25 PA. CODE 260.1 ET SEQ., 271.1, AND 287.1 ET. SEQ. NO BUILDING MATERIALS OR WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURNED, BURIED, DUMPED, OR DISCHARGED AT THE SITE.
11. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED.
12. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL. FORM FP-001 MUST BE RETAINED BY THE PROPERTY OWNER FOR ANY FILL MATERIAL AFFECTED BY A SPILL OR RELEASE OF A REGULATED SUBSTANCE BUT QUALIFYING AS CLEAN FILL DUE TO ANALYTICAL TESTING.
13. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
14. VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM LIMIT OF DISTURBANCE TO PUBLIC ROADS WITHOUT PASSING OVER A ROCK CONSTRUCTION ENTRANCE.
15. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY. IF THE E&S BMPS FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPS, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.
16. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
17. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
18. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
19. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES -- 6 TO 12 INCHES ON COMPACTED SOILS -- PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
20. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
21. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
22. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
23. FROZEN MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED INTO FILLS.
24. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
25. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
26. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 100 FEET OF A HQ/EV SURFACE WATER AND WITHIN 50 FEET OF NON-HQ/EV SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
27. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
28. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
29. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
30. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPS.
31. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCTION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVERSIONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
32. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE LOCAL CONSERVATION DISTRICT TO SCHEDULE A FINAL INSPECTION.
33. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS DEFINED IN SECTION 602 OF THE PENNSYLVANIA CLEAN STREAMS LAW. THE CLEAN STREAMS LAW PROVIDES FOR UP TO $10,000 PER DAY IN CIVIL PENALTIES, UP TO $10,000 IN SUMMARY CRIMINAL PENALTIES, AND UP TO $25,000 IN MISDEMEANOR CRIMINAL PENALTIES FOR EACH VIOLATION.
34. CONCRETE WASH WATER SHALL BE HANDLED IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. IN NO CASE SHALL IT BE ALLOWED TO ENTER ANY SURFACE WATERS OR GROUNDWATER SYSTEMS.
35. ALL SWALES SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS, LEAVES, WOODY DEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION MATERIAL/WASTES.
36. UNDERGROUND UTILITIES CUTTING THROUGH ANY ACTIVE SWALE SHALL BE IMMEDIATELY BACKFILLED AND THE SWALE RESTORED TO ITS ORIGINAL CROSS-SECTION AND PROTECTIVE LINING. ANY BASE FLOW WITHIN THE SWALE SHALL BE CONVEYED PAST THE WORK AREA IN THE MANNER DESCRIBED IN THIS PLAN UNTIL SUCH RESTORATION IS COMPLETE.
37. SWALES HAVING RIPRAP, RENO MATTRESS, OR GABION LININGS MUST BE SUFFICIENTLY OVER-EXCAVATED SO THAT THE DESIGN DIMENSIONS WILL BE PROVIDED AFTER PLACEMENT OF THE PROTECTIVE LINING.
38. SEDIMENT BASINS AND/OR TRAPS SHALL BE KEPT FREE OF ALL CONSTRUCTION WASTE, WASH WATER, AND OTHER DEBRIS HAVING POTENTIAL TO CLOG THE BASIN/TRAP OUTLET STRUCTURES AND/OR POLLUTE THE SURFACE WATERS.
39. SEDIMENT BASINS SHALL BE PROTECTED FROM UNAUTHORIZED ACTS BY THIRD PARTIES.
40. ANY DAMAGE THAT OCCURS IN WHOLE OR IN PART AS A RESULT OF BASIN OR TRAP DISCHARGE SHALL BE IMMEDIATELY REPAIRED BY THE PERMITTEE IN A PERMANENT MANNER SATISFACTORY TO THE MUNICIPALITY, LOCAL CONSERVATION DISTRICT, AND THE OWNER OF THE DAMAGED PROPERTY.
41. UPON REQUEST, THE APPLICANT OR HIS CONTRACTOR SHALL PROVIDE AN AS-BUILT (RECORD DRAWING) FOR ANY SEDIMENT BASIN OR TRAP TO THE MUNICIPAL INSPECTOR, LOCAL CONSERVATION DISTRICT OR THE DEPARTMENT.
42. EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER, WITHIN 100' OF A STREAM OR WETLAND IN A HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHED, WITHIN 50' OF A STREAM OR WETLAND IN A NON-HIGH QUALITY OR EXCEPTIONAL VALUE WATERSHED, AND ON ALL OTHER DISTURBED AREAS SPECIFIED ON THE PLAN MAPS AND/OR DETAIL SHEETS.
43. FILL MATERIAL FOR EMBANKMENTS SHALL BE FREE OF ROOTS, OR OTHER WOODY VEGETATION, ORGANIC MATERIAL, LARGE STONES, AND OTHER OBJECTIONABLE MATERIALS. THE EMBANKMENT SHALL BE COMPACTED IN MAXIMUM 9 INCH LAYERED LIFTS AT 95% DENSITY.

GENERAL EROSION & SEDIMENT CONTROL NOTES

1. INSPECT SNOW PLACEMENT AREAS DURING THE THAW CYCLE. INSTALL EROSION & SEDIMENT CONTROL BMPS DURING QUICK THAWS AND WHEN SNOW MELT RUNOFF IS CONCENTRATED OR IS CAUSING EROSION.
2. DISCHARGING SEDIMENT LADEN WATER WHICH WILL CAUSE OR CONTRIBUTE TO THE DEGRADATION OF A BENEFICIAL USE OF A WATER OF THE STATE FROM THE CONSTRUCTION SITE, A DEWATERING SITE, OR SEDIMENT BASIN/TRAP INTO ANY WATER BODY OR STORM DRAIN WITHOUT FILTRATION OR EQUIVALENT TREATMENT IS PROHIBITED.
3. DISCHARGES ORIGINATING FROM OFF-SITE SOURCES, WHICH FLOW THROUGH OR ACROSS THE AREAS DISTURBED BY CONSTRUCTION, SHALL BE DIVERTED AROUND THE ACTIVE CONSTRUCTION AREA WHENEVER POSSIBLE.
4. STAGING AREAS, ASSEMBLY AREAS, TEMPORARY EQUIPMENT AND NON-HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED OUTSIDE THE 100-YR FLOOD ZONE. HAZARDOUS MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM SURFACE WATER BODIES.
5. ALL EXCAVATED MATERIALS THAT WILL NOT BE USED ON THE SITE CANNOT BE STORED IN THE FLOODPLAIN AND MUST BE HAULED TO A DISPOSAL SITE LOCATED OUTSIDE OF THE FLOODPLAIN.
6. CONSTRUCTION STAGING AREAS SHALL BE LOCATED A MINIMUM OF 50 FEET AWAY FROM THE EDGE OF A WETLAND.
7. MEASURES SHALL BE TAKEN TO PREVENT TRENCHES FROM DRAINING A WETLAND OR CHANGING ITS HYDROLOGY.
8. IT IS DESIRED THAT THE AMOUNT AND DURATION OF OPEN TRENCH BE MINIMIZED DURING THE PROJECT.
9. IF TOPSOIL PILES ARE EXPOSED FOR GREATER THAN 4 DAYS, THEY SHALL BE SEEDED WITH AN ANNUAL SEED MIXTURE AND MULCHED WITH STRAW.
10. NO EROSION CONTROL BLANKET SHALL BE INSTALLED IN AGRICULTURAL AREAS EXCEPT AS REQUIRED TO CONSTRUCT THE TEMPORARY FLUME CROSSINGS.
11. HYDRAULICALLY APPLIED EROSION CONTROL BLANKETS MAY BE USED IN LIEU OF EROSION CONTROL BLANKETS WITH PRIOR APPROVAL FROM THE COUNTY CONSERVATION DISTRICT.
12. LOCATION AND SPACING OF THE WATERBARS ARE SHOWN ON THE PLAN. WATERBARS MAY BE ADJUSTED IN THE FIELD DUE TO ACTUAL SITE CONDITIONS. HOWEVER INSTALLATION AND SPACING MUST CONFORM TO THE DETAILS PROVIDED AND APPROVAL MUST BE OBTAINED FROM THE LOCAL CONSERVATION DISTRICT OR PA DEP.
13. SEDIMENT REMOVED FROM PUBLIC ROADS OR BMPS WILL BE REUSED ON SITE OR DISPOSED OF AT A SITE WITH AN EROSION AND SEDIMENT CONTROL PLAN APPROVED BY THE LOCAL CONSERVATION DISTRICT OR DEP.
14. CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE SOIL EROSION AND SEDIMENT CONTROL NARRATIVE AND ENVIRONMENTAL CONSTRUCTION PLAN.
15. CONTRACTOR SHALL MINIMIZE THE TOTAL AREA OF DISTURBANCE.
16. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED 4 DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED E&S PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY TO BE CONSIDERED TEMPORARILY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH ONE OF THE FOLLOWING: A MINIMUM UNIFORM COVERAGE OF MULCH AND SEED, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED E&S, OR AN ACCEPTABLE BMP WHICH TEMPORARILY MINIMIZES ACCELERATED E&S. TEMPORARY STABILIZATION WILL NOT OCCUR ON ACTIVE VEHICULAR TRAVEL WAYS WITHIN THE ROW. THE ON-SITE ENVIRONMENTAL INSPECTOR WILL LOG ACTIVITY WITHIN THE PROJECT LIMITS OF DISTURBANCE AND NOTIFY THE CONTRACTOR OF AREAS REQUIRING TEMPORARY STABILIZATION.
17. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BMPS TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE LOCAL COUNTY CONSERVATION DISTRICT AND/OR PADEP.
18. MAINTAIN TEMPORARY SOIL STOCKPILES.
19. NO EARTH DISTURBANCE ACTIVITIES WITHIN 50 FEET OF STREAM SWALES WILL BE PERFORMED UNTIL MATERIALS NEEDED TO COMPLETE THE CROSSING ARE AT THE NEAREST AVAILABLE LOCATION.
20. THE CONTRACTOR IS REQUIRED TO PROVIDE CONTINUOUS MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES WITHIN DISTURBED AREAS.
21. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE LONGER THAN 4 DAYS IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL SUCH INACTIVE DISTURBED AREAS.
22. DURING NON-GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
23. FOLLOW THE CONSTRUCTION/EROSION CONTROL IMPLEMENTATION PLAN AS OUTLINED ON THE DRAWINGS.
24. THE STAGING OF EARTHMOVING ACTIVITIES FOR THIS PROJECT IS A GENERAL DESCRIPTION OF THE WORK REQUIRED. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH PROJECT OWNER STANDARDS, THE PADEP REGULATIONS, AND ALL OTHER APPLICABLE FEDERAL, STATE OR LOCAL REQUIREMENTS.
25. SCHEDULE WORK TO BE PERFORMED IN A MANNER THAT MINIMIZES THE LENGTH OF TIME THAT BARE SOIL WILL BE EXPOSED TO THE ELEMENTS.
26. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THIS SEQUENCE. EACH STAGE SHALL BE COMPLETED AND IMMEDIATELY STABILIZED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING, GRUBBING AND TOPSOIL STRIPPING SHALL BE LIMITED ONLY TO THOSE AREAS DESCRIBED IN EACH STAGE. IMPLEMENT EROSION CONTROL MEASURES AS SPECIFIED; HOWEVER, THE CONTRACTOR MAY INSERT ADDITIONAL CONSTRUCTION PHASES IN ORDER TO EXPEDITE HIS WORK WHILE MAINTAINING THE SAME LEVEL OF PROTECTION.ANY DEVIATION FROM THE FOLLOWING SEQUENCE MUST BE APPROVED IN WRITING FROM THE LOCAL COUNTY CONSERVATION DISTRICT. CONSTRUCTION MUST BE IN ACCORDANCE WITH THE SEQUENCE OF BMP INSTALLATION INDICATED ON SITE SPECIFIC DETAIL SHEETS. THIS SEQUENCE IS DESIGNED TO MINIMIZE SOIL EROSION AND SEDIMENTATION. THE CONTRACTOR MAY DEVIATE SLIGHTLY FROM THE STAGING OF PERMANENT SITE IMPROVEMENTS, BUT NO DEVIATION FROM THE RELATIVE ORDER OF EROSION AND SEDIMENTATION CONTROL MEASURES WILL BE ALLOWED WITHOUT WRITTEN APPROVAL FROM THE LOCAL COUNTY CONSERVATION DISTRICT OR PADEP.
29. THE FLOODWAY/FLOODPLAIN LINE SHOWN ON THE PLANS WAS DEVELOPED FROM AVAILABLE FEMA FLOODWAY MAPPING, FEMA FLOODPLAIN MAPPING, AND THE PA CHAPTER 105 FLOODWAY DEFINITION.
30. EROSION & SEDIMENT CONTROLS SHOWN HEREON ARE THE MINIMUM REQUIRED. AS SPECIFIC SITE CONDITIONS MAY DICTATE, THE ENVIRONMENTAL INSPECTOR HAS THE AUTHORITY TO MODIFY (OR REDLINE) THE DESIGNED BMPS WITHIN THE ROW AS MAY BE SHOWN WITHIN THE EROSION & SEDIMENT CONTROL PLAN TO BETTER ENSURE CHAPTER 102 COMPLIANCE.
31. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL COUNTY CONSERVATION DISTRICT OR DEP AND BE FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ANY EXCESS MATERIAL AND TO DEVELOP A PLAN THAT MEETS THE CONDITIONS OF CHAPTER 102, NPDES PERMIT CONDITIONS, AND/OR OTHER STATE AND FEDERAL REGULATIONS.

EXISTING CONDITIONS NOTES

1. EXISTING TOPOGRAPHY IS BASED UPON THE FOLLOWING:
   A. PHOTOGRAMMETRIC SURVEY PROVIDED BY AEROMETRIC/QUANTUM AERIAL, BASED UPON DIGITAL AERIAL IMAGERY ACQUIRED MARCH THROUGH NOVEMBER OF 2012 AND APRIL OF 2013, AND COMPILED TO NATIONAL MAP ACCURACY STANDARDS FOR SCALE 1"=100' AND 2' CONTOUR INTERVAL.
   B. SUPPLEMENTAL FIELD SURVEY DATA PROVIDED BY WILLIAMS SURVEY FOR AREAS WITHIN THE PROPOSED ACCESS ROADS CORRIDORS AND PROPOSED FACILITIES.
2. NORTH ARROW AND COORDINATES ARE BASED UPON UNIVERSAL TRANSVERSE MERCATOR WITH NORTH AMERICAN DATUM OF 1983, ZONE 18, U.S. FOOT, CENTRAL MERIDIAN 75° WEST (UTM83-18F).
3. ELEVATIONS ARE BASED UPON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. WETLAND AND WATERBODY DELINEATIONS ARE BASED ON ENVIRONMENTAL SURVEY DATA PROVIDED BY E&E AND ARE LIMITED TO THE AREAS WITHIN OR IN CLOSE PROXIMITY TO THE ACCESS ROADS CORRIDORS, PROPOSED FACILITIES, AND PIPELINES.
5. APPROXIMATE PROPERTY LINES ARE BASED UPON DIGITAL MAPPING PROVIDED BY WILLIAMS SURVEY AND ARE DEPICTED FOR GENERAL INFORMATION ONLY.
6. LAND OWNER IDENTIFICATION IS BASED ON INFORMATION PROVIDED BY WILLIAMS SURVEY AND IS FOR GENERAL INFORMATION ONLY.
7. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY WILLIAMS AND ITS ENGINEER OF ANY CONDITIONS THAT VARY FROM WHAT IS DEPICTED ON THIS PLAN.

THERMAL IMPACT ANALYSIS

IN ORDER TO AVOID THERMAL IMPACTS, THE LIMIT OF DISTURBANCE WITHIN THE PIPELINE RIGHT-OF-WAY HAS BEEN MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE. ADDITIONALLY, ALL DISTURBED AREA WILL BE RESTORED TO AN EXISTING, VEGETATIVE CONDITION FOLLOWING CONSTRUCTION.

THE FOLLOWING PROVISIONS RELATED TO THERMAL IMPACTS BY ACCESS ROADS ARE INCLUDED IN THE E&SC ACCESS ROAD PLANS:

- THE MINIMUM PERMANENT CHANGES IN LAND COVER, NECESSARY TO CONSTRUCT THE REQUIRED FACILITIES ARE BEING PROPOSED.
- RUNOFF FROM THE PERMANENT IMPERVIOUS AREA WILL BE COLLECTED AS PART OF THE POST CONSTRUCTION STORMWATER MANAGEMENT / SITE RESTORATION (PCSM/SR) PLAN AND ROUTED TO PCSM/SR BMPs. IN ADDITION, IMPERVIOUS AREAS WILL BE GRAVEL INSTEAD OF ASPHALT WHEREVER PRACTICAL.
- THE REMOVAL OF VEGETATION, ESPECIALLY TREE COVER, WILL BE LIMITED TO ONLY THAT NECESSARY FOR CONSTRUCTION.
- THE IMPACTS TO EXISTING RIPARIAN CORRIDORS WILL BE LIMITED TO ONLY THAT NECESSARY FOR CONSTRUCTION.
- THE AMOUNT OF IMPERVIOUS SURFACES WILL BE LIMITED TO ONLY THAT NECESSARY TO SUPPORT THE CONSTRUCTION OF THE PIPELINE AND/OR OPERATION OF THE PIPELINE.
- ALL DISTURBED AREAS WILL BE RESTORED TO AN EXISTING, VEGETATIVE CONDITION FOLLOWING CONSTRUCTION AND IN ACCORDANCE WITH CHAPTER 102 AND ESCGP-2 PERMIT REQUIREMENTS FOR LINEAR OIL AND GAS PROJECTS.

NOTICES TO CONTRACTOR

1. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL ASSURE THAT THE APPROVED EROSION AND SEDIMENT CONTROL PLAN IS PROPERLY AND COMPLETELY IMPLEMENTED.
3. WATERBARS IN AGRICULTURAL/FARM FIELDS ARE TEMPORARY AND SHALL BE REMOVED AND RESTABILIZED UPON ESTABLISHMENT OF A UNIFORM 70 PERCENT PERMANENT VEGETATIVE COVER WITHIN THE UPSLOPE TRIBUTARY DRAINAGE AREA PER PA CHAPTER 102.22.
4. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL BE COORDINATED WITH THE AGENCY HAVING JURISDICTION.
5. FURNISH & INSTALL SWALES WHENEVER CONCENTRATED FLOWS HAVE THE POTENTIAL TO RUN ONTO OR THROUGH THE CONSTRUCTION AREA. DIRECT THE SWALE DISCHARGE TO A RIP RAP ENERGY DISSIPATER AND VEGETATED AREA.
6. THE CONTRACTORS SHALL BE ADDED AS CO-PERMITEES TO THE ESCGP-2 PERMIT.

RECEIVING WATERCOURSE - CHAPTER 93 DESIGNATION

REFER TO THE PIPELINE AND ACCESS ROAD PLANS FOR THE LOCATION, NAME AND CHAPTER 93 WATERCOURSE DESIGNATIONS. A SUMMARY TABLE OF THE WATERBODIES CROSSED BY THE PIPELINE AND CHAPTER 93 DESIGNATIONS ARE PROVIDED IN THE COUNTY-SPECIFIC TABLES INCLUDED AT THE END OF THIS PLAN SET.

RECYCLING AND DISPOSAL METHODS

THE RESTORATION OF THE PIPELINE RIGHT-OF-WAY WILL REQUIRE THE REMOVAL OF THE TEMPORARY MATERIALS. THE TEMPORARY MATERIALS INCLUDE, BUT MAY NOT BE LIMITED TO, STONE SURFACES AND ASSOCIATED GEOTEXTILES. THE CONTRACTORS ARE REQUIRED TO DISPOSE OF THE MATERIALS AT SUITABLE DISPOSALS OR RECYCLING SITES AND IN COMPLIANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

CONTRACTORS ARE REQUIRED TO INVENTORY AND MANAGE THEIR CONSTRUCTION SITE MATERIALS. THE GOAL IS TO BE AWARE OF THE MATERIALS ON-SITE, ENSURE THEY ARE PROPERLY MAINTAINED, USED, AND DISPOSED OF, AND TO MAKE SURE THE MATERIALS ARE NOT EXPOSED TO STORMWATER.

MATERIALS COVERED

THE FOLLOWING MATERIALS OR SUBSTANCES ARE EXPECTED TO BE PRESENT ON-SITE DURING CONSTRUCTION (NOTE: THIS LIST IS NOT AN ALL-INCLUSIVE LIST AND THE MATERIALS MANAGEMENT PLAN CAN BE MODIFIED TO ADDRESS ADDITIONAL MATERIALS USED ON-SITE):
- ACIDS
- DETERGENTS
- FERTILIZERS (NITROGEN/PHOSPHORUS)
- HYDROSEEDING MIXTURES
- PETROLEUM BASED PRODUCTS
- SANITARY WASTES
- SOIL STABILIZATION ADDITIVES
- SOLDER
- SOLVENTS
- OTHER (LIST HERE): ____

THESE MATERIALS MUST BE STORED AS APPROPRIATE AND SHALL NOT CONTACT STORM OR NON-STORMWATER DISCHARGES. CONTRACTOR SHALL PROVIDE A WEATHER PROOF CONTAINER TO STORE CHEMICALS OR ERODIBLE SUBSTANCES THAT MUST BE KEPT ON THE SITE. CONTRACTOR IS RESPONSIBLE FOR READING, MAINTAINING, AND MAKING EMPLOYEES AND SUBCONTRACTORS AWARE OF MATERIAL SAFETY DATA SHEETS (MSDSs).

MATERIAL MANAGEMENT PRACTICES

THE FOLLOWING ARE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES TO STORMWATER RUNOFF.

1. GOOD HOUSEKEEPING PRACTICES

THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON SITE DURING CONSTRUCTION:

- STORE ONLY ENOUGH MATERIAL REQUIRED TO DO THE JOB.
- STORE MATERIALS IN A NEAT, ORDERLY MANNER.
- STORE CHEMICALS IN WATERTIGHT CONTAINERS OR IN A STORAGE SHED, UNDER A ROOF, COMPLETELY ENCLOSED, WITH APPROPRIATE SECONDARY CONTAINMENT TO PREVENT SPILL OR LEAKAGE. DRIP PANS SHALL BE PROVIDED UNDER DISPENSERS.
- SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.
- MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.
- INSPECTIONS WILL BE PERFORMED TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.
- COVER AND BERM LOOSE STOCKPILED CONSTRUCTION MATERIALS THAT ARE NOT ACTIVELY BEING USED (I.E. SOIL, SPOILS, AGGREGATE, ETC.).
- MINIMIZE EXPOSURE OF CONSTRUCTION MATERIALS TO PRECIPITATION.
- MINIMIZE THE POTENTIAL FOR OFF-SITE TRACKING OF LOOSE CONSTRUCTION AND LANDSCAPE MATERIALS.

2. HAZARDOUS PRODUCTS

THESE PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS. MSDSS FOR EACH SUBSTANCE WITH HAZARDOUS PROPERTIES THAT IS USED ON THE JOB SITE(S) WILL BE OBTAINED AND USED FOR THE PROPER MANAGEMENT OF POTENTIAL WASTES THAT MAY RESULT FROM THESE PRODUCTS. A MSDS WILL BE POSTED IN THE IMMEDIATE AREA WHERE SUCH PRODUCT IS STORED AND/OR USED AND ANOTHER COPY OF EACH MSDS WILL BE MAINTAINED IN A FILE AT THE JOB SITE CONSTRUCTION TRAILER OFFICE. EACH EMPLOYEE WHO MUST HANDLE A SUBSTANCE WITH HAZARDOUS PROPERTIES WILL BE INSTRUCTED ON THE USE OF MSDS AND THE SPECIFIC INFORMATION IN THE APPLICABLE MSDS FOR THE PRODUCT HE/SHE IS USING, PARTICULARLY REGARDING SPILL CONTROL TECHNIQUES.

- PRODUCTS WILL BE KEPT IN ORIGINAL CONTAINERS WITH THE ORIGINAL LABELS IN LEGIBLE CONDITION.
- ORIGINAL LABELS AND MSDSS WILL BE PRODUCED AND USED FOR EACH MATERIAL.
- IF SURPLUS PRODUCT MUST BE DISPOSED OF, MANUFACTURER'S OR LOCAL/STATE/FEDERAL RECOMMENDED METHODS FOR PROPER DISPOSAL WILL BE FOLLOWED.

3. HAZARDOUS WASTES

ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF BY THE CONTRACTOR IN THE MANNER SPECIFIED BY LOCAL, STATE, AND/OR FEDERAL REGULATIONS AND BY THE MANUFACTURER OF SUCH PRODUCTS. SITE PERSONNEL WILL BE INSTRUCTED.

4. CONCRETE AND OTHER WASH WATERS

PREVENT DISPOSAL OF RINSE, WASH WATERS, OR MATERIALS ON IMPERVIOUS OR PERVIOUS SURFACES, INTO STREAMS, WETLANDS OR OTHER WATER BODIES.

CONCRETE TRUCKS WILL BE ALLOWED TO WASH OUT OR DISCHARGE SURPLUS CONCRETE OR DRUM WASH WATER ON THE SITE, BUT ONLY IN EITHER (1) SPECIFICALLY DESIGNATED DIKED AREAS WHICH HAVE BEEN PREPARED TO PREVENT CONTACT BETWEEN THE CONCRETE AND/OR WASHOUT AND SOIL AND STORMWATER HAVING THE POTENTIAL TO BE DISCHARGED FROM THE SITE OR (2) IN LOCATIONS WHERE WASTE CONCRETE CAN BE POURED INTO FORMS TO MAKE RIPRAP OR OTHER USEFUL CONCRETE PRODUCTS.

THE HARDENED RESIDUE FROM THE CONCRETE WASHOUT DIKED AREAS WILL BE DISPOSED OF IN THE SAME MANNER AS OTHER NON-HAZARDOUS CONSTRUCTION WASTE MATERIALS OR MAY BE BROKEN UP AND USED ON THE SITE AS DEEMED APPROPRIATE BY THE CONTRACTOR AND GEOTECHNICAL ENGINEER. THE CONTRACTOR WILL BE RESPONSIBLE FOR SEEING THAT THESE PROCEDURES ARE FOLLOWED.

ALL CONCRETE WASHOUT AREAS WILL BE LOCATED IN AN AREA WHERE THE LIKELIHOOD OF THE AREA CONTRIBUTING TO STORMWATER DISCHARGE IS NEGLIGIBLE. IF REQUIRED, ADDITIONAL BMPS MUST BE IMPLEMENTED TO PREVENT CONCRETE WASTES FROM CONTRIBUTING TO STORMWATER DISCHARGES. THE LOCATION OF THE CONCRETE WASHOUT AREA(S) MUST BE IDENTIFIED, BY THE CONTRACTOR/JOB SITE SUPERINTENDENT, ON THE JOB SITE COPY OF THE EROSION AND SEDIMENT CONTROL PLAN(S) IN THIS ESCP.

5. SANITARY WASTES

ALL SANITARY WASTE UNITS WILL BE LOCATED IN AN AREA WHERE THE LIKELIHOOD OF THE UNIT CONTRIBUTING TO STORMWATER DISCHARGES IS NEGLIGIBLE. ADDITIONAL BMPS MUST BE IMPLEMENTED, SUCH AS CONTAINMENT TRAYS (PROVIDED BY THE RENTAL COMPANY) OR SPECIAL CONTAINMENT CREATED WITH 2"X4" LUMBER, IMPERVIOUS PLASTIC, AND GRAVEL. THE LOCATION OF THE SANITARY WASTE UNITS MUST BE IDENTIFIED ON THE JOB SITE COPY OF THE EROSION AND SEDIMENT CONTROL PLAN(S), IN THIS ESCP, BY THE CONTRACTOR/JOB SITE SUPERINTENDENT.

6. SOLID AND CONSTRUCTION WASTES

ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL COMPLY WITH ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS. THE DUMPSTER/CONTAINER LIDS SHALL BE CLOSED AT THE END OF EVERY BUSINESS DAY AND DURING RAIN EVENTS. APPROPRIATE MEASURES SHALL BE TAKEN TO PREVENT DISCHARGES FROM WASTE DISPOSAL CONTAINERS TO THE RECEIVING WATER.

7. CONSTRUCTION ACCESS

A STABILIZED CONSTRUCTION ENTRANCE WILL BE PROVIDED TO HELP REDUCE VEHICLE TRACKING OF SEDIMENTS. THE PAVED ROADS ADJACENT TO THE SITE ENTRANCE WILL BE INSPECTED DAILY AND SWEPT AS NECESSARY TO REMOVE ANY EXCESS MUD, DIRT, OR ROCK TRACKED FROM THE SITE. DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN AS NECESSARY.

8. PETROLEUM PRODUCTS

ON-SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTATIVE MAINTENANCE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. PETROLEUM STORAGE TANKS ON SITE WILL HAVE A DIKE OR BERM CONTAINMENT STRUCTURE CONSTRUCTED AROUND IT TO CONTAIN SPILLS WHICH MAY OCCUR (CONTAINMENT VOLUME TO BE 110% OF VOLUME STORED). THE DIKE OR BERMED AREA SHALL BE LINED WITH AN IMPERVIOUS MATERIAL SUCH AS A HEAVY DUTY PLASTIC SHEET. DRIP PANS SHALL BE PROVIDED FOR ALL DISPENSERS. ANY ASPHALT SUBSTANCES USED ON THE SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

9. FERTILIZERS AND LANDSCAPE MATERIALS

FERTILIZERS WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO MINIMIZE THE POTENTIAL FOR EXPOSURE TO STORMWATER. STORAGE WILL BE UNDER COVER. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO MINIMIZE THE POTENTIAL FOR SPILLS. THE BIN SHALL BE LABELED APPROPRIATELY.

CONTAIN STOCKPILED MATERIALS, SUCH AS BUT NOT LIMITED TO, MULCHES, TOP SOIL, ROCKS AND GRAVEL, AND DECOMPOSED GRANITE, WHEN THEY ARE NOT ACTIVELY BEING USED.

APPLY ERODIBLE LANDSCAPE MATERIAL AT QUANTITIES AND APPLICATION RATES ACCORDING TO MANUFACTURER RECOMMENDATIONS OR BASED ON WRITTEN SPECIFICATIONS BY KNOWLEDGEABLE AND EXPERIENCED FIELD PERSONNEL. DISCONTINUE THE APPLICATION OF ANY ERODIBLE LANDSCAPE MATERIAL WITHIN TWO DAYS PRIOR TO A FORECASTED RAIN EVENT OR DURING PERIODS OF PRECIPITATION.

10. PAINTS, PAINT SOLVENTS AND CLEANING SOLVENTS

CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT IN USE. EXCESS PAINT AND SOLVENTS WILL BE PROPERLY DISPOSED OF ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR LOCAL/STATE/FEDERAL REGULATIONS.

11. CONTAMINATED SOILS

ANY CONTAMINATED SOILS (RESULTING FROM SPILLS OF MATERIALS WITH HAZARDOUS PROPERTIES) WHICH MAY RESULT FROM CONSTRUCTION ACTIVITIES WILL BE CONTAINED AND CLEANED UP IMMEDIATELY IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS.

12. OFF-SITE WASTE AND BORROW AREAS

ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL COUNTY CONSERVATION DISTRICT OF PADEP FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ANY EXCESS MATERIAL AND TO DEVELOP A PLAN THAT MEETS THE CONDITIONS OF CHAPTER 102, NPDES PERMIT CONDITIONS, AND/OR OTHER STATE AND FEDERAL REGULATIONS.

EARTH DISTURBANCE ACTIVITY - PAST, PRESENT, AND FUTURE LAND USES

REFER TO THE PIPELINE AND ACCESS ROAD EROSION AND SEDIMENTATION CONTROL PLANS FOR LAND USE INFORMATION.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
ENGINEER
PE082757

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE, ENGINEERING, ENVIRONMENTAL, LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	***Oct. 2016***	***BL***	***PADEP TECHNICAL DEFICIENCY RESPONSE #1***	***W0572385***	***JLK***	***SMK***

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

Williams GAS PIPELINE

GENERAL NOTES

DRAWN BY: ELZ	DATE: 05/15/15	ISSUED FOR BID:		SCALE:	
CHECKED BY: JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:		REVISION:	2
APPROVED BY: SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP-GN		SHEET 1	OF 3
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Drawn By & Date/Time: cmastriano Nov 13, 2016 – 1:07pm
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PIPELINE BMP INSTALLATION SEQUENCE

1. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, ENVIRONMENTAL INSPECTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE PCSM PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE LOCAL CONSERVATION DISTRICT TO AN ON-SITE PRECONSTRUCTION MEETING.
2. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING INTO AN AREA PREVIOUSLY UNMARKED, THE PENNSYLVANIA ONE CALL SYSTEM INC. SHALL BE NOTIFIED AT 1-800-242-1776 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
3. HOLD PRE-CONSTRUCTION CONFERENCE WITH THE ENVIRONMENTAL INSPECTORS, LOCAL COUNTY CONSERVATION DISTRICT (CCD), PADEP, AND DESIGN ENGINEER.
4. LOCATE STAGING AREAS AND ACCESS POINTS INCLUDING CONSTRUCTION ENTRANCES. FIELD LOCATE THE LOD.
5. LOCATE, STAKE AND/OR INSTALL ORANGE CONSTRUCTION FENCE AROUND SPECIAL AREAS OF CONCERN (I.E. WETLANDS, STREAMS, CULTURAL RESOURCES…)
6. PERFORM NON-MECHANIZED TREE CUTTING WHERE REQUIRED.
7. INSTALL CONSTRUCTION ENTRANCES.
8. ALL OFF-SITE WASTE AND BORROW AREAS MUST HAVE AN E&S PLAN APPROVED BY THE LOCAL COUNTY CONSERVATION DISTRICT OR DEP AND BE FULLY IMPLEMENTED PRIOR TO BEING ACTIVATED. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE REMOVAL OF ANY EXCESS MATERIAL AND TO DEVELOP A PLAN THAT MEETS THE CONDITIONS OF CHAPTER 102, NPDES PERMIT CONDITIONS, AND/OR OTHER STATE AND FEDERAL REGULATIONS.
9. REMOVE BRUSH, INCLUDING STUMPS, ONLY IN AREAS NECESSARY TO EFFECTIVELY INSTALL PERIMETER SEDIMENT BARRIERS, UPSLOPE TEMPORARY FILTER SOCK DIVERSIONS AND TEMPORARY DIVERSION SWALES. LEVEL SIDE CUTS REQUIRED TO GRANT ACCESS FOR VEHICLES AND WORKERS TO SAFELY PERFORM THE INSTALLATION OF SEDIMENT BARRIERS AS SHOWN ON THE E&SC PLANS.
10. INSTALL PERIMETER CONTROLS (SEDIMENT BARRIERS). ACCESS REQUIREMENTS FOR PERIMETER CONTROLS ALONG PRIVATE DRIVES WITHIN THE LOD SHALL BE IN ACCORDANCE WITH THE LANDOWNER AGREEMENTS.
11. INSTALL PERMANENT AND TEMPORARY ACCESS ROADS AND ASSOCIATED BMPS (VEGETATED ROADSIDE DITCHES, DITCH RELIEF CULVERTS, AND RIPRAP OUTLET PROTECTION). SEE ACCESS ROAD SEQUENCE OF CONSTRUCTION FOR SPECIFIC CONSTRUCTION STEPS ASSOCIATED WITH ROAD CONSTRUCTION (PROVIDED IN SECTION 2 OF THE ESCGP-2 NOI).
12. THE COMPLIANCE MANAGER SHALL PROVIDE PADEP AT LEAST THREE DAYS' NOTICE PRIOR TO BULK EARTH DISTURBANCE AND UPON COMPLETED INSTALLATION OF PERIMETER EROSION CONTROLS.
13. HAVE SURVEY CREWS LOCATE AND RE-STAKE AS NEEDED, IF ANY STAKES ARE DAMAGED, IN ALL SPECIAL AREAS OF CONCERN (I.E., WETLANDS, STREAMS, ETC.)
14. UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY WHERE THE CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED FOUR DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED E&SC PENDING FUTURE EARTH DISTURBANCE ACTIVITIES. FOR AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OF AN ACTIVITY TO BE CONSIDERED TEMPORARILY STABILIZED, THE DISTURBED AREAS SHALL BE COVERED WITH ONE OF THE FOLLOWING: A MINIMUM UNIFORM COVERAGE OF MULCH AND SEED, WITH A DENSITY CAPABLE OF RESISTING ACCELERATED E&SC, OR AN ACCEPTABLE E&SC BMP WHICH TEMPORARILY MINIMIZES ACCELERATED E&SC. TEMPORARY STABILIZATION WILL NOT OCCUR ON ACTIVE VEHICULAR TRAVEL WAYS WITHIN THE ROW.
15. PROCEED WITH MAJOR CLEARING AND GRUBBING.
16. BEGIN CONSTRUCTION STAKING FOR TEMPORARY GRADING.
17. INSTALL CLEAN WATER CROSSINGS, INCLUDING LINERS, RIP RAP APRON ENERGY DISSIPATERS AND FLUME CROSSINGS
18. AS THE GRUBBING OPERATION COMMENCES, INSTALL ROCK FILTERS AND WATERBARS ALONG THE ALIGNMENT.
19. STRIP AND STOCKPILE TOPSOIL; INSTALL SEDIMENT BARRIERS AROUND STOCKPILES.
20. HAUL PIPE TO RIGHT-OF-WAY. BEND, PLACE ON SUPPORTS, ALIGN, AND WELD. INSTALL STREAM AND WETLAND CROSSING BMPS (TIMBER MATTING, TIMBER MAT BRIDGES). LAY PIPE IN DITCH. IMMEDIATELY AFTER INSTALLING CROSSING, RESTORE DISTURBED AREA AND INSTALL STREAMBANK STABILIZATION.
21. CLEAR, GRUB, AND CONSTRUCT STREAM AND WETLAND CROSSINGS IN ACCORDANCE WITH CHAPTER 105, SECTION 404, 401, AND RELATED PERMITS. INSTALL STREAM FLUMES, AND/OR DAM AND PUMP AS SPECIFIED IN CHAPTER 105 PERMIT DOCUMENTS FOR CROSSING OF STREAM AND WETLAND AREAS. CONTRACTOR SHALL PLACE PIPE, INSTALL TRENCH PLUGS, BACKFILL TRENCH, AND TEMPORARILY STABILIZE WITHIN 48 HOURS OF EXCAVATING TRENCH IN RESOURCE CROSSING LOCATIONS.
22. DIG TRENCH OUTSIDE OF RESOURCE CROSSINGS. CONTRACTOR SHALL PLACE PIPE, INSTALL TRENCH PLUGS, AND BACKFILL TRENCH WITHIN 30 DAYS OF EXCAVATING TRENCH.
23. PERFORM NON-DESTRUCTIVE TESTING (NDT) INSPECTION OF WELDS AND APPLY COATING TO WELD AREA.
24. INSTALL TRENCH PLUGS.
25. BACKFILL PIPE TRENCH, REPAIR PERMANENT WATERBARS, REMOVE TEMPORARY WATERBARS, RETURN TEMPORARILY GRADED AREAS TO PRE-DEVELOPMENT GRADE, REPAIR/INSTALL EROSION CONTROL BLANKET AS NEEDED, IMMEDIATELY SEED AND STABILIZE DISTURBED AREAS (SLOPES, DITCHES AND CHANNELS) AS THEY ARE RETURNED TO FINAL GRADE. REFER TO PLANTING PLANS AND RIPARIAN BUFFER PLANTINGS, AS APPLICABLE, IN THE BMP PLAN SET AND E&S NARRATIVE.
26. PERFORM HYDROSTATIC PRESSURE TEST OF PIPELINE.
27. DEWATER PIPELINE UTILIZING APPROPRIATE BMPS, COMPLETE FINAL TIE-INS, AND DRY PIPELINE.
28. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.
29. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE PERMITTEE AND/OR OPERATORS SHALL CONTACT THE LOCAL CCD AND/OR PADEP FOR AN INSPECTION PRIOR TO THE REMOVAL OF THE E&SC BMPS. REMOVAL OF TEMPORARY WETLAND AND STREAM CROSSINGS, TEMPORARY BMPS INCLUDING SEDIMENT BARRIERS, TEMPORARY FILTER SOCK DIVERSION SWALES, TEMPORARY CLEAN WATER DIVERSION SWALES (AND ASSOCIATED GRADING), CLEAN WATER CROSSING OUTFALL PROTECTION AND LEVEL SPREADERS, ROCK FILTERS, AND TEMPORARY WATERBARS ALONG THE ALIGNMENT.
30. COMPLETE SITE RESTORATION AND STABILIZATION, INCLUDING SOIL AERATION, SOIL TREATMENT, SEED APPLICATION AND MULCHING IN AREAS DISTURBED BY E&SC BMP REMOVAL. INSTALL RIPARIAN BUFFER PLANTINGS PER THE RIPARIAN BUFFER PLANTING PLANS.
31. REMOVE AND PROPERLY DISPOSE OF/RECYCLE E&SC BMPS. REMOVE STAKES AND ORANGE CONSTRUCTION FENCE. REPAIR AND PERMANENTLY STABILIZE AREAS DISTURBED DURING E&SC BMP REMOVAL.

MAINTENANCE PROGRAM

THE FOLLOWING INSPECTION AND MAINTENANCE PRACTICES WILL BE USED TO MAINTAIN EROSION AND SEDIMENT CONTROLS AND STABILIZATION MEASURES. REFER TO BMP DETAILS FOR SPECIFIC OPERATION AND MAINTENANCE REQUIREMENTS.

1. ALL EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED ONCE EVERY SEVEN DAYS AND AFTER EACH RUNOFF EVENT. A WRITTEN REPORT MUST ALSO BE COMPLETED DOCUMENTING EACH INSPECTION AND, IF NECESSARY, ANY REPAIR, REPLACEMENT OR MAINTENANCE ACTIVITY.
2. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER; IF REPAIRS OR ADDITIONAL MEASURES ARE FOUND TO BE NECESSARY, THEY WILL BE INITIATED WITHIN 24 HOURS OF THE INSPECTION REPORT.
3. BUILT UP SEDIMENT WILL BE REMOVED FROM PERIMETER BMPS WHEN IT HAS REACHED ONE-THIRD THE HEIGHT OF THE BMP.
4. PERIMETER BMPS WILL BE INSPECTED FOR DEPTH OF SEDIMENT, DAMAGE, ETC., TO ENSURE THE MEASURE IS IN PROPER WORKING ORDER, AND THAT ANY POSTS/WOOD STAKES ARE SECURELY IN THE GROUND.
5. TEMPORARY SEDIMENT TRAPS, IF PRESENT, WILL BE INSPECTED FOR DEPTH OF SEDIMENT, AND BUILT UP SEDIMENT WILL BE REMOVED WHEN IT REACHES THE DESIGN CLEANOUT DEPTH.
6. TEMPORARY AND PERMANENT SEEDING, AND OTHER STABILIZATION MEASURES, WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND HEALTHY GROWTH.
7. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION. COPIES OF THE REPORT FORMS TO BE COMPLETED BY THE INSPECTOR ARE INCLUDED IN THIS ESCP.
8. THE INSPECTOR WILL IMPLEMENT INSPECTION AND MAINTENANCE PRACTICES NECESSARY FOR KEEPING THE EROSION AND SEDIMENT CONTROLS THAT ARE USED ON THE SITE IN GOOD WORKING ORDER. THE INSPECTOR WILL ALSO BE TRAINED IN THE COMPLETION OF, INITIATION OF ACTIONS REQUIRED BY, AND THE FILING OF THE INSPECTION FORMS.
9. DISTURBED AREAS AND MATERIALS STORAGE AREAS WILL BE INSPECTED FOR EVIDENCE OF OR POTENTIAL FOR POLLUTANTS ENTERING THE STORMWATER.

A COPY OF THE APPROVED EROSION AND SEDIMENT CONTROL PLAN(S) WILL BE AVAILABLE ON THE SITE AT ALL TIMES.

ONCE ANY EROSION CONTROL MEASURES ARE INSTALLED, THE MAINTENANCE AND INSPECTION PROCEDURES ABOVE SHALL BEGIN. THE CONTRACTOR SHOULD BE AWARE THAT THE INSPECTION FORMS BECOME AN INTEGRAL PART OF THE ESCP AND SHALL BE MADE READILY AVAILABLE TO THE GOVERNMENT INSPECTION OFFICIALS, THE PROJECT OWNER'S ENGINEER, AND THE PROJECT OWNER FOR REVIEW UPON REQUEST DURING VISITS TO THE PROJECT SITE.

INSPECTORS SHOULD BE KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICE OF EROSION AND SEDIMENT CONTROLS AND POSSESS THE SKILLS TO ASSESS CONDITIONS AT THE CONSTRUCTION SITE THAT COULD IMPACT STORMWATER QUALITY AND TO ASSESS THE EFFECTIVENESS OF ANY SEDIMENT AND EROSION CONTROL MEASURES SELECTED TO CONTROL THE QUALITY OF STORMWATER DISCHARGES FROM THE CONSTRUCTION SITE. THEY SHOULD ALSO HAVE READ AND UNDERSTOOD ALL PORTIONS OF THIS ESCP, INCLUDING THE ESCGP-2.

THE INDIVIDUAL(S) RESPONSIBLE FOR POST-STORM AND STORM EVENT BMP INSPECTIONS, AND THE QUALIFIED PERSON(S) ASSIGNED RESPONSIBILITY TO ENSURE FULL COMPLIANCE WITH THE PERMIT AND IMPLEMENTATION OF ALL ELEMENTS OF THE ESCP, INCLUDING THE PREPARATION OF THE ANNUAL COMPLIANCE EVALUATION AND THE ELIMINATION OF ALL UNAUTHORIZED DISCHARGES ARE:
NAME: _____

PHONE NUMBER: _____ EMERGENCY PHONE #: _____

COMPANY: _____

RESPONSIBILITIES: _____

NAME: _____

PHONE NUMBER: _____ EMERGENCY PHONE #: _____

COMPANY: _____

RESPONSIBILITIES: _____

TEMPORARY AND PERMANENT STABILIZATION

1. TEMPORARY STABILIZATION

   TEMPORARY SEEDING WITH STRAW MULCH COVER FOR INTERIM STABILIZATION IS A TYPE OF BMP THAT CAN USUALLY BE PROVIDED WHERE THE EARTH DISTURBANCE ACTIVITY TEMPORARILY CEASES (I.E. 4 DAYS OR MORE) UNLESS DIRECTED BY THE PROJECT OWNER, PADEP, OR CONSERVATION DISTRICT.

   THE INSTALLATION OF AN EROSION CONTROL BLANKET OR APPLICATION OF STRAW MULCH UPON SEEDED AREAS ARE BOTH CONSIDERED TO BE PERMANENT STABILIZATION BMPS TO PROTECT THE SEEDBED UNTIL VEGETATION IS ESTABLISHED.

2. PERMANENT STABILIZATION

   UPON COMPLETION OF ANY EARTH DISTURBANCE ACTIVITY, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED EROSION AND SEDIMENTATION.

   EROSION & SEDIMENTATION CONTROLS SHALL BE LEFT IN PLACE UNTIL SUCH TIME AS THE DISTURBED AREAS HAVE PERMANENT STABILIZATION. AN AREA SHALL BE CONSIDERED TO HAVE ACHIEVED FINAL STABILIZATION WHEN IT HAS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING AND OTHER MOVEMENTS.

3. STABILIZATION DURING NON-GROWING SEASONS

   WHEN UTILITY CONSTRUCTION MUST BE DONE AND IS COMPLETED DURING A NON-GROWING SEASON, INTERIM STABILIZATION BMPS MUST BE IMPLEMENTED AND ADEQUATELY MAINTAINED. THE APPLICATION OF STRAW MULCH AT THE RATE OF 3.0 TONS PER ACRE IS REQUIRED. THE BMPS SHOULD BE INSPECTED WEEKLY (UNLESS SNOW COVERED) AND AFTER EACH RUNOFF EVENT TO IDENTIFY AREAS THAT BECOME BARE.

   BARE AREAS SHOULD BE COVERED WITH A PROPERLY INSTALLED EROSION CONTROL BLANKET. ALL TEMPORARY EROSION AND SEDIMENT POLLUTION CONTROLS MUST BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.

4. WHERE REQUIRED, STRAW MULCH MUST BE APPLIED AT A MINIMUM OF 3.0 TONS PER ACRE.
5. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT FINELY CHOPPED OR BROKEN.
6. PRIOR TO ANY SEEDING, LIME, OR FERTILIZATION APPLICATION, A SOIL TEST SHALL BE PERFORMED TO DETERMINE THE pH FACTOR. ADDITIONAL LIME AND FERTILIZER MAY BE REQUIRED. NO LIME OR FERTILIZERS SHALL BE USED IN WETLAND AREAS.
7. LIME, FERTILIZE, SEED, AND MULCH DISTURBED AREAS PER THE EROSION AND SEDIMENT CONTROL PLANS. IN AREAS OF STEEP SLOPES OR OBVIOUS AREAS WHERE POTENTIAL EROSION MAY OCCUR, AND EROSION CONTROL MAT OR FLEXIBLE GROWTH MEDIUM (FGM) SHALL BE USED. FGM SHALL BE APPLIED PER MANUFACTURER SPECIFICATIONS. NO LIME OR FERTILIZERS SHALL BE USED IN WETLAND OR STREAM AREAS.
8. WATERBARS WITHIN AGRICULTURAL OR RESIDENTIAL AREAS SHALL BE USED AS TEMPORARY FEATURES. WATERBARS MAY BE REMOVED WHEN THE TRIBUTARY DRAINAGE AREA IS AT LEAST 70% STABILIZED WITH PERENNIAL VEGETATION AS PER PA CHAPTER 102.22.

PIPELINE WORK SEQUENCE IN WETLANDS

FOR WORK IN WETLANDS, THE FOLLOWING STEPS SHALL BE INSERTED IN THE GENERAL PIPELINE CONSTRUCTION SEQUENCE ABOVE:

1. INSTALL ORANGE FLAGGING AROUND PERIMETER OF WETLAND AND SEDIMENT BARRIERS ALONG THE ***LIMITS OF DISTURBANCE***.
2. LOCATE STAGING AREAS AT LEAST 50 FEET FROM THE EDGE OF THE WETLAND.
3. INSTALL SEDIMENT BARRIERS DOWN SLOPE OF THESE AREAS.
4. INSTALL CONSTRUCTION ENTRANCE AS SHOWN ON THE PLANS.
5. MATS, PADS, OR SIMILAR DEVICES SHALL BE USED DURING THE CROSSINGS OF WETLANDS. ORIGINAL GRADES THROUGH WETLANDS MUST BE RESTORED AFTER TRENCHING AND BACKFILLING. ANY EXCESS FILL MATERIALS MUST BE REMOVED FROM THE WETLAND AND NOT SPREAD ON-SITE.
6. SOIL EXCAVATED FROM WETLAND AREAS SHALL BE CAREFULLY REMOVED WITH THE ROOTS INTACT. THIS SOIL SHOULD BE PLACED IN A SEPARATE STOCKPILE TO BE REUSED DURING THE WETLAND SURFACE RESTITUTION.
7. DEWATER WORK AREA; WATER FROM THE EXCAVATION SHALL BE PUMPED TO A SEDIMENT TRAP OR A FILTER BAG.
8. INSTALL PIPE.
9. INSTALL TRENCH PLUGS IN WETLAND AREAS PER THE E&S PLAN TO PREVENT THE TRENCH FROM DRAINING THE WETLAND OR CHANGING ITS MICROHYDROLOGY.
10. BACKFILL PIPE TRENCH. BACKFILL THE TOP 12-INCHES OF THE EXCAVATED TRENCH WITH THE STOCKPILED WETLAND SOIL TO MATCH ORIGINAL SURFACE GRADES.
11. COMPACT BACKFILL AND GRADE THE SURFACE OF THE TRENCH AREA TO ALLOW FOR POSITIVE DRAINAGE TO SOIL E&SCS AND TO PREPARE DISTURBED AREAS FOR PERMANENT TRENCH RESTORATION.
12. MAINTAIN ALL E&SC DEVICES UNTIL SITE WORK IS COMPLETE AND A MINIMUM UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER IS ESTABLISHED.
13. REMOVE ALL SOIL AND E&SC MEASURES UPON ESTABLISHMENT OF A MINIMUM UNIFORM 70 PERCENT PERENNIAL VEGETATIVE COVER OVER THE DISTURBED AREA REGRADE AND REVEGETATE AREAS DISTURBED DURING THE REMOVAL OF THE SOIL E&SCS.

PIPELINE WORK SEQUENCE AT STREAM CROSSINGS

FOR STREAM CROSSINGS, THE FOLLOWING STEPS SHALL BE INSERTED IN THE GENERAL PIPELINE CONSTRUCTION SEQUENCE ABOVE:

1. AFTER INSTALLATION OF SEDIMENTATION BMPS, INSTALL BYPASS HOSE, PUMP, OR COFFERDAM AS DESCRIBED IN STREAM CROSSING DETAILS AROUND THE WORK AREA.
2. DEWATER WORK AREA. WATER FROM THE EXCAVATION SHALL BE PUMPED TO A SEDIMENT FILTER BAG. WHERE POSSIBLE, EXCAVATION SHALL BE FROM THE TOP OF THE STREAM BANK.
3. STABILIZE CHANNEL EXCAVATION AND STREAM BANKS PRIOR TO REDIRECTING STREAM FLOW WITHIN 24 HOURS OF CROSSING BEING DONE FOR ALL STREAMS SMALLER THAN 10 FEET AND 48 HOURS FOR STREAMS LARGER THAN 10 FEET WIDE.
4. REMOVE BYPASS HOSE, PUMP, AND TEMPORARY DAM AS NEEDED.

ACCESS ROAD BMP INSTALLATION SEQUENCE

REFER TO SPECIFIC ACCESS ROAD CONSTRUCTION SEQUENCE NOTES INCLUDED IN THE ACCESS ROAD E&S PLAN SETS UNDER SEPARATE COVER.

ACID-PRODUCING SOILS AND BEDROCK CONTROL PLAN

THE FOLLOWING ACID PRODUCING SOILS CONTROL PLAN WAS DEVELOPED TO IDENTIFY BMPS AND PROCEDURES FOR MINIMIZING THE POTENTIAL FOR POLLUTION ASSOCIATED WITH THE DISTURBANCE OF THE AREAS WITHIN THE PROPOSED RIGHT-OF-WAY THAT CONTAIN ACID-PRODUCING SOILS WITH A pH LESS THAN 4.0.

ACID-PRODUCING SOILS AND BEDROCK CONTROL PLAN:

1. CONTRACTOR SHALL LIMIT THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID-PRODUCING SOILS ARE ENCOUNTERED. LOCATIONS WHERE ACIDIC SOILS ARE ANTICIPATED TO BE PRESENT ALONG THE PIPELINE CORRIDOR ARE PROVIDED IN THE COUNTY-SPECIFIC TABLE INCLUDED AT THE END OF THIS PLAN SET.
2. CONTRACTOR SHALL SEPARATELY STORE TOPSOIL STRIPPED FROM THE SITE AWAY FROM TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOILS AND BEDROCK.S.
3. CONTRACTOR SHALL STOCKPILE HIGH ACID-PRODUCING SOILS AND BEDROCK MATERIAL ON LEVEL GROUND TO MINIMIZE ITS MOVEMENT, ESPECIALLY WHEN THESE MATERIALS HAVE A HIGH CLAY CONTENT.
4. CONTRACTOR SHALL COVER TEMPORARILY STOCKPILED HIGH ACID-PRODUCING SOIL AND BEDROCK MATERIAL TO BE EXPOSED MORE THAN 7 DAYS WITH PROPERLY ANCHORED, HEAVY-GRATE SHEETS OF POLYETHYLENE, WHERE POSSIBLE. IF NOT POSSIBLE, STOCKPILES SHALL BE COVERED WITH A MINIMUM OF THREE TO SIX INCHES OF WOOD CHIPS TO MINIMIZE EROSION OF THE STOCKPILE. IN ADDITION, THE CONTRACTOR SHALL INSTALL SILT FENCE AT THE TOE OF THE STOCKPILE SLOPE TO CONTAIN MOVEMENT OF MATERIAL. CONTRACTOR SHALL NOT APPLY TOPSOIL TO THE HIGH ACID-PRODUCING SOIL OR BEDROCK STOCKPILES TO PREVENT TOPSOIL CONTAMINATION.
5. CONTRACTOR SHALL ULTIMATELY DISPOSE OF HIGH ACID-PRODUCING SOILS OR BEDROCK WITH A pH OF FOUR OR LESS, OR CONTAINING IRON SULFIDE (INCLUDING BORROW FROM CUTS) BY PLACING THE MATERIAL COMBINED WITH LIMESTONE AT THE RATE OF 6 TONS PER ACRE (OR 275 POUNDS PER 1,000 SQUARE FEET OF SURFACE AREA) AND COVERING THE MIXTURE WITH A MINIMUM OF 12 INCHES OF SETTLED SOILS WITH A PH OF FIVE OR MORE EXCEPT AS FOLLOWS:
   A. IN THE AREAS WHERE TREES OF SHRUBS ARE TO BE PLANTED, THE CONTRACTOR SHALL COVER THE LIMESTONE/SOIL MIXTURE WITH A MINIMUM OF 24 INCHES OF SOILS WITH A PH OF FIVE OR MORE.
   B. CONTRACTOR SHALL NOT LOCATE ANY DISPOSAL AREA WITHIN 24 INCHES OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES, AND OTHER SURFACE WATERS TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.
6. AT THE END OF EACH DAY, CONTRACTOR SHALL CLEAN ALL EQUIPMENT USED TO HANDLE HIGH ACID-PRODUCING SOILS OR BEDROCK TO PREVENT SPREADING OF HIGH-ACID MATERIALS TO OTHER PARTS OF THE PROPOSED RIGHT-OF-WAY, INTO STREAMS, OR STORMWATER CONVEYANCES, AND TO PROTECT MACHINERY FROM ACCELERATED CORROSION.
7. CONTRACTOR SHALL PROVIDE AND INSTALL NON-VEGETATIVE EROSION CONTROLS (STONE TRACKING PADS, STRATEGICALLY-PLACE LIMESTONE CHECK DAMS, SILT FENCES, WOOD CHIPS) TO LIMIT THE MOVEMENT OF HIGH ACID-PRODUCING SOILS FROM, AROUND, OR OFF OF THE PROPOSED RIGHT-OF-WAY.
8. FOLLOWING THE BURIAL OR REMOVAL OF HIGH ACID-PRODUCING SOILS AND BEDROCK, TOP SOILING, AND SEEDING OF THE PROPOSED RIGHT-OF-WAY, TRANSCO SHALL MONITOR THE SITE FOR APPROXIMATELY SIX TO 12 MONTHS TO ASSURE THERE IS ADEQUATE STABILIZATION AND THAT NO HIGH-ACID SOIL OR BEDROCK PROBLEMS EMERGE. CONTRACTOR SHALL CORRECT ANY PROBLEMS THAT ARE DISCOVERED WITHIN THIS TIME PERIOD.
9. IF PROBLEMS OCCUR WHERE HIGH ACID-PRODUCING SOILS OR BEDROCK HAVE BEEN PLACED OR BURIED, THE APPLICANT SHALL MONITOR THESE AREAS FOR AT LEAST TWO YEARS TO ASSURE THERE IS NO MIGRATION OF POTENTIAL ACID LEACHATE.

Drawn By & Date/Time: cmastriano Nov 13, 2016 - 1:07pm
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SUZANNE KING REG NO. PE 082757
BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
Williams GAS PIPELINE
GENERAL NOTES

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	*2*
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP-GN	SHEET	2
WO:				OF	3

RIP RAP GRADATION, FILTER BLANKET, & MAXIMUM VELOCITIES

Riprap Gradation, Filter Blanket Requirements, Maximum Velocities

Class, Size NO. / Rock Size (inches)	R-8	R-7	R-6	R-5	R-4	R-3
Percent Passing (Square Openings)						
42	100					
30		100				
24	15-50		100			
18		15-50		100		
15	0-15					
12		0-15	15-50		100	
9				15-50		
6			0-15		15-50	100
4				0-15		
3					0-15	15-50
2						0-15
Nominal Placement Thickness (inches)	63	45	36	27	18	9
Filter Stone[1]	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #3	AASHTO #3	AASHTO #57
V_{max} (ft/sec)	17.0	14.5	13.0	11.5	9.0	6.5

Adapted from PennDOT Pub. 408, Section 703.2(c), Table C

ADAPTED FROM PENNDOT PUB. 408, SECTION 703.2 (c), TABLE C.

1. THIS IS A GENERAL STANDARD. SOIL CONDITIONS AT EACH SITE SHOULD BE ANALYZED TO DETERMINE ACTUAL FILTER SIZE. A SUITABLE WOVEN OR NON-WOVEN GEOTEXTILE UNDERLAYMENT, USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, MAY BE SUBSTITUTED FOR THE FILTER STONE FOR GRADIENTS < 10%.

LIMING AND FERTILIZER RATES

Soil Amendment	Permanent Seeding Application Rate: Per Acre	Per 1,000 sq. ft.	Per 1,000 sq. yd.	Notes
Agricultural lime	6 tons	240 lb.	2,480 lb.	Or as per soil test; may not be required in agricultural fields
10-10-20 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

PA DEP TABLE 11.2

1. NO LIME AND/OR FERTILIZER MAY BE APPLIED IN WETLANDS.

SLOPE SEED MIX

Common Name	Scientific Name	# PLS/ acre	PLS/ sq ft	% of Mix
Big Bluestem	*Andropogon gerardii*	2	6	10
Little Bluestem	*Schizachyrium scoparium*	1	6	10
Switchgrass	*Panicum virgatum*	1.3	12	20
Timothy	*Phleum prantense*	0.4	12	20
Virginia Wildrye	*Elymus virginicus*	4.4	7.5	13
Deertongue	*Dichanthelium clandestinum*	0.7	6	10
Blackeyed Susan	*Rudbeckia hirta*	0.1	3	5
White Clover	*Trifolium repens*	0.2	3	5
Oxeye Sunflower	*Heliopsis helianthoides*	0.6	1.5	3
Partridge Pea	*Chamaecrista fasciculata*	1.1	1.5	3
Purple Coneflower	*Echinacea purpurea*	0.6	1.5	3
Total	--	12.3	60	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

ROW SEED MIX

Common Name	Scientific Name	# PLS/ acre[1]	PLS/sq ft	% of Mix
Red Top	Agrostis gigantea	0.1	12.0	20
Timothy	Phleum prantense	0.4	12.0	20
Tall Fescue	Festuca arundinacea	1.7	9.0	15
Annual Rygrass	Lolium perenne multiflorum	1.7	9.0	15
Italian Ryegrass	Festulium	1.7	9.0	15
Alsike Clover	Trifolium hybridum	0.2	3.0	5
White Clover	Trifolium repens	0.2	3.0	5
Ladino White Clover	Trifolium repens latum	0.2	3.0	5
Total	--	6.2	60.0	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

COVER CROP SEED MIXES

Common Name	Crop Type	# PLS/ acre	PLS/ sq ft	% of Mix
Warm Season				
Pearl Millett	Grass	6.9	12.6	70
Sunn Hemp	Legume	10.5	3.6	20
Nitro Radishes	Brassicas	3.1	1.8	10
Total	--	20.5	18	100
Cool Season				
Annual ryegrass	Grass	8	35.1	65
Red Clover	Legume	3.2	13.5	25
Nitro Radishes	Brassicas	9.4	5.4	10
Total	--	20.6	54	100

NOTES:

1. PLS IS ROUNDED TO THE NEAREST TENTH OF A POUND.
2. PLS = PURE LIVE SEED

TEMPORARY SEED MIXTURE

TEMPORARY SEEDING SHALL CONSIST OF ANNUAL RYEGRASS (100 PERCENT BY WEIGHT), OR EQUIVALENT, AND SHALL BE PLACED AT THE RATE OF 5 POUNDS PER 1,000 SQUARE YARDS. TEMPORARY SEEDING SHALL BE APPLIED TO THOSE AREAS THAT ARE A POTENTIAL EROSION PROBLEM DURING CONSTRUCTION AND TO THOSE AREAS EXPOSED FOR LONGER THAN 20 CALENDAR DAYS. IF CONDITIONS DO NOT PERMIT TEMPORARY SEEDING, MULCHING SHALL BE EMPLOYED. ADDITIONALLY, NITROGEN FERTILIZER (50-50-50) @ ONE (1) TON PER ACRE, AGRICULTURAL LIME @ ONE (1) TON PER ACRE, AND STRAW MULCH @ THREE (3) TONS PER ACRE. STRAW MULCH SHALL BE APPLIED IN LONG STRANDS, NOT CHOPPED OR FINELY BROKEN.

SPECIES TYPE AND SEASON OF PLANTING

Species Type and Season of Planting	
Cover Crops[1]	
Cool Season - Spring	March 1 to June 1
Warm Season	June 1 to August 15
Cool Season - Fall	August 15 - October 15
Permanent Crop[2]	
Spring	April 20 to June 15
Late Fall (dormant)	October 10 - March 1

NOTES:

1. SEEDING DATES FOR COVER CROPS ARE BASED ON DATES REFERENCED BY CLARK, ____.

2. SEEDING DATES FOR PERMANENT CROPS ARE BASED ON DATES REFERENCED BY LANDSHOOT, 1997 AND DELONG AND BRITTINGHAM, 2002.

SEED AFTER OCTOBER 10 WHEN GROUND TEMPERATURES AT A DEPTH OF 4 INCHES ARE 45 F OR LOWER AND COOLER AIR TEMPERATURES ARE FORECASTED.

DORMANT SEEDING CAN OCCUR UNTIL SOIL IS FROZEN AND ADEQUATE PENETRATION OF THE DRILL SEEDER DOES NOT OCCUR.

FACW MEADOW MIX ERNMX-122

Seeding Rate	20 lb per acre, or 1/2 lb per 1,000 sq ft
Mix Type	Wet Meadow & Wetland Sites
31.0%	Fox Sedge, PA Ecotype (Carex vulpinoidea, PA Ecotype)
20.0%	Virginia Wildrye, PA Ecotype (Elymus virginicus, PA Ecotype)
14.0%	Lurid (Shallow) Sedge, PA Ecotype (Carex lurida, PA Ecotype)
5.0%	Green Bulrush, PA Ecotype (Scirpus atrovirens, PA Ecotype)
4.0%	Blue Vervain, PA Ecotype (Verbena hastata, PA Ecotype)
3.5%	Wood Reedgrass, PA Ecotype (Cinna arundinacea, PA Ecotype)
3.0%	Soft Rush (Juncus effusus)
3.0%	Blunt Broom Sedge, PA Ecotype (Carex scoparia, PA Ecotype)
3.0%	Hop Sedge, PA Ecotype (Carex lupulina, PA Ecotype)
2.0%	Sensitive Fern (Onoclea sensibilis)
2.0%	Oxeye Sunflower, PA Ecotype (Heliopsis helianthoides, PA Ecotype)
1.0%	Rattlesnake Grass, PA Ecotype (Glyceria canadensis, PA Ecotype)
1.0%	Woolgrass, PA Ecotype (Scirpus cyperinus, PA Ecotype)
1.0%	Swamp Milkweed, PA Ecotype (Asclepias incarnata, PA Ecotype)
1.0%	New England Aster, PA Ecotype (Aster novae-angliae (Symphyotrichum n.), PA Ecotype)
1.0%	Flat Topped White Aster, PA Ecotype (Aster umbellatus (Doellingeria umbellata), PA Ecotype)
0.5%	Joe Pye Weed, PA Ecotype (Eupatorium fistulosum, PA Ecotype)
0.5%	Boneset, PA Ecotype (Eupatorium perfoliatum, PA Ecotype)
0.5%	Ditch Stonecrop, PA Ecotype (Penthorum sedoides, PA Ecotype)
0.5%	Narrowleaf Blue Eyed Grass (Sisyrinchium angustifolium)
0.5%	Seedbox, PA Ecotype (Ludwigia alternifolia, PA Ecotype)
0.5%	Great Blue Lobelia, PA Ecotype (Lobelia siphilitica, PA Ecotype)
0.5%	Mud Plantain (Water Plantain), PA Ecotype (Alisma subcordatum (A. plantago-aquatica), PA Ecotype)
0.5%	Square Stemmed Monkeyflower, PA Ecotype (Mimulus ringens, PA Ecotype)
0.4%	Bladder (Star) Sedge, PA Ecotype (Carex intumescens, PA Ecotype)
0.1%	Slender Mountainmint (Pycnanthemum tenuifolium)

RIPARIAN BUFFER MIX ERNMX-178

Seeding Rate	20 lb per acre with a cover crop at 30 lb per acre (dry sites - grain oats, Jan 1-Aug 1)
Mix Type	Riparian Sites
20.0%	Virginia Wildrye, PA Ecotype (Elymus virginicus, PA Ecotype)
16.0%	Indiangrass, PA Ecotype (Sorghastrum nutans, PA Ecotype)
15.0%	Deertongue, 'Tioga' (Panicum clandestinum (Dichanthelium c.), 'Tioga')
12.5%	Big Bluestem, 'Niagara' (Andropogon gerardii, 'Niagara')
8.0%	Switchgrass, 'Carthage', NC Ecotype (Panicum virgatum, 'Carthage', NC Ecotype)
5.0%	Partridge Pea, PA Ecotype (Chamaecrista fasciculata (Cassia f.), PA Ecotype)
4.0%	Autumn Bentgrass, PA Ecotype (Agrostis perennans, PA Ecotype)
4.0%	Blue Vervain, PA Ecotype (Verbena hastata, PA Ecotype)
3.0%	Blackeyed Susan, Coastal Plain NC Ecotype (Rudbeckia hirta, Coastal Plain NC Ecotype)
3.0%	Oxeye Sunflower, PA Ecotype (Heliopsis helianthoides, PA Ecotype)
2.3%	New England Aster, PA Ecotype (Aster novae-angliae (Symphyotrichum n.), PA Ecotype)
2.0%	Soft Rush (Juncus effusus)
1.0%	Boneset, PA Ecotype (Eupatorium perfoliatum, PA Ecotype)
1.0%	Joe Pye Weed, PA Ecotype (Eupatorium fistulosum, PA Ecotype)
1.0%	Blue False Indigo, Southern WV Ecotype (Baptisia australis, Southern WV Ecotype)
1.0%	New York Ironweed, PA Ecotype (Vernonia noveboracensis, PA Ecotype)
0.5%	Great Blue Lobelia, PA Ecotype (Lobelia siphilitica, PA Ecotype)
0.5%	Wild Bergamot, PA Ecotype (Monarda fistulosa, PA Ecotype)
0.2%	Grassleaf Goldenrod, PA Ecotype (Euthamia graminifolia (Solidago g.), PA Ecotype)

PERMANENT SEED MIXTURES COOL & WARM SEASON GRASSES

HAYFIELDS

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Orchardgrass	Dactylis glomerata	4.0	60.0	40
Timothy	Phleum pratense	2.0	60.0	40
Ladino White Clover	Trifolium repens latum	0.8	15.0	10
Red Clover	Trifolium pratense	2.4	15.0	10
Total	--	9.2	150.0	100

PASTURES

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Timothy	*Phleum pratense*	0.5	15.0	25%
Perennial Ryegrass	*Lolium perenne*	2.3	12.0	20%
Red Top	*Agrostis gigantea*	0.1	9.0	15%
Italian Ryegrass	*Festulolium*	1.7	9.0	15%
Alsike Clover	*Trifolium hybridum*	0.6	9.0	15%
Ladino White Clover	*Trifolium repens latum*	0.3	6.0	10%
Total	--	5.5	60.0	100%

SLOPING/FORESTED LAND

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Sideoats Grama	*Bouteloua curtipendula*	1.4	6.0	10%
Little Bluestem	*Schizachyrium scoparium*	1.0	6.0	10%
Switchgrass	*Panicum virgatum*	1.3	12.0	20%
Timothy	*Phleum pratense*	0.4	12.0	20%
Virginia Wildrye	*Elymus virginicus*	4.24	7.2	12%
Deertongue	*Dichanthelium clandestinum*	0.7	6.0	10%
Blackeyed Susan	*Rudbeckia hirta*	0.1	2.4	4%
White Clover	*Trifolium repens*	0.1	2.4	4%
Oxeye Sunflower	*Heliopsis helianthoides*	0.8	1.8	3%
Partridge Pea	*Chamaecrista fasciculata*	1.7	2.4	4%
Purple Coneflower	*Echinacea purpurea*	0.7	1.8	3%
Total	--	12.3	60.0	100%

DROUGHT/ROCKY SITES

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Little Bluestem	*Schizachyrium scoparium*	1.5	9.0	15%
Timothy	*Phleum pratense*	0.3	9.0	15%
Prairie Junegrass	*Koeleria macrantha*	0.1	6.0	10%
Deertongue	*Dichanthelium clandestinum*	1.0	9.0	15%
Sideoats Grama	*Bouteloua curtipendula*	2.7	12.0	20%
Virginia Wildrye	*Elymus virginicus*	3.5	6.0	10%
Partridge Pea	*Chamaecrista fasciculata*	2.1	3.0	5%
Ladino White Clover	*Trifolium repens latum*	0.2	3.0	5%
Lanceleaf Coreopsis	*Coreopsis lanceolata*	0.6	3.0	5%
Total	--	12.0	60.0	100%

NON-AGRICULTURAL MEADOWS

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Virginia Wildrye	*Elymus virginicus*	5.3	9.0	15%
Little Bluestem	*Schizachyrium scoparium*	1.5	9.0	15%
Sideoats Grama	*Bouteloua curtipendula*	2.1	9.0	15%
Deertongue	*Dichanthelium clandestinum*	1.0	9.0	15%
Partridge Pea	*Chamaecrista fasciculata*	4.2	6.0	10%
Oxeye Sunflower	*Heliopsis helianthoides*	1.3	3.0	5%
Lanceleaf Coreopsis	*Coreopsis lanceolata*	1.2	6.0	10%
Blackeyed Susan	*Rudbeckia hirta*	0.1	3.0	5%
Butterfly Milkweed	*Asclepias tuberosa*	5.2	6.0	10%
Total	--	21.8	60.0	100%

NATIVE NON-NATIVE FOOD PLOT MIX

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Timothy	*Phleum pratense*	0.4	12.0	20%
Upland Bent Grass	*Agrostis perennans*	0.1	9.0	15%
Virginia Wildrye	*Elymus virginicus*	5.3	9.0	15%
White Clover	*Trifolium repens*	0.5	9.0	15%
Ladino White Clover	*Trifolium repens latum*	0.7	12.0	20%
Crimson Clover	*Trifolium incarnatum*	3.5	9.0	15%
Total	--	10.4	60.0	100%

POLLINATOR MIX (TO BE ADDED TO ANY MIX UPON LANDOWNER REQUEST)

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Butterfly Milkweed	*Asclepias tuberosa*	2.6	3.0	15%
Purple Coneflower	*Echinacea purpurea*	1.1	3.0	15%
Dense Blazing Star	*Liatris spicata*	0.7	2.0	10%
Lanceleaf Coreopsis	*Coreopsis lanceolata*	0.4	2.0	10%
Blackeyed Susan	*Rudbeckia hirta*	0.1	3.0	15%
Oxeye Sunflower	*Heliopsis*	1.3	3.0	15%
Wild Bergamot	*Monarda fistulosa*	0.1	2.0	10%
Hoary Mountainmint	*Pycnanthemum*	0.0	2.0	10%
Total	--	6.3	20.0	100%

BRASSICA MIX

Common Name	Scientific Name	# PLS/acre	PLS/sq ft	% of Mix
Bonar (Rape)	*Brassica napus*	2.7	6.6	33%
Turnip	*Brassica rapa*	12.9	6.6	33%
Nitro Radish	*Raphanus*	11.8	6.8	34%
Total	--	27.4	20.0	100%

MULCH

1. MULCHES SHOULD BE APPLIED AT THE RATES SHOWN IN TABLE 11.6
2. STRAW AND HAY MULCH SHOULD BE ANCHORED OR TACKIFIED IMMEDIATELY AFTER APPLICATION TO PREVENT BEING WINDBLOWN. A TRACTOR-DRAWN IMPLEMENT MAY BE USED TO "CRIMP" THE STRAW OR HAY INTO THE SOIL – ABOUT 3 INCHES. THIS METHOD SHOULD BE LIMITED TO SLOPES NO STEEPER THAN 3H:1V. THE MACHINERY SHOULD BE OPERATED ON THE CONTOUR. CRIMPING OF HAY OR STRAW BY RUNNING OVER IT WITH TRACKED MACHINERY IS NOT RECOMMENDED.
3. POLYMERIC AND GUM TACKIFIERS MIXED AND APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS MAY BE USED TO TACK MULCH. AVOID APPLICATION DURING RAIN AND ON WINDY DAYS. A 24-HOUR CURING PERIOD AND A SOIL TEMPERATURE HIGHER THAN 45°F ARE TYPICALLY REQUIRED. APPLICATION SHOULD GENERALLY BE HEAVIEST AT EDGES OF SEEDED AREAS AND AT CRESTS OF RIDGES AND BANKS TO PREVENT LOSS BY WIND. THE REMAINDER OF THE AREA SHOULD HAVE BINDER APPLIED UNIFORMLY. BINDERS MAY BE APPLIED AFTER MULCH IS SPREAD OR SPRAYED INTO THE MULCH AS IT IS BEING BLOWN ONTO THE SOIL. APPLYING STRAW AND BINDER TOGETHER IS GENERALLY MORE EFFECTIVE.
4. SYNTHETIC BINDERS, OR CHEMICAL BINDERS, MAY BE USED AS RECOMMENDED BY THE MANUFACTURER TO ANCHOR MULCH PROVIDED SUFFICIENT DOCUMENTATION IS PROVIDED TO SHOW THEY ARE NON-TOXIC TO NATIVE PLANT AND ANIMAL SPECIES.
5. MULCH ON SLOPES 8% OR STEEPER SHOULD BE HELD IN PLACE WITH NETTING. LIGHTWEIGHT PLASTIC, FIBER, OR PAPER NETS MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
6. SHREDDED PAPER HYDROMULCH SHOULD NOT BE USED ON SLOPES STEEPER THAN 5%. WOOD FIBER HYDROMULCH MAY BE APPLIED ON STEEPER SLOPES PROVIDED A TACKIFIER IS USED. THE APPLICATION RATE FOR ANY HYDROMULCH SHOULD BE 2,000 LB/ACRE AT A MINIMUM.
7. HYDRAULICALLY APPLIED BLANKETS CAN BE AN EFFECTIVE METHOD OF STABILIZING STEEP SLOPES WHEN USED PROPERLY. THEY MAKE USE OF A CROSS-LINKED HYDROCOLLOID TACKIFIER TO BOND THERMALLY PROCESSED WOOD FIVERS. APPLICATION RATES VARY ACCORDING TO SITE CONDITIONS. IN ANY CASE, MANUFACTURER'S RECOMMENDATIONS SHOULD BE FOLLOWED. SHOULD NOT BE USED IN AREAS OF CONCENTRATED FLOW (E.G. SWALES).
8. NO MULCH MAY BE APPLIED IN WETLANDS.

TABLE 11.6

MULCH APPLICATION RATES

MULCH TYPE	APPLICATION RATE (MIN.): PER ACRE	PER 1,000 SQ. FT.	PER 1,000 SQ. YD.	NOTES
STRAW	3 TONS	140 LB.	1,240 LB.	EITHER WHEAT OR OAT STRAW, FREE OF WEEDS, NOT CHOPPED OR FINELY BROKEN
WOOD CHIPS	4–6 TONS	185–275 LB.	1,650–2,500 LB.	MAY PREVENT GERMINATION OF GRASSES AND LEGUMES
HYDRO– MULCH	1 TON	47 LB.	415 LB.	SEE LIMITATIONS ABOVE
HYDRAULICALLY APPLIED BLANKETS	3,000 LB.	N/A	N/A	SLOPES UP TO 3H:1V
	4,000 LB.	N/A	N/A	SLOPES STEEPER THAN 3H:1V

OPERATIONS AND MAINTENANCE PROGRAM PERMANENT STORMWATER FACILITIES

THE PERMIT APPLICANT SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF PERMANENT STORMWATER FACILITIES LOCATED ON THE SUBJECT PROPERTIES. PERMANENT MAINTENANCE OF THE STORM SYSTEM AFTER ACCEPTANCE WILL PRIMARILY CONSIST OF ROUTINE CLEANING OF ACCUMULATED SEDIMENT AND DEBRIS BY FACILITY STAFF OR PRIVATE CONTRACTORS. THE SPECIFIC MAINTENANCE STEPS AND SCHEDULE ARE LISTED BELOW:

1. *VEGETATED SWALES*
   ALL SWALES MUST BE KEPT FREE OF OF OBSTRUCTIONS SUCH AS FILL, FALLEN LEAVES & WOODY DEBRIS, ACCUMULATED SEDIMENT, AND CONSTRUCTION MATERIAL/WASTES. SWALES SHALL BE KEPT MOWED AND/OR FREE OF ALL WEEDY, BRUSHY OR WOODY GROWTH. ANY UNDERGROUND UTILITIES RUNNING ACROSS/THROUGH THE SWALE(S) SHALL BE IMMEDIATELY BACKFILLED AND THE SWALE(S) REPAIRED AND STABILIZED PER THE SWALE CROSS SECTION DETAIL. ANY DISTURBANCE TO THE SWALES SHALL BE IMMEDIATELY REPAIRED AND STABILIZED PER THE SWALE CROSS SECTION DETAIL. REFER TO THE ADJACENT TABLE FOR THE OPERATION AND MAINTENANCE PROCEDURES FOR THE VEGETATED SWALES.
2. *MAINLINE VALVE SITES*
   ALL VALVE SITES MUST BE KEPT FREE OF OF OBSTRUCTIONS SUCH AS FILL, FALLEN LEAVES & WOODY DEBRIS, ACCUMULATED SEDIMENT, AND CONSTRUCTION MATERIAL/WASTES. ANY DISTURBANCE TO THE VALVE SITE SHALL BE IMMEDIATELY REPAIRED AND STABILIZED. COMPACTION OF THE VALVE SITE BOTTOM SHALL BE PREVENTED.
3. *ANNUAL CERTIFICATION OF MAINTENANCE PROCEDURES*
   THE OWNER SHALL MAINTAIN A CHECKLIST WHENEVER THE PERMANENT FACILITES ARE INSPECTED AND CLEANED. AN ANNUAL LIST OF INSPECTIONS AND MAJOR CLEANING OPERATIONS AND REPAIRS (REPAIR CHECK DAMS, REPLACE AGGREGATE, ETC.) SHALL BE MAINTAINED. THE COUNTY CONSERVATION DISTRICT(S) OR ENFORCEMENT OFFICIALS SHALL HAVE ACCESS TO THOSE RECORDS.
4. *ESCGP-2*
   COMPLIANCE WITH ESCGP-2 REQUIREMENTS AND RECORD KEEPING FOR PERMANENT STORMWATER DISCHARGE AND MAINTENANCE AND OTHER APPLICABLE ESCGP-2 AND DEP REQUIREMENTS REGARDING DISCHARGES.
5. *PROTECT SENSITIVE/SPECIAL VALUE FEATURES*
   PROTECTED AREAS SHALL REMAIN UNDISTURBED AFTER CONSTRUCTION ACTIVITIES CEASE. PROTECTED AREAS SHALL RECEIVE A BIANNUAL HEALTH INSPECTION. DEAD OR DYING VEGETATION SHALL BE IMMEDIATELY REPLACED WITH SUITABLE SPECIES. RESEED BARE AREAS AND INSTALL APPROPRIATE EROSION CONTROLS WHEN SOIL IS EXPOSED. ORANGE CONSTRUCTION FENCE WILL BE USED TO PROTECT SPECIAL VALUE/SENSITIVE AREAS DURING CONSTRUCTION.
6. *MINIMIZE SOIL COMPACTION*
   PROTECTED AREAS – RESTRICT VEHICLE ACCESS, DO NOT CLEAR VEGETATION. AVOID EARTH DISTURBANCE. CONDUCT BIANNUAL HEALTH INSPECTIONS AND IMMEDIATELY REPLACE DEAD OR DYING VEGETATION WITH SUITABLE SPECIES. RESEED BARE AREAS AND APPLY APPROPRIATE EROSION CONTROL WHERE SOIL IS EXPOSED. MINIMUM DISTURBANCE AREAS – RESTRICT VEHICLE ACCESS.

VEGETATED SWALE	
OPERATION & MAINTENANCE PROCEDURES	
ACTIVITY	*SCHEDULE*
PLANT ALTERNATIVE GRASS SPECIES IN THE EVENT OF UNSUCCESSFUL ESTABLISHMENT. RESEED BARE AREAS; ROTOTILL OR CULTIVATE THE SURFACE OF THE SAND/SOIL BED OF DRY SWALES IF THE SWALE DOES NOT DRAW DOWN WITHIN 48 HOURS. WATER DURING DRY PERIODS, FERTILIZE, AND APPLY PESTICIDES WHEN NECESSARY. REMOVE SEDIMENT BUILD-UP WITHIN THE BOTTOM OF THE SWALE ONCE IT HAS ACCUMULATED TO 25% OF THE ORIGINAL DESIGN VOLUME, OR ONCE IT HAS COVERED VEGETATION.	*AS NEEDED*
INSPECT AND CORRECT EROSION PROBLEMS, DAMAGE TO VEGETATION, DAMAGE TO ROCK FILTERS, AND SEDIMENT AND DEBRIS ACCUMULATION. INSPECT GRASS ALONG SIDE SLOPES FOR EROSION, RILLS, OR GULLIES, & CORRECT. MOW AND TRIM VEGETATION TO ENSURE SAFETY, PROPER SWALE OPERATION, OR TO SUPPRESS WEEDS AND INVASIVE VEGETATION. INSPECT FOR POOLS OF STANDING WATER; DEWATER & DISCHARGE TO AN APPROVED LOCATION, RESTORE TO DESIGN GRADE. INSPECT FOR UNIFORMITY IN CROSS-SECTION & LONGITUDINAL SLOPE, CORRECT AS NEEDED. INSPECT SWALE INLET AND OUTLET FOR SIGNS OF EROSION OR BLOCKAGE, CORRECT AS NEEDED.	*ANNUAL*
INSPECT SWALE IMMEDIATELY AFTER SPRING MELT. REMOVE RESIDUALS AND REPLACE DAMAGED VEGETATION. IF ROADSIDE OR PARKING LOT RUNOFF IS DIRECTED TO THE SWALE, MULCHING &/OR SOIL AERATION MAY BE REQUIRED IN THE SPRING TO RESTORE SOIL STRUCTURE & MOISTURE CAPACITY & TO REDUCE THE IMPACT OF DEICING AGENTS. USE NONTOXIC, ORGANIC DEICING AGENTS. PLANT SALT TOLERANT VEGETATION IN SWALES.	*WINTER*

TOPSOIL APPLICATION

GRADED AREAS SHOULD BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF 3 TO 5 INCHES TO PERMIT BONDING OF THE TOPSOIL TO THE SURFACE AREAS AND TO PROVIDE A ROUGHENED SURFACE TO PREVENT TOPSOIL FROM SLIDING DOWN SLOPE.

TOPSOIL SHOULD BE UNIFORMLY DISTRIBUTED ACROSS THE DISTURBED AREA TO A DEPTH OF 4 TO 8 INCHES MINIMUM – 2 INCHES ON FILL OUTSLOPES. SPREADING SHOULD BE DONE IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL PREPARATION OR TILLAGE. IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOIL PLACEMENT SHOULD BE CORRECTED IN ORDER TO PREVENT FORMATION OF DEPRESSIONS UNLESS SUCH DEPRESSIONS ARE PART OF THE PCSM PLAN.

TOPSOIL SHOULD NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION. COMPACTED SOILS SHOULD BE SCARIFIED 6 TO 12 INCHES ALONG CONTOUR WHEREVER POSSIBLE PRIOR TO SEEDING.

TABLE 11.1
Cubic Yards of Topsoil Required for Application to Various Depths

Depth (in)	Per 1,000 Square Feet	Per Acre
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	537
5	15.5	672
6	18.6	806
7	21.7	940
8	24.8	1,074

Adapted from VA DSWC

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE, ENGINEERING, ENVIRONMENTAL, LAND SURVEYING

REVISIONS						
NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

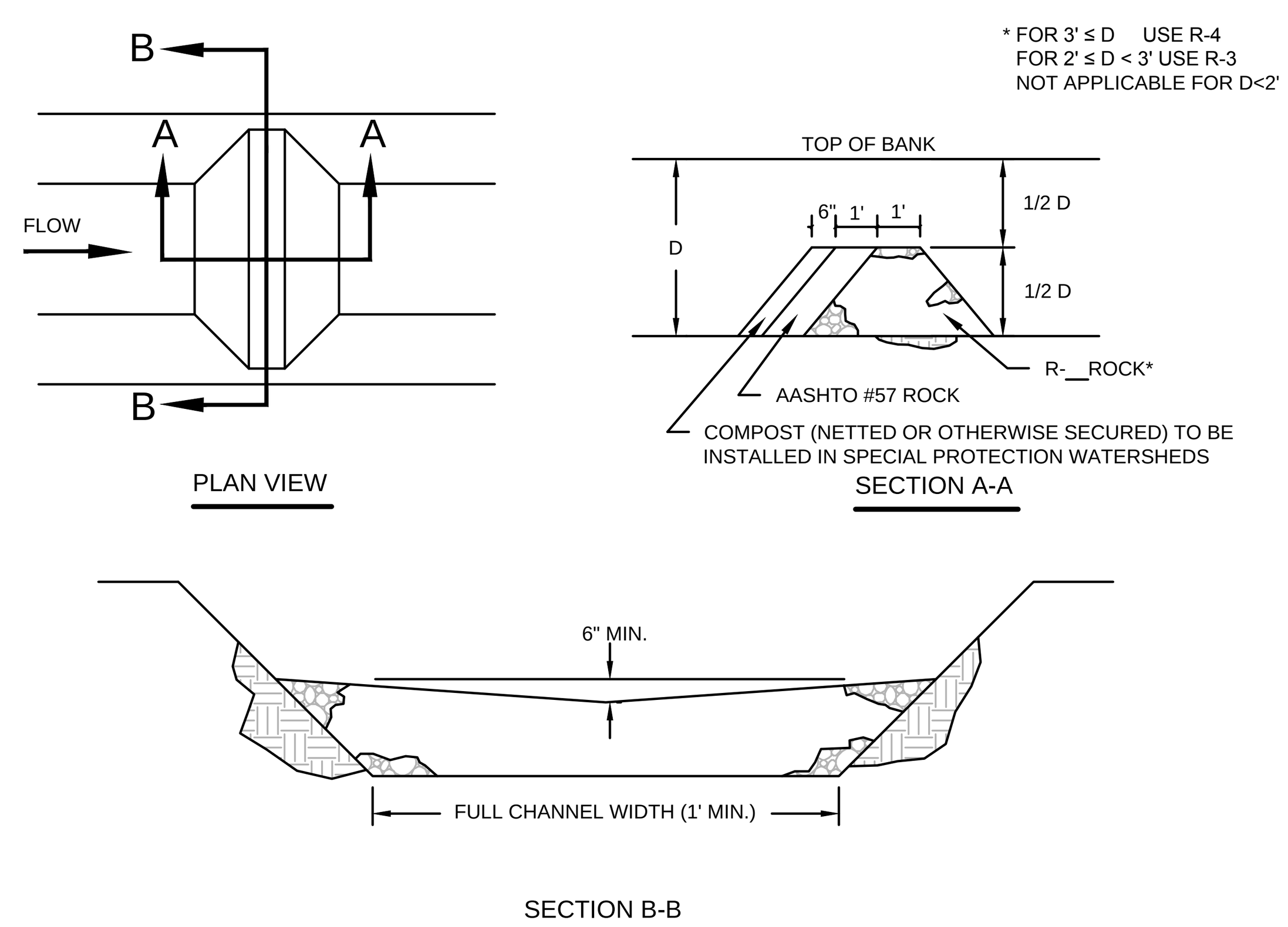
Williams GAS PIPELINE

GENERAL NOTES

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: *2*
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP-GN	SHEET 3 OF 3
W.O:					

Drawn By & Date/Time: cmastriano Nov 13, 2016 – 1:07pm
Drawing Location & Name: G:\JOBS\14\1404909\DWG\BMPs&DETAILS\PL_DN1404909(02)_NOTES-02-03.dwg

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-14.



ROCK FILTER NO.	LOCATION	D (FT.)	RIPRAP SIZE
ALL	ACCESS ROADS AS NECESSARY	2	R–3

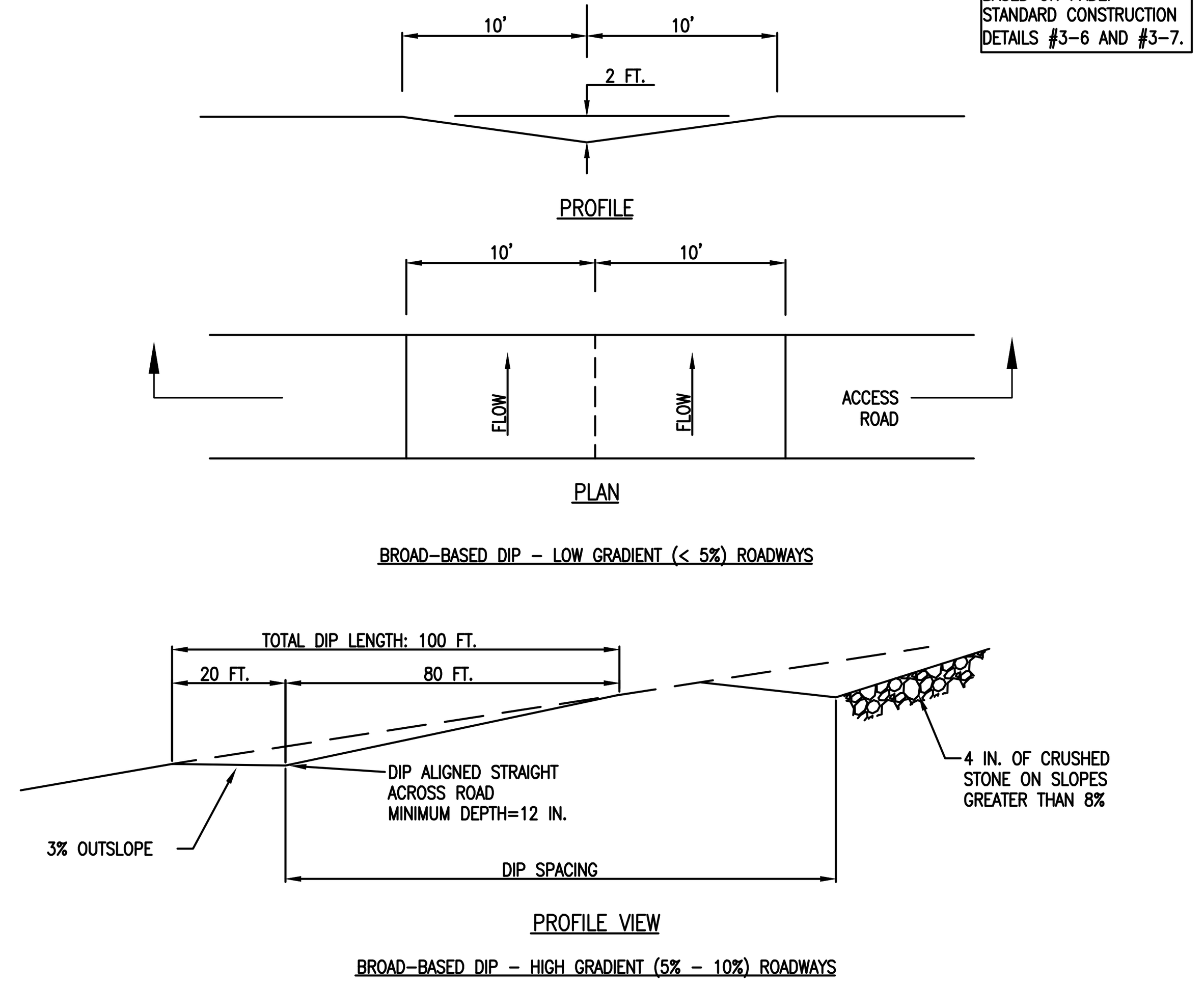
NOTES:

1. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE HEIGHT OF THE FILTER.
2. IMMEDIATELY UPON STABILIZATION OF EACH CHANNEL, INSTALLER SHALL REMOVE ACCUMULATED SEDIMENT, REMOVE ROCK FILTER, AND STABILIZE DISTURBED AREAS.
3. IN SPECIAL PROTECTION WATERSHEDS, HQ OR EV, THE ANTIDEGRADATION BEST AVAILABLE COMBINATION OF TECHNOLOGIES (ABACT) ROCK FILTER WITH THE 6" LAYER OF COMPOST ANCHORED ON TOP OF THE UPSLOPE SIDE OF THE AASHTO #57 STONE SHALL BE USED. IN NON-SPECIAL PROTECTION WATERSHEDS, THE COMPOST LAYER MAY BE OMITTED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
ARF ABACT ROCK FILTER
Williams.

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAILS #3-6 AND #3-7.



NOTES:

1. BROAD-BASED DIPS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN AND AT THE LOCATIONS SHOWN ON THE PLAN DRAWINGS.
2. DIPS SHALL BE ORIENTED SO AS TO DISCHARGE TO THE LOW SIDE OF THE ROADWAY.
3. DIPS SHALL BE INSPECTED DAILY. DAMAGED OR NON-FUNCTIONING DIPS SHALL BE REPAIRED BY THE END OF THE WORKDAY.
4. MAXIMUM SPACING OF BROAD-BASED DIPS SHALL BE AS SHOWN IN TABLE 3.2.

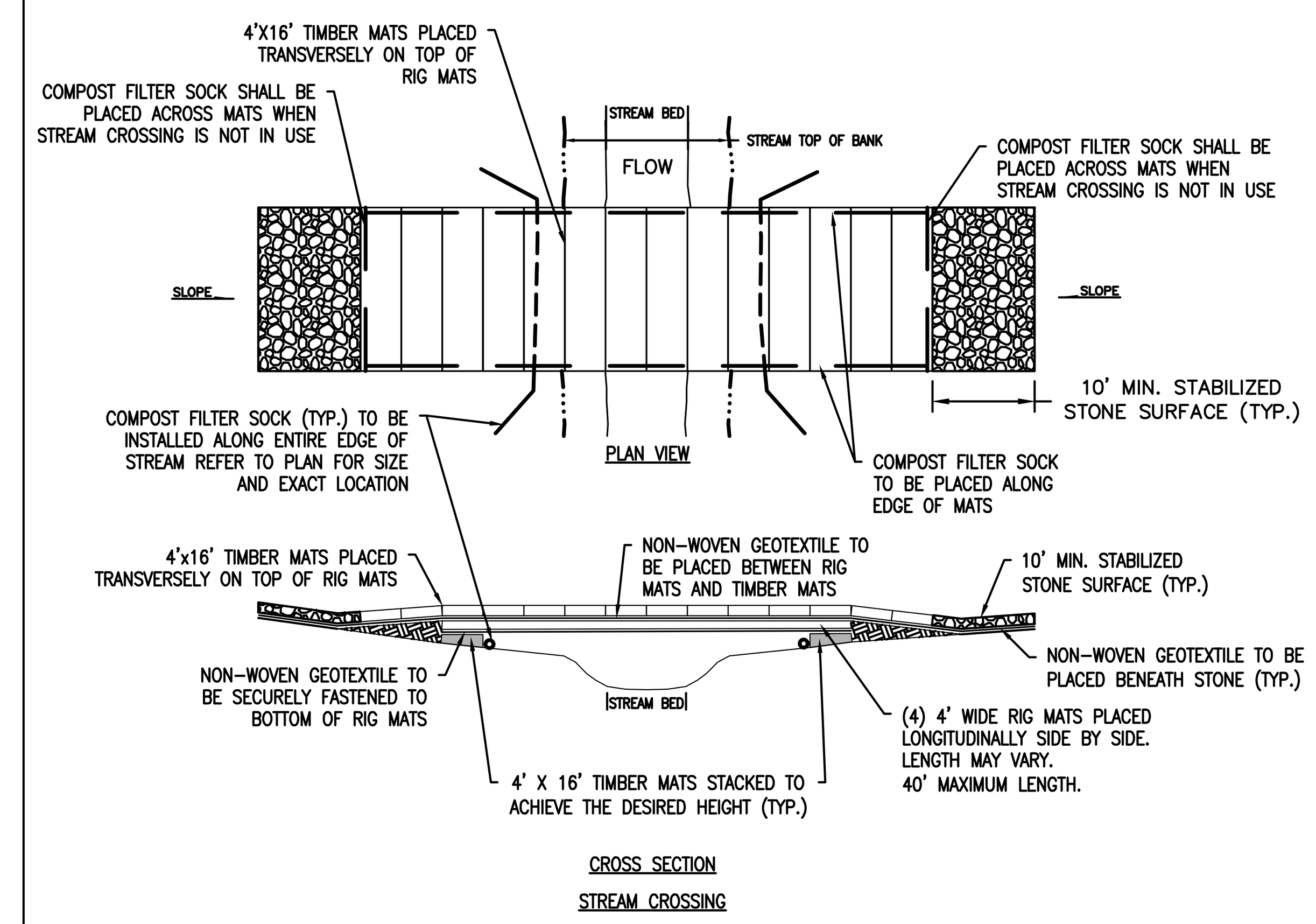
TABLE 3.2 – MAXIMUM SPACING OF BROAD-BASED DIPS

PERCENT SLOPE	SPACING BETWEEN BROAD-BASED DIPS (FT)
<2	300
3	235
4	200
5	180
6	165
7	155
8	150
9	145
10	140

USDA FOREST SERVICE

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
BBD BROAD-BASED DIP
Williams.



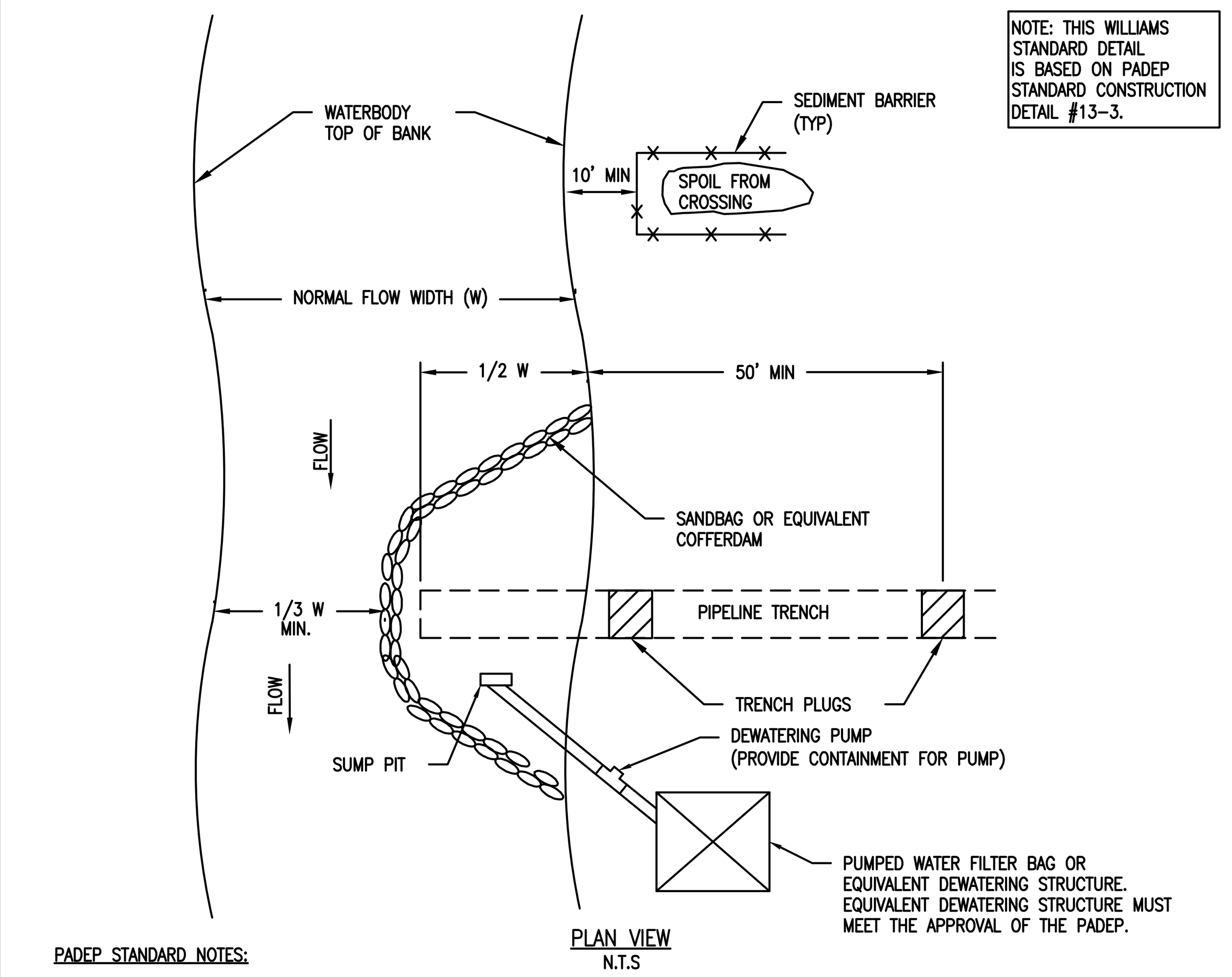
NOTES:

1. ALL STONE SURFACES ASSOCIATED WITH TEMPORARY EQUIPMENT CROSSINGS SHALL BE REMOVED UPON COMPLETION OF THE PROJECT.
2. ANY SEDIMENT TRACKED ONTO THE TIMBER MATS SHALL BE IMMEDIATELY REMOVED AND EVENLY DISPERSED UPSLOPE OF A PROPERLY FUNCTIONING COMPOST FILTER SOCK.
3. THE CONTRACTOR HAS THE OPTION TO INSTALL A PIPE OR JERSEY BARRIER (IF NEEDED) OUTSIDE OF BASE FLOW OF STREAM CHANNEL FOR ADDITIONAL SUPPORT.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
BEC BRIDGE EQUIPMENT CROSSING
Williams.

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #13-3.



PADEP STANDARD NOTES:

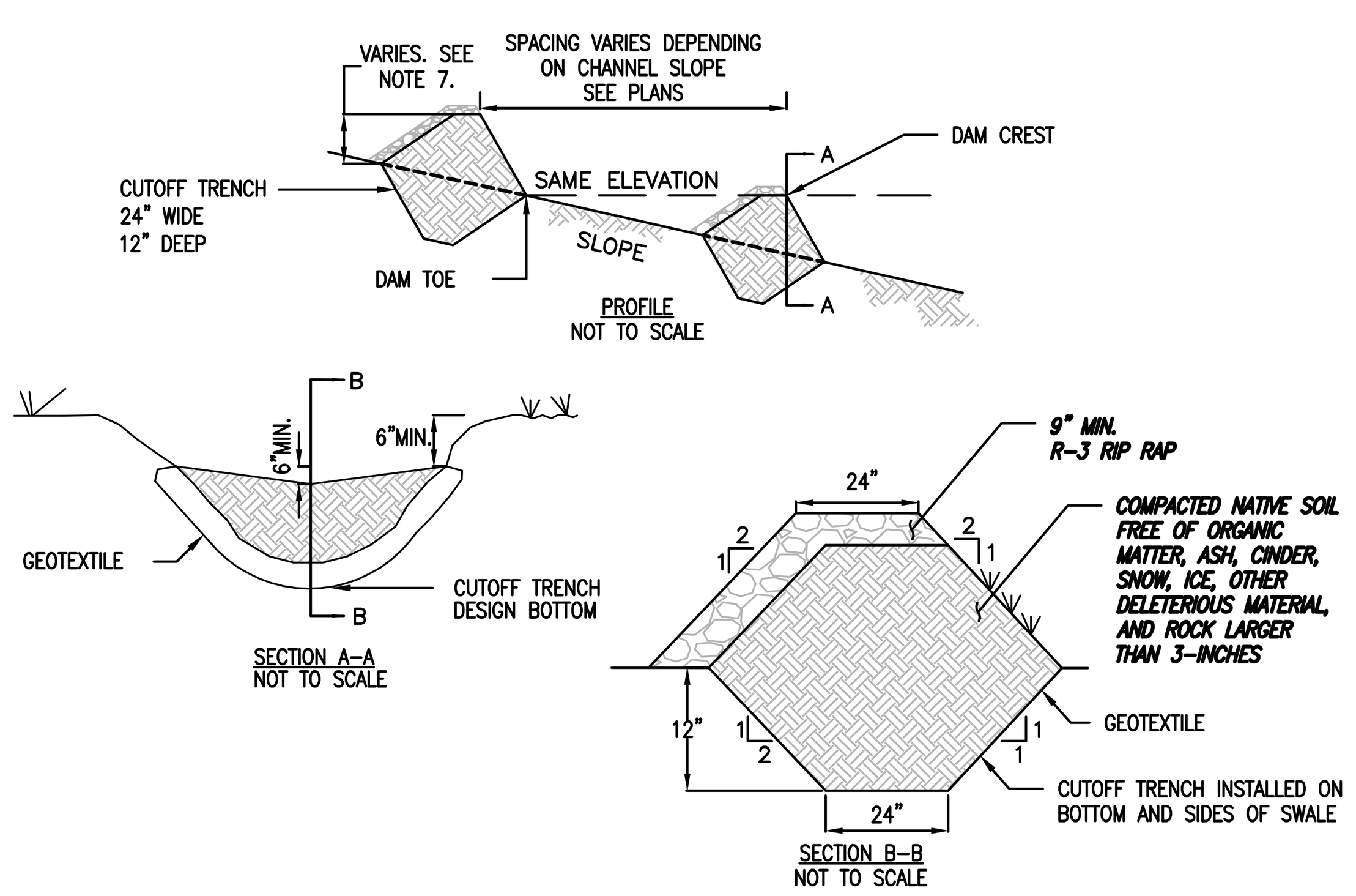
1. GRUBBING SHALL NOT TAKE PLACE WITHIN 50 FEET OF TOP-OF-BANK UNTIL ALL MATERIALS REQUIRED TO COMPLETE CROSSING ARE ON SITE AN PIPE IS READY FOR INTALLATION.
2. TRENCH PLUG SHALL BE INSTALLED WITHIN THE TRENCH ON BOTH SIDES OF THE WATERBODY CHANNEL.
3. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
4. HAZARDOUS OR POLLUTANT MATERIAL STORAGE AREAS SHALL BE LOCATED AT LEAST 100 FEET BACK FROM THE TOP OF WATERBODY BANK.
5. ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE WATERBODY CROSSING AREA.
6. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR WATERBODIES OR 48 HOURS OF INITIAL DISTURBANCE FOR INTERMEDIATE WATERBODIES UNLESS OTHERWISE AUTHORIZED.

WILLIAMS STANDARD NOTES:

1. APPROPRIATE WATERBODY BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.
2. THE WATERBODY CROSSING WILL GENERALLY BE COMPLETED IN 2 STAGES. THE DETAIL DEPICTS STAGE 1. STAGE 2 WILL GENERALLY BE COMPLETED USING THE SAME CONFIGURATION FROM THE OPPOSITE BANK.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CD COFFERDAM STREAM CROSSING
Williams.



NOTES:

1. CHECK DAMS ARE APPLICABLE FOR SMALL DITCHES AND SWALES AND ARE NOT TO BE USED IN LIVE FLOWING STREAMS.
2. CHECK DAMS SHALL BE INSTALLED SUCH THAT COMPLETE COVERAGE OF THE ENTIRE WIDTH OF THE DITCH OR SWALE IS ACHIEVED.
3. SEDIMENT SHALL BE REMOVED WHEN IT ACCUMULATES TO A DEPTH OF ONE-HALF THE ORIGINAL DAM HEIGHT.
4. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
5. INSTALL A CUTOFF TRENCH A MINIMUM OF 12 INCHES INTO THE SWALE BOTTOM AND SIDES TO PREVENT CUTTING AROUND THE DAM.
6. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
7. ***THE HEIGHT OF CHECK DAMS IN SWALES ALONG ACCESS ROADS IS EQUAL TO THE DEPTH OF SWALE MINUS 6 INCHES. THE DEPTH OF SWALE IS SHOWN ON THE "SOIL EROSION CONTROL PLAN" IN THE "EROSION CONTROL AND LAYOUT PLANS FOR ACCESS ROADS" AND THE AND THE "POST CONSTRUCTION STORMWATER PLAN" IN THE "POST CONSTRUCTION STORMWATER PLAN FOR PERMANENT ACCESS ROADS" UNDER SEPARATE COVERS.***

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
CDM CHECK DAM
Williams.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
ENGINEER
PE082757

[illegible]

SUZANNE KING REG NO. PE 082757

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	AJB
3	03/28/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	AJB
4	***Oct. 2016***	***BL***	***PADEP TECHNICAL DEFICIENCY RESPONSE #1***	***W0572385***	***JLK***	***AJB***

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

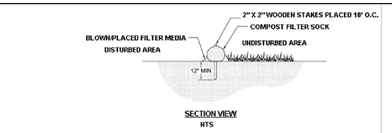
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams
GAS PIPELINE

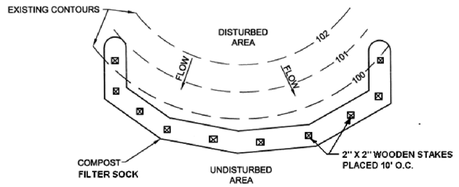
DRAWN BY: ELZ	DATE: 05/15/15	ISSUED FOR BID:		SCALE:	
CHECKED BY: JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:		REVISION:	4
APPROVED BY: SMK	DATE: 07/08/15	DRAWING NUMBER: ASR–BMP		SHEET	1
WO:				OF	11

Drawn By & Date/Time: joutlaw Nov 13, 2016 – 2:01pm
Drawing Location & Name: G:\JOBS14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(20S)_LA-BMP-01.dwg



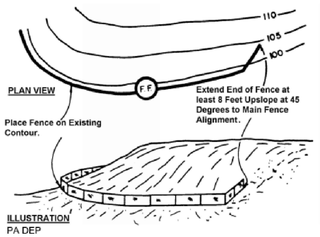
SECTION VIEW
NTS

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-1.



PLAN VIEW
NOT TO SCALE

FIGURE 4.1
Sediment Barrier Alignment



NOT TO SCALE

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

CFS COMPOST FILTER SOCK

1 OF 3

TABLE 4.1
COMPOST SOCK FABRIC MINIMUM SPECIFICATIONS

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photo-degradable	Photo-degradable	Bio-degradable	Photo-degradable	Photo-degradable
Sock Diameters	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		25 psi	25 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years
Two-ply systems					
Inner Containment Netting				HDPE biaxial net Continuously wound Fusion-welded junctures 3/4" X 3/4" Max. aperture size	
Outer Filtration Mesh				Composite Polypropylene Fabric (Woven layer and non-woven fleece mechanically fused via needle punch) 3/16" Max. aperture size	
Sock fabrics composed of burlap may be used on projects lasting 6 months or less.					

TABLE 4.2
COMPOST STANDARDS

ORGANIC MATTER CONTENT	25%-100% (DRY WEIGHT BASIS)
ORGANIC PORTION	FIBROUS AND ELONGATED
pH	5.5 – 8.5
MOISTURE CONTENT	30% – 60%
PARTICLE SIZE	30%-50% PASS THROUGH 3/8" SIEVE
SOLUBLE SALT CONCENTRATION	5.0 DS/M (MMHOS/CM) MAXIMUM

NOTES:

1. SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2. (SEE SHEET 2 OF 3 OF THIS DETAIL.)
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED THAT SHOWN ON FIGURE 4.2. (SEE SHEET 3 OF 3 OF THIS DETAIL). STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS COMPOST FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
5. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
6. BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
7. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.
8. SOCKS SHALL BE INSTALLED PARALLEL TO THE CONTOURS, TYPICALLY. IN AREAS WHERE THE SLOPE OF THE CATCHMENT AREA IS LESS THAN FIVE PERCENT, THE SOCKS MAY BE INSTALLED AS NECESSARY TO MINIMIZE THE NUMBER OF SEPARATE SOCK SEGMENTS ALONG THE EDGE OF DISTURBANCE.

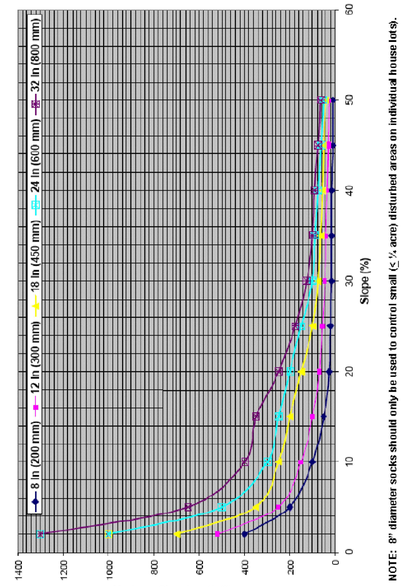
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

CFS COMPOST FILTER SOCK

2 OF 3

FIGURE 4.2
MAXIMUM PERMISSIBLE SLOPE LENGTH ABOVE COMPOST FILTER SOCKS



Adapted from Filtrexx

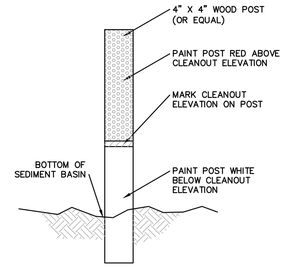
NOTE: 8" diameter socks should only be used to control small (≤ ¼ acre) disturbed areas on individual house lots.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

CFS COMPOST FILTER SOCK

3 OF 3

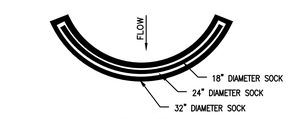


NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

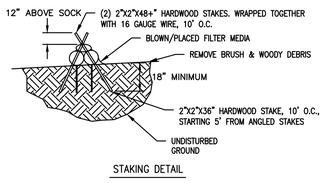
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

CS CLEANOUT STAKE

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-11.



PLAN VIEW



STAKING DETAIL

NOTES:

1. SEE COMPOST FILTER SOCK (CFS) DETAIL FOR MORE INFORMATION. SOCK MATERIAL SHALL MEET THE STANDARDS OF TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2.
2. COMPOST SOCK SEDIMENT TRAPS SHALL NOT EXCEED THREE SOCKS IN HEIGHT AND SHALL BE STACKED IN PYRAMIDAL FORM AS SHOWN ABOVE. MINIMUM TRAP HEIGHT IS ONE 24" DIAMETER SOCK. ADDITIONAL STORAGE MAY BE PROVIDED BY MEANS OF AN EXCAVATED SUMP 12" DEEP EXTENDING 1 TO 3 FEET UPSLOPE OF THE SOCKS ALONG THE LOWER SIDE OF THE TRAP.
3. THE MAXIMUM TRIBUTARY DRAINAGE AREA IS 5.0 ACRES. SINCE COMPOST SOCKS ARE "FLOW-THROUGH," NO SPILLWAY IS REQUIRED.
4. COMPOST SOCK SEDIMENT TRAPS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/3 THE HEIGHT OF THE SOCKS.
5. PHOTODEGRADABLE AND BIODEGRADABLE SOCKS SHALL NOT BE USED FOR MORE THAN 1 YEAR.
6. DESIGN NOTES:
   A. COMPOST SOCK SEDIMENT TRAP SHALL BE SIZED TO PROVIDE 2,000 CUBIC FEET OF STORAGE CAPACITY WITH 12" FREEBOARD FOR EACH ACRE TRIBUTARY TO THE TRAP.
   B. MINIMUM BASE WIDTH IS EQUIVALENT TO THE HEIGHT.
   C. SEDIMENT ACCUMULATION SHALL NOT EXCEED 1/3 THE TOTAL HEIGHT OF THE TRAP.
   D. SOCKS SHALL BE OF LARGER DIAMETER AT THE BASE OF THE TRAP AND DECREASE IN DIAMETER FOR SUCCESSIVE LAYERS AS INDICATED TO THE LEFT.
   E. ENDS OF THE TRAP SHALL BE A MINIMUM OF 1 FOOT HIGHER IN ELEVATION THAN THE MID-SECTION, WHICH SHALL BE LOCATED AT THE POINT OF DISCHARGE.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

CST COMPOST SOCK SEDIMENT TRAP

REFER TO THE QUANTITY, CROSSING AND ACIDIC SOIL TABLES FOR DETAIL AND DESIGN

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
STANDARD ENVIRONMENTAL DETAIL

CWC CLEAN WATER CROSSING (FLUME CROSSING)

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
ENGINEER PE082757

SUZANNE KING REG. NO. PE 082757

BLE Corporation
ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	*2*
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	2
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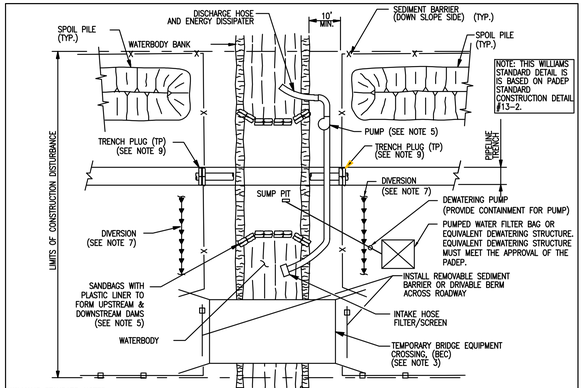


WILLIAMS STANDARD NOTES:

1. SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT-OF-WAY.
2. HARD DITCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL THE WATERBODY CROSSING IS INSTALLED AND BACKFILLED.
3. EQUIPMENT OPERATING IN THE WATERBODY SHALL BE LIMITED TO THAT NEEDED TO PERFORM CONSTRUCTION. IF OTHER TYPES OF EQUIPMENT MUST CROSS THE WATERBODY, CONTRACTOR SHALL PROVIDE AND USE A TEMPORARY BRIDGE EQUIPMENT CROSSING (BEC).
4. STAGING AREA(S) FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.
5. IMPLEMENTATION OF THE DAM-AND-PUMP CROSSING METHOD MUST MEET THE FOLLOWING PERFORMANCE CRITERIA:
   (A) USE SUFFICIENT PUMPS, INCLUDING ON-SITE BACKUP PUMPS, TO MAINTAIN DOWNSTREAM FLOWS.
   (B) CONSTRUCT DAMS WITH MATERIALS THAT PREVENT SEDIMENT AND OTHER POLLUTANTS FROM ENTERING THE WATERBODY (E.G., SANDBAGS OR CLEAN GRAVEL WITH PLASTIC LINER).
   (C) SCREEN PUMP INTAKES;
   (D) PREVENT STREAMBED SCOUR AT PUMP DISCHARGE.
   (E) MONITOR THE DAM AND PUMPS TO ENSURE PROPER OPERATION THROUGHOUT THE WATERBODY CROSSING.
6. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.
7. INSTALL DIVERSION TRENCHES AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY.
8. CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT, EXCEPT PUMPS, SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY.
9. INSTALL TRENCH PLUGS ON BOTH SIDES OF THE WATERBODY TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.
10. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY ADJACENT TO WATERBODY UNTIL STAGING AREA IS PREPARED AND WORK IN THE WATERBODY IS READY TO COMMENCE.
11. PUMP INTAKE SHALL BE MAINTAINED TO A SUFFICIENT DISTANCE FROM BOTTOM TO PREVENT SEDIMENT FROM ENTERING THE SYSTEM.
12. DO NOT EXCAVATE A SUMP FOR THE PUMP INTAKE.
13. TYPICAL PIPELINE BURIAL DEPTH SHALL PROVIDE 5' OF COVER. HOWEVER, IN AREAS OF CONSOLIDATED ROCK, COVER CAN BE REDUCED TO 2' MINIMUM.

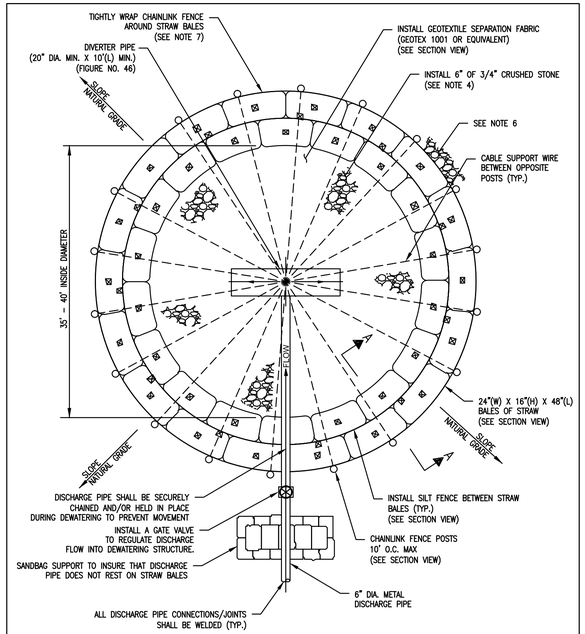
SUPPLEMENTAL PADEP NOTES:

1. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
2. ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
3. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

DPX — DAM AND PUMP STREAM CROSSING



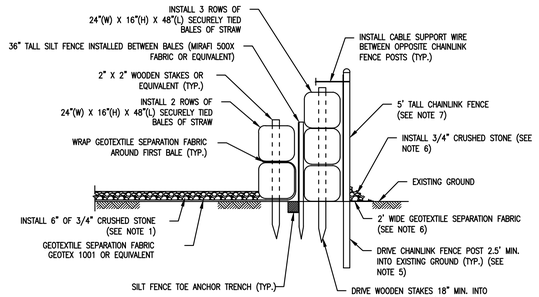
PLAN VIEW
SCALE: N.T.S.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

DS — HYDROSTATIC DEWATERING STRUCTURE

1 OF 2



SECTION A-A
SCALE: N.T.S.

NOTES:

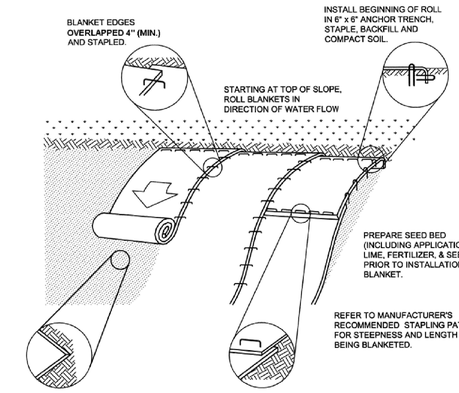
1. STRUCTURE SHALL BE PLACED ON A LEVEL WELL VEGETATED SITE SUCH THAT WATER WILL FLOW AWAY FROM STRUCTURE AND WORK AREAS AND MINIMIZE EROSION OF THE SURROUNDING AREA TO THE EXTENT PRACTICABLE.
2. AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR, ADDITIONAL EROSION AND SEDIMENTATION CONTROL DEVICES (E.G. RIPRAP CHECK DAMS, COMPOST FILTER SOCKS, ETC.) MAY BE REQUIRED TO BE INSTALLED DOWNSTREAM OF THE STRUCTURE IF EROSION BECOMES APPARENT DURING DEWATERING.
3. FLOW RATES AND VOLUMES THROUGH DISCHARGE AND DIVERTER PIPES SHALL BE SUCH THAT THE STRUCTURE WILL NOT OVERFLOW OR CAUSE EROSION. A MINIMUM FREEBOARD OF 3" MEASURED FROM THE TOP OF THE THIRD ROW OF STRAW BALES TO THE WATER SURFACE ELEVATION SHALL BE MAINTAINED AT ALL TIMES. ADDITIONAL DEWATERING STRUCTURES WILL BE ADDED AS NECESSARY TO FACILITATE DEWATERING OF THE PIPELINE AT THE APPROVED RATES.
4. THE 3/4" CRUSHED STONE INSTALLED WITHIN THE BASIN SHALL BE WASHED TO REMOVE ALL DIRT/FINE PARTICLES PRIOR TO INSTALLATION.
5. THE CHAINLINK FENCE POSTS SHALL BE DRIVEN A MINIMUM OF 2.5 FT. INTO STABLE, EXISTING GROUND. THE CONTRACTOR MAY BE REQUIRED TO INSTALL THE POLES DEEPER IF STABLE SUBSOILS ARE NOT ACHIEVED WITHIN 2.5 FT.
6. AT THE DISCRETION OF THE ENVIRONMENTAL INSPECTOR, ADDITIONAL GEOTEXTILE SEPARATION FABRIC AND 3/4" CRUSHED STONE MAY BE REQUIRED TO BE INSTALLED AROUND THE OUTSIDE EDGE OF THE DEWATERING STRUCTURE.
7. CHAINLINK FENCE SHALL INSTALLED TIGHTLY AGAINST THE STRAW BALES AND SECURELY FASTENED TOGETHER AT ALL JOINTS WITH CABLE TENSION WIRE AND STRETCHER BARS.
8. THE ENVIRONMENTAL INSPECTOR SHALL HAVE THE AUTHORITY TO MODIFY THE DESIGN AS REQUIRED TO PREVENT EROSION AND SEDIMENTATION DOWNSTREAM OF THE STRUCTURE.
9. STRAW BALES SHALL BE STACKED SUCH THAT THE JOINTS ARE STAGGERED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

DS — HYDROSTATIC DEWATERING STRUCTURE

2 OF 2



NOT TO SCALE

NOTES:

1. SEED AND SOIL AMENDMENTS SHALL BE APPLIED ACCORDING TO THE RATES IN THE PLAN DRAWINGS PRIOR TO INSTALLING THE BLANKET.
2. PROVIDE ANCHOR TRENCH AT TOE OF SLOPE IN SIMILAR FASHION AS AT TOP OF SLOPE.
3. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS, AND GRASS.
4. BLANKET SHALL HAVE GOOD CONTINUOUS CONTACT WITH UNDERLYING SOIL THROUGHOUT ENTIRE LENGTH. LAY BLANKET LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH SOIL. DO NOT STRETCH BLANKET.
5. STAPLING OF THE BLANKET SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. BLANKETED AREAS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT UNTIL PERENNIAL VEGETATION IS ESTABLISHED TO A MINIMUM UNIFORM 70% COVERAGE THROUGHOUT THE BLANKETED AREA. DAMAGED OR DISPLACED BLANKETS SHALL BE RESTORED OR REPLACED WITHIN 4 CALENDAR DAYS.
7. BIODEGRADABLE STAPLES SHALL BE USED.

WILLIAMS SUPPLEMENTAL NOTES:

1. CONTRACTOR SHALL USE SINGLE MAT STRAW FOR SLOPES FLATTER THAN 3:1.
2. HYDRAULIC APPLIED EROSION CONTROL BLANKETS MAY BE USED IN LIEU OF ECB.

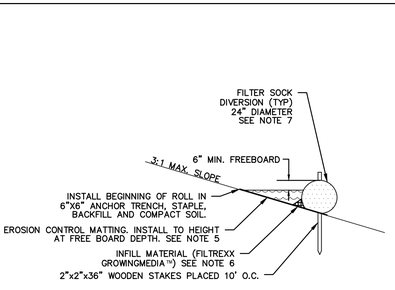
NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #11-1.

ADAPTED FROM PADEP

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

ECB — EROSION CONTROL BLANKET



SINGLE INSTALLATION SECTION VIEW
N.T.S.

NOTES:

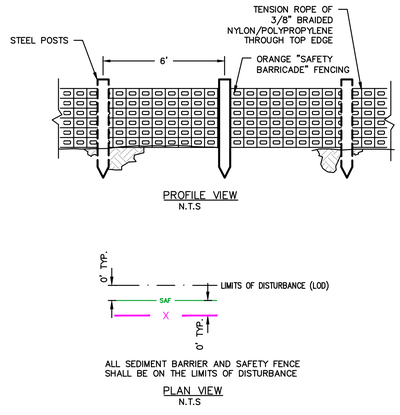
1. REMOVE SEDIMENT FROM THE UPSLOPE SIDE OF THE FILTER SOCK DIVERSION WHEN ACCUMULATION HAS REACHED 1/2 OF THE EFFECTIVE HEIGHT OF THE FILTER SOCK DIVERSION. SEDIMENT SHALL ALSO BE REMOVED DURING INSTALLATION OF FINAL STABILIZATION MEASURES (E.G. EROSION CONTROL MATTING, SEEDING, MULCHING, ETC.) TO LIMIT POTENTIAL DISTURBANCE FROM CONSTRUCTION EQUIPMENT WHILE VEGETATION IS ESTABLISHING.
2. SLOPES GREATER THAN 5% MAY REQUIRE ADDITIONAL STABILIZATION PRACTICES AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
3. THE FILTER SOCK DIVERSION SHALL BE FILLED WITH FILTREXX GROWINGMEDIA™ OR APPROVED EQUAL AND SEEDED AT THE TIME OF INSTALLATION. SOIL OR AND MAY BE ADDED TO THE GROWINGMEDIA™ TO ADD WIGHT AND BALLAST TO THE RUNOFF DIVERSION.
4. IF UNDERMINING IS OBSERVED CONTRACTOR SHALL PROVIDE AND MAINTAIN GROWING MEDIA PACKING AT TOE OF FILTER SOCK DIVERSION.
5. EROSION CONTROL MATTING INSTALLED UNDER AND ADJACENT TO THE FILTER SOCK DIVERSION FOR ACCESS ROADS SHALL BE NORTH AMERICAN GREEN C-125™ OR APPROVED EQUIVALENT AND SEEDED AT THE TIME OF INSTALLATION. REFER TO TABLE 2: TEMPORARY CLEAN WATER DIVERSION OF THIS PLAN SET FOR THE REQUIRED NORTH AMERICAN GREEN (OR APPROVED EQUIVALENT) LINING ASSOCIATED WITH THE PIPELINE FILTER SOCK DIVERSIONS. REFER TO THE EROSION CONTROL BLANKET DETAIL (ECB) ON PAGE 3 FOR PROPER INSTALLATION OF EROSION CONTROL MATTING.
6. INFILL MATERIAL (FILTREXX GROWINGMEDIA™ OR APPROVED EQUAL) SHALL BE MODIFIED TO REDUCE PERMEABILITY AND PROMOTE VEGETATIVE GROWTH IN ACCORDANCE WITH BMP REQUIREMENTS. THE GROWINGMEDIA™ SHALL BE DISPERSED ON SITE OR THE FILTER SOCK DIVERSION SHALL BE REMOVED ONCE THE DISTURBED AREA HAS BEEN PERMANENTLY STABILIZED OR AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.
7. MAXIMUM EFFECTIVE HEIGHT OF A 24" FILTER SOCK IS 19", THEREFORE TOTAL DEPTH IS ALSO 19". EFFECTIVE HEIGHT MINUS FREEBOARD (6") SHOULD NOT EXCEED 13".
8. EROSION CONTROL MATTING SHOULD NOT EXTEND UPHILL PAST THE LIMIT OF DISTURBANCE.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

FD — FILTER SOCK DIVERSION

1 OF 1



PROFILE VIEW
N.T.S

ALL SEDIMENT BARRIER AND SAFETY FENCE SHALL BE ON THE LIMITS OF DISTURBANCE

PLAN VIEW
N.T.S

NOTES:

1. INSTALL CONSTRUCTION FENCING ALONG THE LOD, AS NECESSARY, AND AROUND AREAS TO BE PROTECTED, SUCH AS WETLANDS AND TREES.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

FEN — CONSTRUCTION FENCE

1 OF 1

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — SUZANNE MARIE KING — ENGINEER — PE082757

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	*2*
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	3
WO:				OF	11

Drawn By & Date/Time: joutlaw Nov 13, 2016 - 2:05pm
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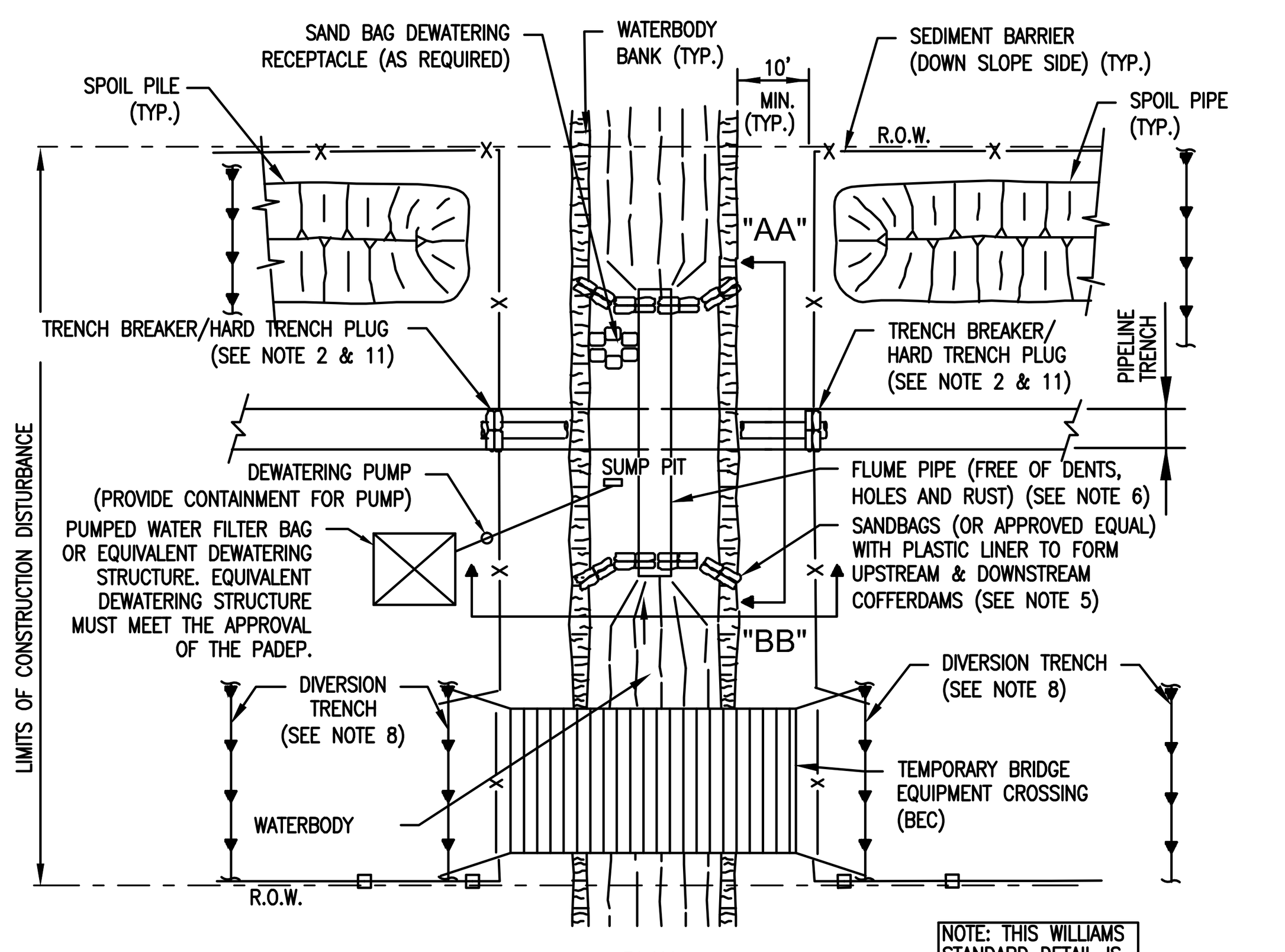


PLAN
SCALE: N.T.S.

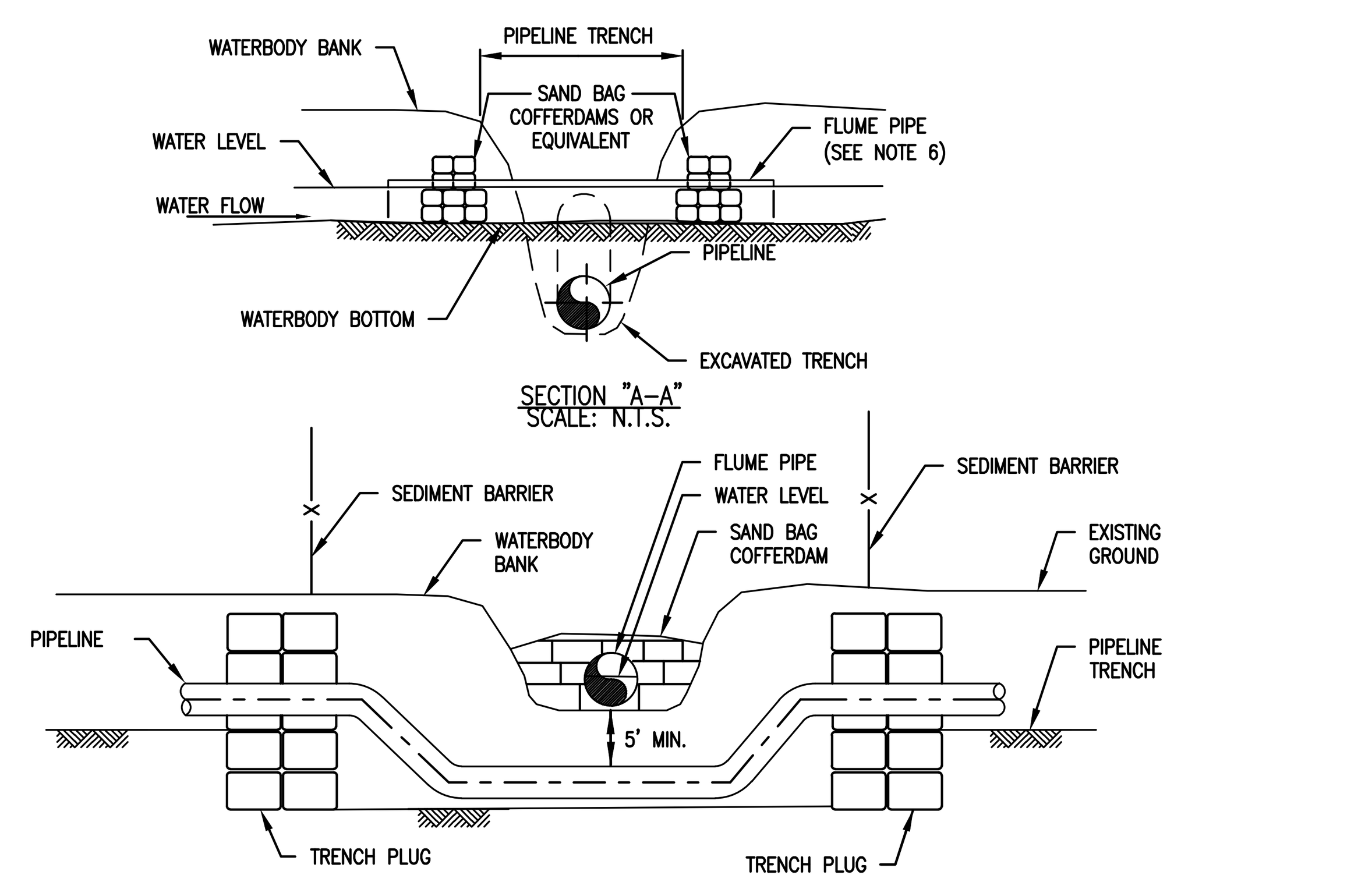
NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #13-1.

NOTES:

1. SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT-OF-WAY.
2. HARD TRENCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE THE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL THE WATERBODY CROSSING IS INSTALLED AND BACKFILLED.
3. EQUIPMENT OPERATING IN THE WATERBODY SHALL BE LIMITED TO THAT NEEDED TO PERFORM CONSTRUCTION. IF OTHER TYPES OF EQUIPMENT MUST CROSS THE WATERBODY, THE CONTRACTOR SHALL PROVIDE AND USE A TEMPORARY BRIDGE EQUIPMENT CROSSING.
4. STAGING AREA(S) FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM THE WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.
5. FLUME CROSSING METHOD REQUIREMENTS INCLUDE:
   (A) INSTALL FLUME PIPE(S) AFTER BLASTING (IF NECESSARY), BUT BEFORE ANY TRENCHING.
   (B) USE SAND BAG OR SAND BAG AND PLASTIC SHEETING DIVERSION STRUCTURES OR EQUIVALENT TO DEVELOP AN EFFECTIVE SEAL AND TO DIVERT WATERBODY FLOW THROUGH THE FLUME PIPE (SOME MINOR MODIFICATIONS TO THE WATERBODY BOTTOM MAY BE REQUIRED TO ACHIEVE AN EFFECTIVE SEAL).
   (C) PROPERLY ALIGN FLUME PIPE(S) TO PREVENT BANK EROSION AND WATERBODY CHANNEL BED SCOUR.
   (D) DO NOT REMOVE FLUME PIPE DURING TRENCHING, PIPE LAYING, OR BACKFILLING ACTIVITIES, OR INITIAL STREAM BED RESTORATION EFFORTS.
   (E) REMOVE ALL FLUME PIPES AND DAMS THAT ARE NOT ALSO PART OF THE EQUIPMENT BRIDGE AS SOON AS FINAL CLEANUP OF THE STREAM BED AND BANK IS COMPLETE.
6. THE FLUME PIPE MUST BE SIZED TO ADEQUATELY CONVEY MAXIMUM ANTICIPATED FLOW RATES AT THE TIME OF THE CROSSING WITHOUT FLOODING THE TRENCH, WHILE TO MAINTAINING ADEQUATE FLOW RATES TO PROTECT AQUATIC LIFE AND PREVENT THE INTERRUPTION OF EXISTING DOWNSTREAM USES.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
FX
FLUME STREAM CROSSING
Williams.
1 OF 2



SECTION "A-A"
SCALE: N.T.S.

SECTION "B-B"
SCALE: N.T.S.

7. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.
8. INSTALL DIVERSION TRENCHES AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY AND AT 50' FROM WATERBODY BANKS.
9. CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT, EXCEPT FOR PUMPS, SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY UNLESS OTHERWISE APPROVED BY THE ENVIRONMENTAL INSPECTOR.
10. WATER ACCUMULATING IN THE WORK SPACE SHALL BE PUMPED TO A FILTER BAG PRIOR TO DISCHARGE TO A WATERBODY.
11. INSTALL TRENCH BREAKERS ON BOTH SIDES OF THE WATERBODY TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.
13. EXCEPT FOR BLASTING AND OTHER ROCK BREAKING MEASURES, THE CONTRACTOR SHALL COMPLETE IN WATERBODY CONSTRUCTION ACTIVITIES (INCLUDING TRENCHING, PIPE INSTALLATION, BACKFILL, AND RESTORATION OF THE WATERBODY CHANNEL CONTOURS) WITHIN 24 HOURS. WATERBODY BANKS AND UNCONSOLIDATED WATERBODY CHANNELS MAY REQUIRE ADDITIONAL RESTORATION AFTER THIS PERIOD.
14. TYPICAL PIPELINE BURIAL DEPTH SHALL PROVIDE 5' OF COVER. HOWEVER, IN AREAS OF CONSOLIDATED ROCK, COVER CAN BE REDUCED TO 2' MINIMUM.

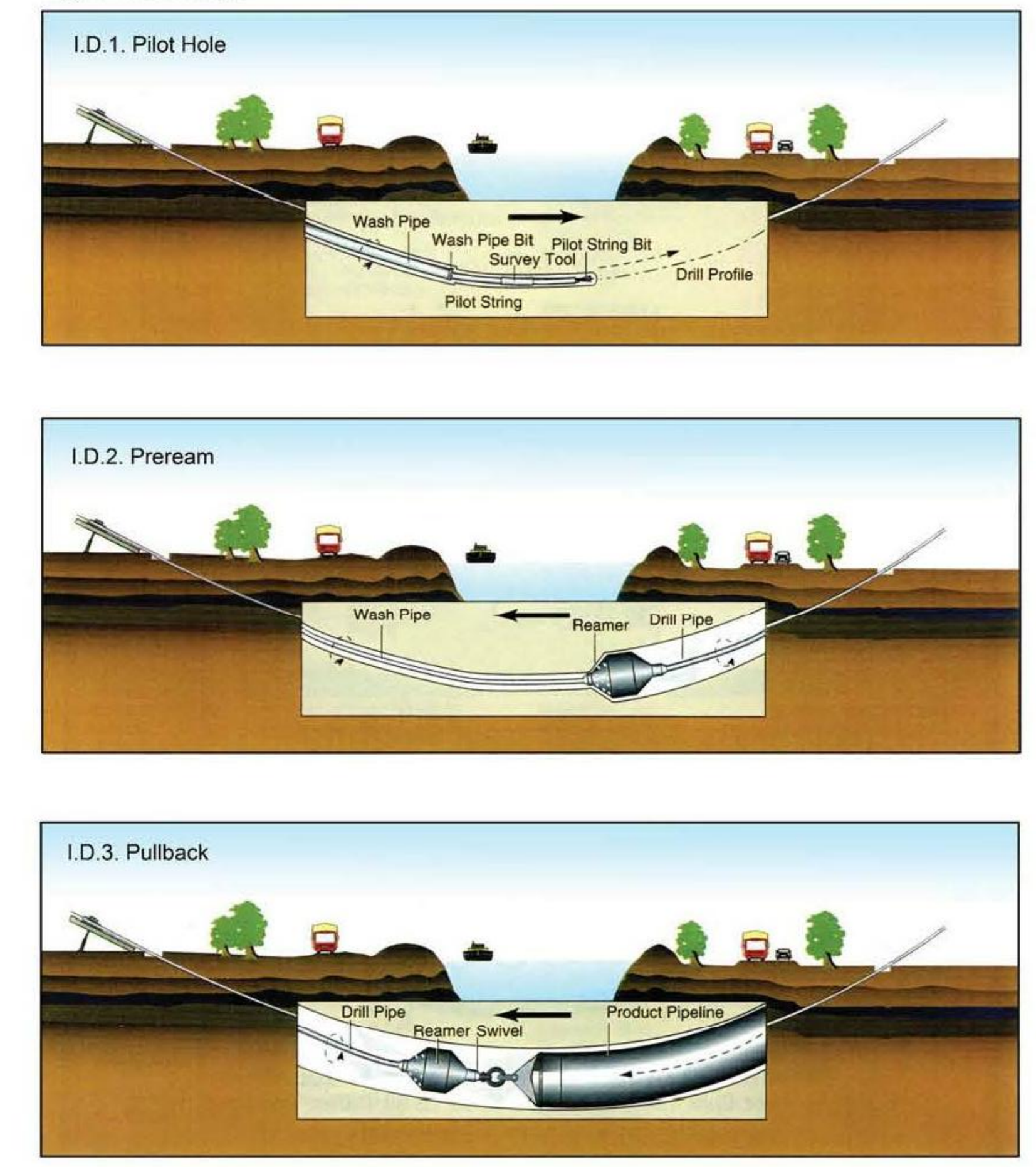
SUPPLEMENTAL PADEP NOTES:

1. WATER ACCUMULATING WITHIN THE WORK AREA SHALL BE PUMPED TO A PUMPED WATER FILTER BAG OR SEDIMENT TRAP PRIOR TO DISCHARGING INTO ANY SURFACE WATER.
2. ALL EXCESS EXCAVATED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE STREAM CROSSING AREA.
3. ALL DISTURBED AREAS WITHIN 50 FEET OF TOP-OF-BANK SHALL BE BLANKETED OR MATTED WITHIN 24 HOURS OF INITIAL DISTURBANCE FOR MINOR STREAMS OR 48 HOURS OF INITIAL DISTURBANCE FOR MAJOR STREAMS UNLESS OTHERWISE AUTHORIZED. APPROPRIATE STREAM BANK PROTECTION SHALL BE PROVIDED WITHIN THE CHANNEL.

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

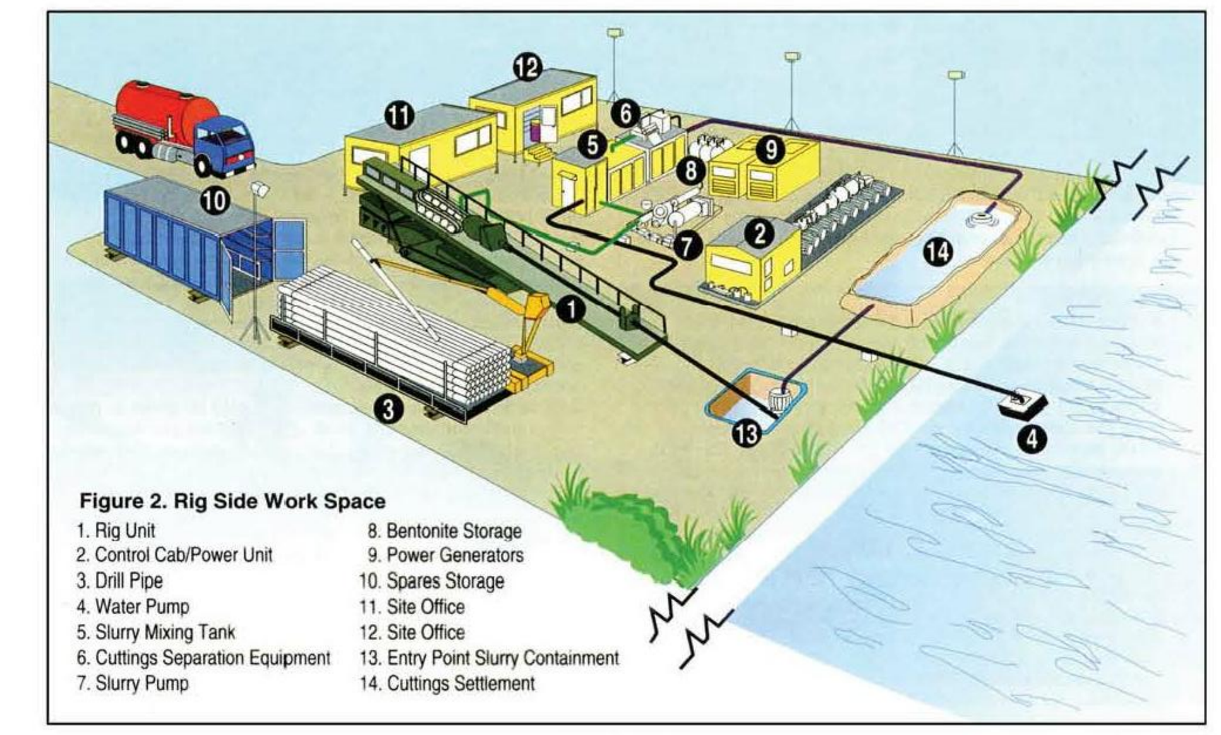
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
FX
FLUME STREAM CROSSING (SECTIONS)
Williams.
2 OF 2

Figure 1. Technique

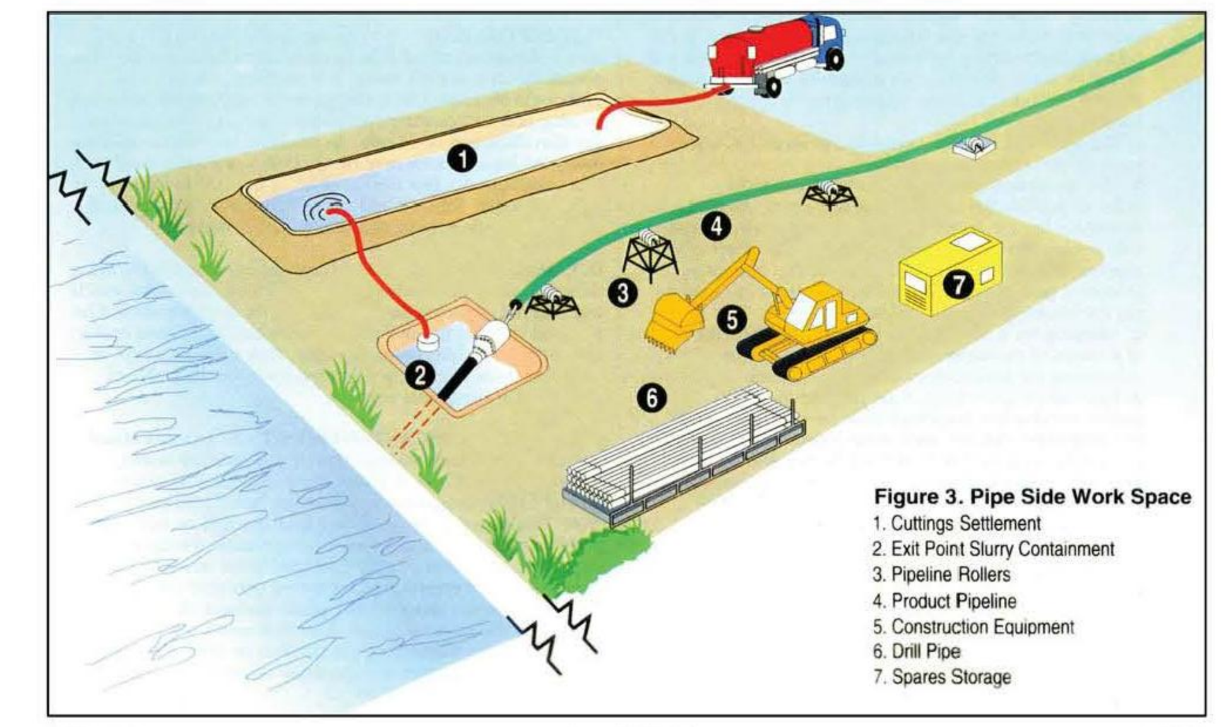


NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
HDD
HORIZONTAL DIRECTIONAL DRILL
Williams.
1 OF 2



DCCA4 PIPELINE DIGEST AUGUST 1995

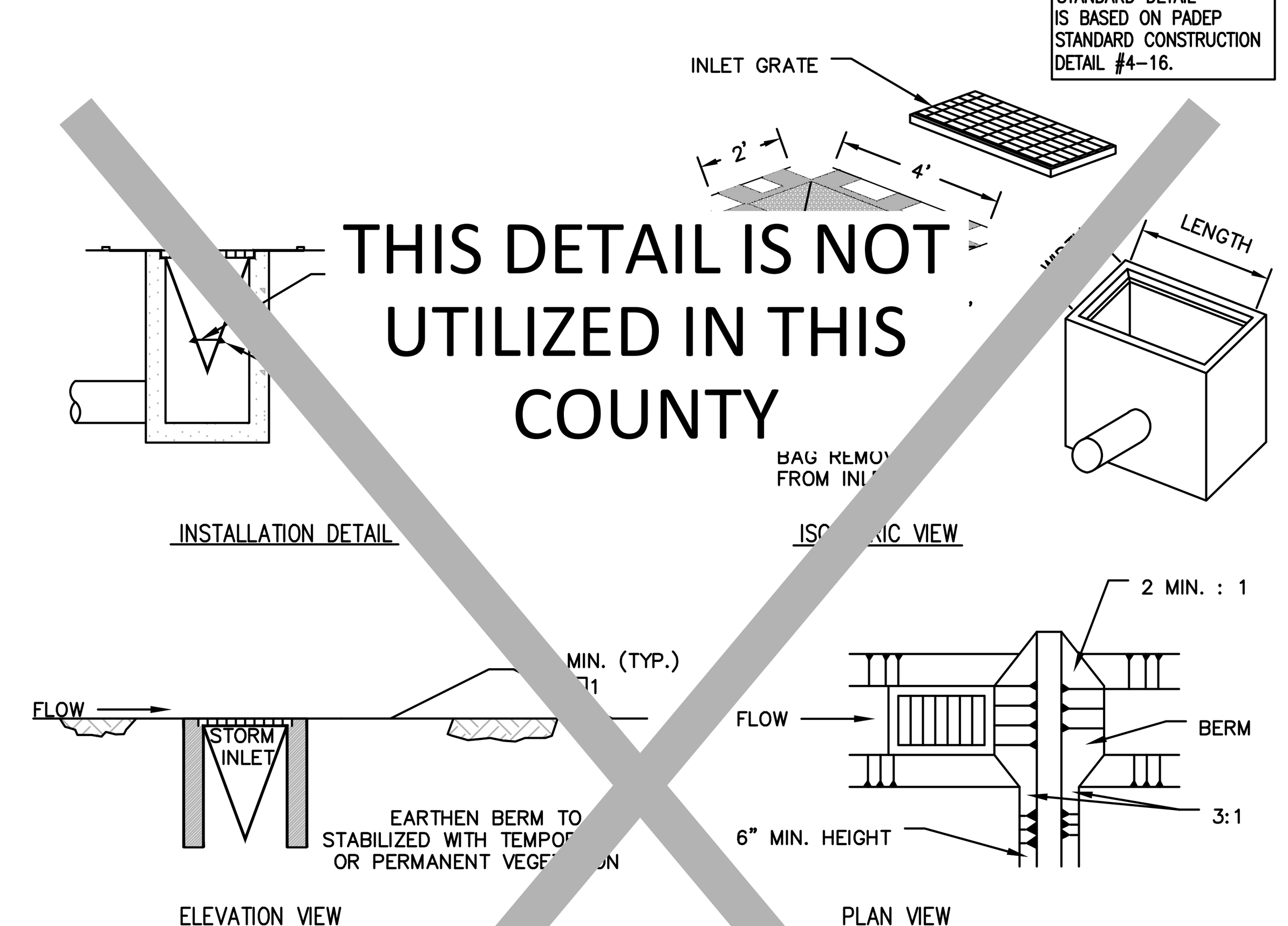


AUGUST 1995 PIPELINE DIGEST DCCA5

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
HDD
HORIZONTAL DIRECTIONAL DRILL
Williams.
2 OF 2

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-16.



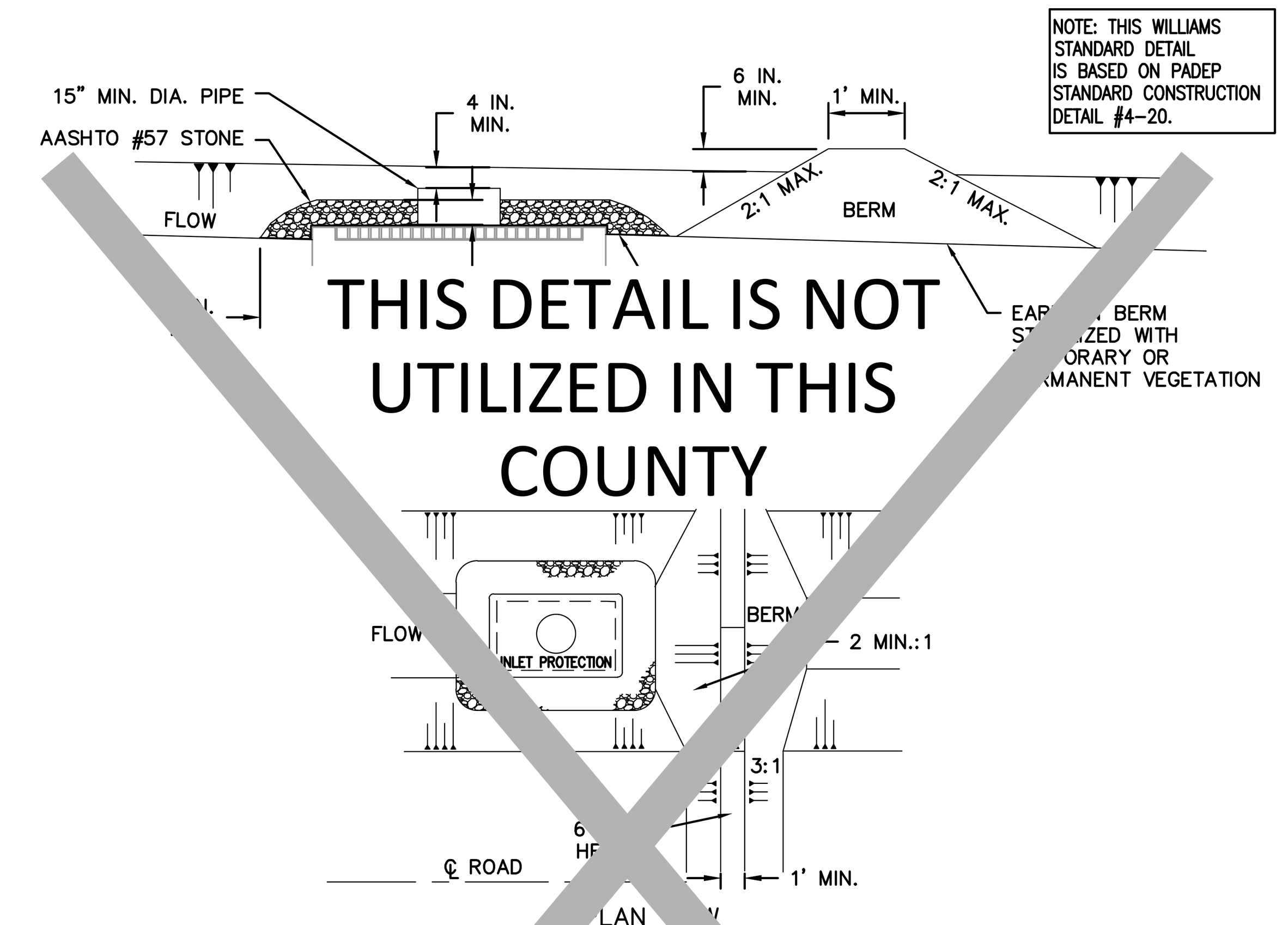
NOTES:

1. MAXIMUM DRAINAGE AREA = 1/2 AC
2. INLET PROTECTION SHALL NOT BE UIRED FOR INLET TRIBUTARY TO SEDIMENT BASIN O AP. BERMS SHALL BE REQUIRED FOR ALL INSTALLATIONS.
3. ROLLED EARTHEN BERM IN WAY SHALL BE MAINTAINED UNTIL ROADWAY IS STONED. ROAD ASE BERM SHALL BE MAINTAINED UNTIL ROADW PAVED. EARTHEN BERM IN CHANNEL SHALL BE MAINTAINED UNTI MANENT STABILIZATION IS COMPLETED OR REMAIN ANENTLY.
4. AT A MINIMUM, THE IC SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 120 LBS, A MINIMUM ST STRENGTH OF 200 PSI, AND A MINIM RAPEZOIDAL TEAR STRENGTH OF 50 LBS. FILTER BAGS SHALL BE CAPABLE OF TR G ALL PARTICLES NOT PASSING A 40 SIEVE.
5. INLET FILTE S SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. BAGS SHALL MPTIED AND RINSED O LACED WHEN HALF FULL OR WHEN FLOW CAPACITY HAS BEEN REDUCED SO AS TO CAUSE FLOOD R BYPASSING OF THE . DAMAGED OR CLOGGED BAGS SHALL BE REPLACED. A SUPPLY SHALL BE MAINTAINED ON SITE FOR ACEMENT OF B ALL NEEDED REPAIRS SHALL BE INITIATED IMMEDIATELY AFTER THE INSPECTION. DISPOSE OF ACCUMULATE IMENT AS WE ALL USED BAGS ACCORDING TO THE PLAN NOTES.
6. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
IPF
FILTER BAG INLET PROTECTION - TYPE M
Williams.

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-20.



NOTES:

1. INLET PROTECTION SHALL NOT BE RE D FOR INLET TRIBUT TO SEDIMENT BASIN OR TRAP. BERMS SHALL BE REQUIRED FOR ALL INST IONS NOT LOCATED AT POINT.
2. ROLLED EARTHEN BERM IN ROA SHALL BE PROVIDED AND MAIN D IMMEDIATELY DOWN GRADIENT OF THE PROTECTED INLET UNTIL WAY IS STONED. ROAD SUBBASE BE N ROADWAY SHALL BE MAINTAINED UNTIL ROADWAY IS PAVED. HEN BERM IN CHANNEL SHALL BE MAIN D UNTIL PERMANENT STABILIZATION IS COMPLE OR TO REMAIN PERMANENTLY.
3. STONE INLET PROTEC AND BERM FOR A TYPE M INLET CAN BE USED IN CRE MAXIMUM DRAINAGE AREA WITH 15 IN. LOW PIPE AND 4 IN. HEAD. A PERFORATED PLATE WEL A METAL RISER MAY NOT BE SUBSTIT FOR THE WIRE MESH. A SLOTTED PLATE WELDED TO THE RI AY BE USED IN CONJUNCTION HE WIRE MESH IF CALCULATIONS ARE PROVIDED TO SHOW SUF T CAPACITY OF THE INLET TO AC THE PEAK RUNOFF FOR A 2-YEAR STORM EVENT FROM THE TRIBU RAINAGE AREA. TOP OF PIP ALL BE AT LEAST 6 INCHES BELOW ADJACENT ROADWAY IF PONDED WA OULD POSE A SAFETY H D TO TRAFFIC. EARTHEN BERM SHALL BE ROLLED.
4. SEDIM SHALL BE REMOVED WHEN IT REACHES HALF THE HEIGHT OF THE STONE. DAMAGED LOGGED INST TIONS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
5. SYSTEMS DISCHARGING TO HQ OR EV SURFACE WATER, A 6 IN. THICK COMPOST LAYER SHALL CURELY ANCHORED ON OUTSIDE AND OVER TOP OF STONE. COMPOST SHALL MEET THE STANDARDS ABLE 4.2 OF THE PA DEP EROSION CONTROL MANUAL.
6. DO NOT USE ON MAJOR PAVED ROADWAYS WHERE PONDING MAY CAUSE TRAFFIC HAZARDS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL
IPS
STONE AND CONCRETE INLET PROTECTION - TYPE M
Williams.

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
ENGINEER
PE082757

SUZANNE KING REG NO. PE 082757

BL Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams
GAS PIPELINE

DRAWN BY: ELZ	DATE: 05/15/15	ISSUED FOR BID:		SCALE:	
CHECKED BY: JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:		REVISION:	2
APPROVED BY: SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP		SHEET	4
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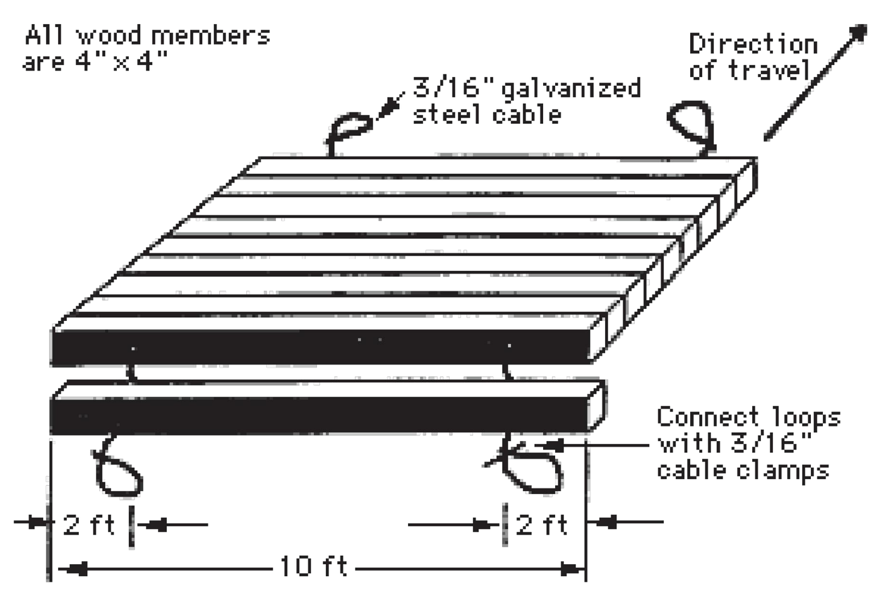
Drawn By & Date/Time: joutlaw Nov 13, 2016 - 2:07pm
Drawing Location & Name: G:\JOBS14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(20S)_LA-BMP-04.dwg

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP FIGURE 3.07.



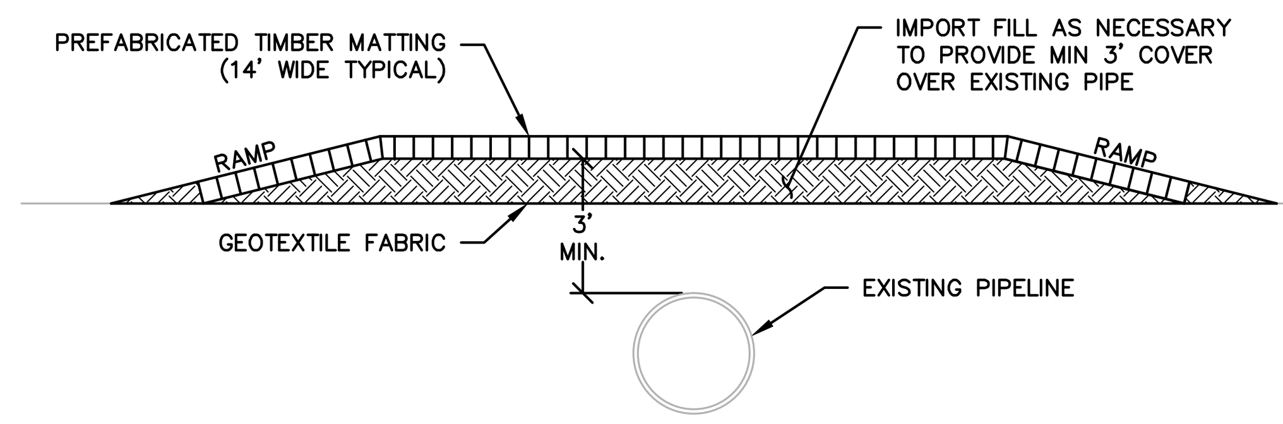
University of Minnesota FS 07009

A geotextile underlayment shall be used under the wood mat.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

MAT.1 TIMBER MATTING IN WETLANDS OR AT LOW POINTS



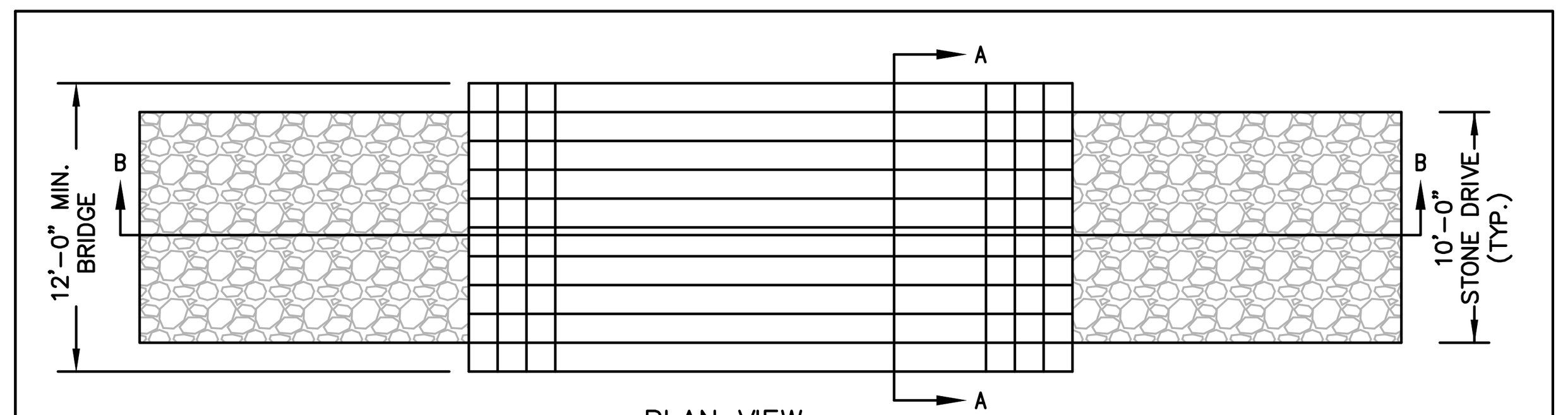
NOTES:

1. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE THE NUMBER OF EQUIPMENT MATS REQUIRED.

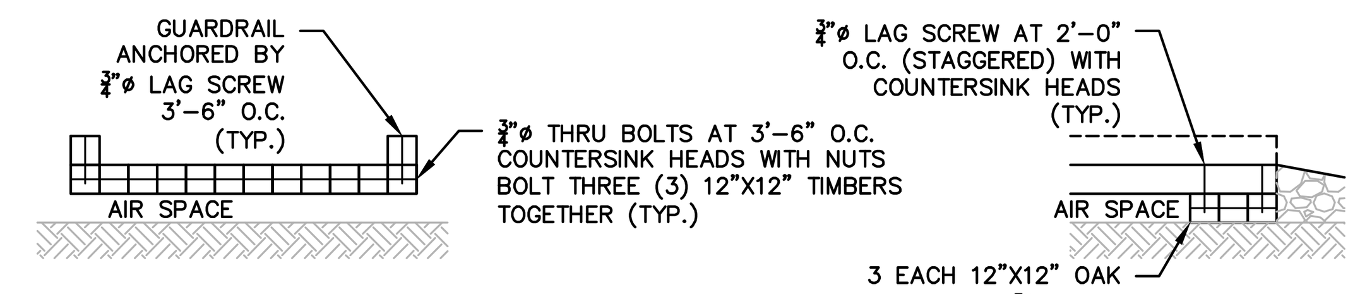
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

MAT.2 TIMBER MATTING WITH FILL OVER EXISTING PIPELINES

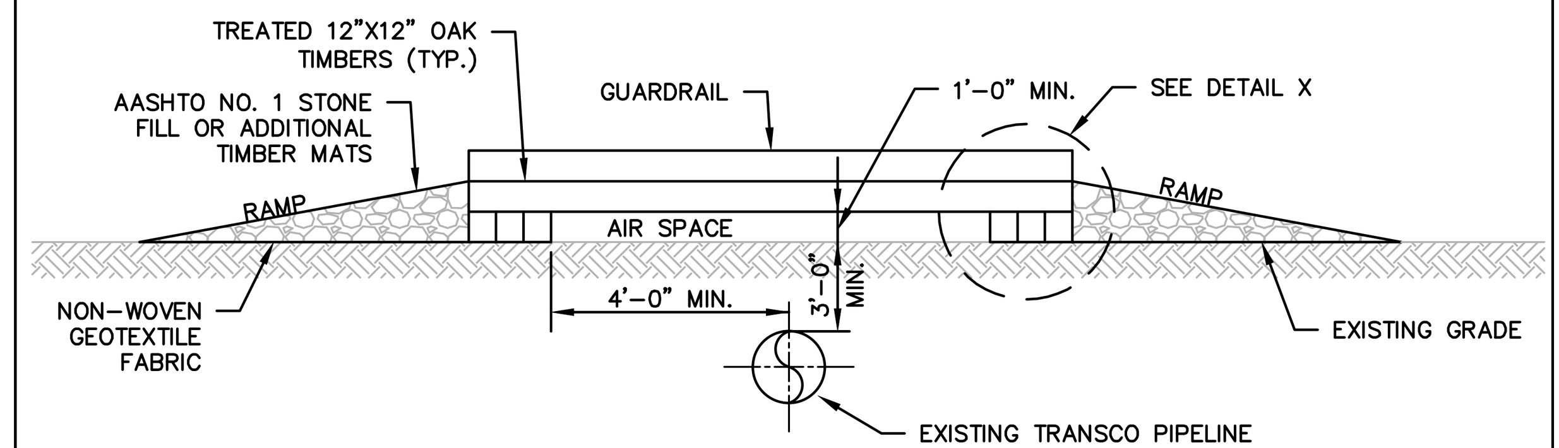


PLAN VIEW



SECTION A–A

DETAIL X



SECTION B–B

NOTES:

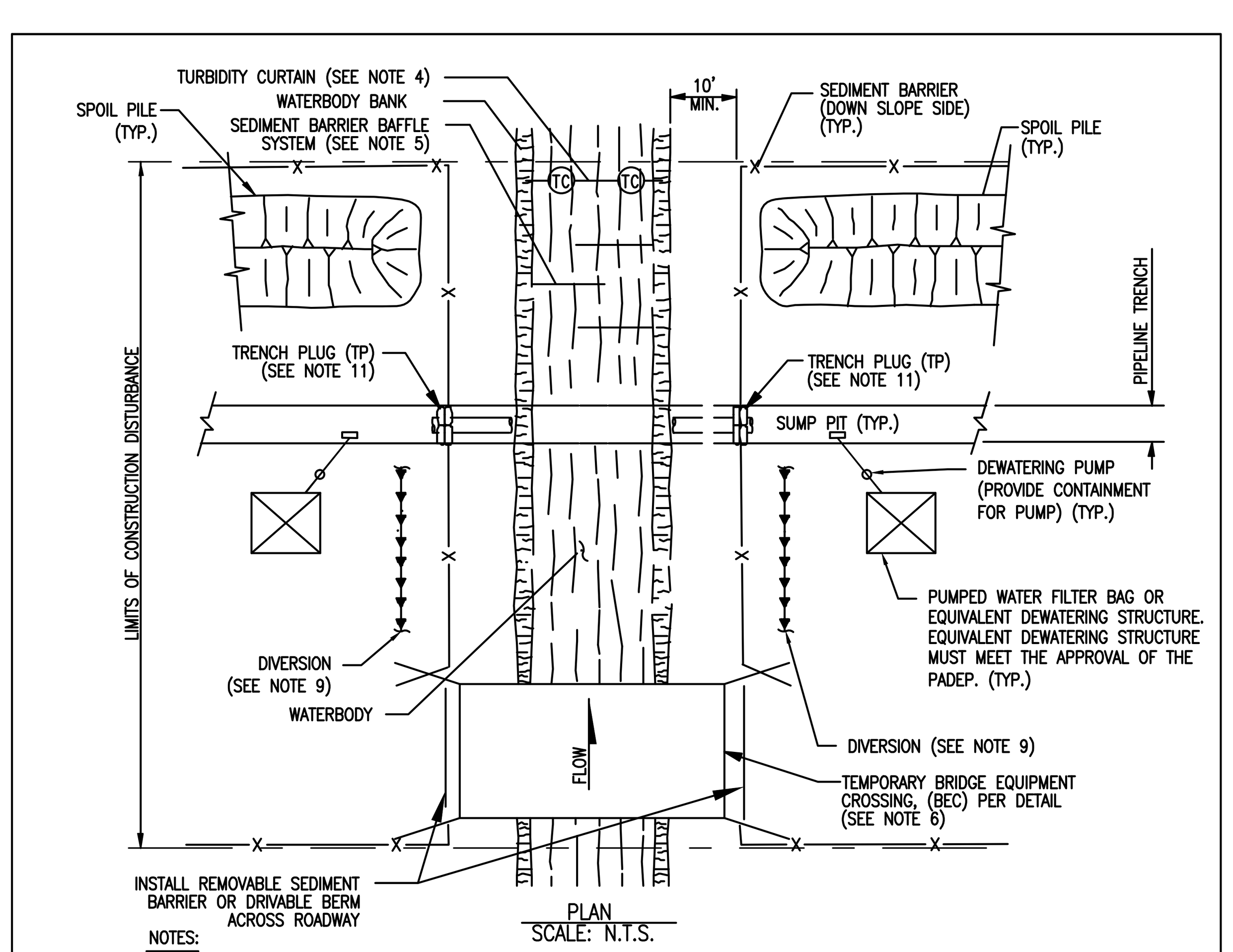
1. IF STONE USED FOR RAMP, INSTALL 1 (ONE) LAYER OF NON-WOVEN GEOTEXTILE FABRIC PRIOR TO INSTALLING THE STONE.

2. MINIMUM WIDTH OF BRIDGE IS 12'-0" WITH A 10'-0" WIDE STONE DRIVE.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

MAT.3 TIMBER MATTING AIR BRIDGE



PLAN
SCALE: N.T.S.

NOTES:

1. THIS METHOD APPLIES TO MINOR WATERBODY CROSSINGS THAT ARE DEFINED AS WATERBODIES THAT ARE LESS THAN OR EQUAL TO 10 FEET AT WATERS EDGE AT THE TIME OF CROSSING.
2. SEDIMENT BARRIERS SHALL BE INSTALLED AS DEPICTED AND ALONG DOWN GRADIENT SIDES OF WORK AREAS AND STAGING AREAS SUCH THAT NO HEAVILY SILT LADEN WATER ENTERS THE WATERBODY OR LEAVES THE CONSTRUCTION RIGHT OF WAY.
3. HARD DITCH PLUGS MUST REMAIN IN PLACE AT CONVENIENT LOCATIONS TO SEPARATE MAINLINE DITCH FROM THE WATERBODY CROSSING UNTIL THE WATERBODY IS INSTALLED AND BACK FILLED.
4. INSTALL TURBIDITY CURTAINS DOWNSTREAM OF CROSSING AT EDGE OF WORK CORRIDOR IF STREAM FLOW IS CONDUCIVE TO SUCH AN INSTALLATION.
5. IF FLOW OF WATERBODY IS SUCH THAT TURBIDITY CURTAIN CAN NOT BE INSTALLED, THEN INSTALL DOWNSTREAM SEDIMENT BARRIER BAFFLE SYSTEM AS DEPICTED.
6. EQUIPMENT OPERATING IN THE WATERBODY SHALL BE LIMITED TO THAT NEEDED TO PERFORM CONSTRUCTION. IF OTHER TYPES OF EQUIPMENT MUST CROSS THE WATERBODY, CONTRACTOR SHALL PROVIDE AND USE TEMPORARY STREAM CROSSING (BEC).
7. STAGING AREA(S) FOR WATERBODY CROSSING(S), WHEN REQUIRED, SHALL BE LOCATED AT LEAST 50 FEET FROM WATER'S EDGE AND SHALL BE OF A MINIMUM SIZE NEEDED FOR CONVENIENT PREPARATION.
8. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED DAILY AND REPAIRED IF NECESSARY.
9. INSTALL DIVERSION TRENCHES AT THE BASE OF ALL SLOPES ADJACENT TO THE WATERBODY.
10. CHEMICALS, FUELS AND LUBRICATING OILS SHALL NOT BE STORED AND EQUIPMENT SHALL NOT BE REFUELED WITHIN 100 FEET OF THE WATERBODY.
11. INSTALL TRENCH PLUGS ON BOTH SIDES OF THE WATERBODY TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ANY ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.
12. CONTRACTOR SHALL POSTPONE GRADING OF RIGHT-OF-WAY IMMEDIATELY ADJACENT TO WATERBODY UNTIL STAGING AREA IS PREPARED AND WORK IN THE WATERBODY IS READY TO COMMENCE.
13. EXCEPT FOR BLASTING AND OTHER ROCK BREAKING MEASURES, COMPLETE IN STREAM CONSTRUCTION ACTIVITIES (INCLUDING TRENCHING, PIPE INSTALLATION, BACKFILL, AND RESTORATION OF THE STREAM BED CONTOURS) WITHIN 24 HOURS. STREAM BANKS AND UNCONSOLIDATED STREAM BEDS MAY REQUIRE ADDITIONAL RESTORATION AFTER THIS PERIOD.

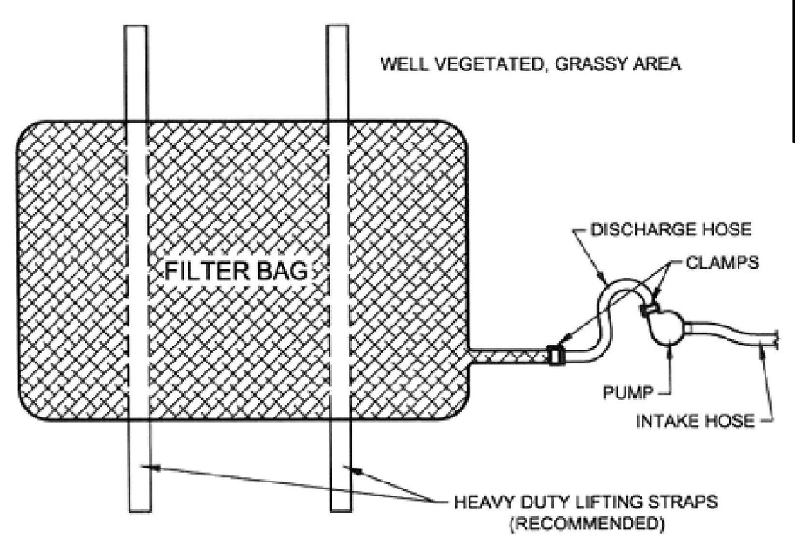
(APPLIES TO WATERBODIES 10' WIDE OR LESS AT WATERS EDGE AT TIME OF CROSSING)

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

MWC WET MINOR WATERBODY CROSSING

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-16.



PLAN VIEW
N.T.S.

ELEVATION VIEW
N.T.S.

LOW VOLUME FILTER BAGS SHALL BE MADE FROM NON-WOVEN GEOTEXTILE MATERIAL SEWN WITH HIGH STRENGTH, DOUBLE STITCHED "J" TYPE. THEY SHALL BE CAPABLE OF TRAPPING PARTICLES LARGER THAN 150 MICRONS. HIGH VOLUME FILTER BAGS MAY BE MADE FROM WOVEN GEOTEXTILES THAT MEET THE FOLLOWING STANDARDS:

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4884	60 LB/IN
GRAB TENSILE	ASTM D-4632	205 LB
PUNCTURE	ASTM D-4833	110 LB
MULLEN BURST	ASTM D-3786	350 PSI
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	80 SIEVE

A SUITABLE MEANS OF ACCESSING THE BAG WITH MACHINERY REQUIRED FOR DISPOSAL PURPOSES MUST BE PROVIDED. FILTER BAGS SHALL BE REPLACED WHEN THEY BECOME ½ FULL OF SEDIMENT. SPARE BAGS SHALL BE KEPT AVAILABLE FOR REPLACEMENT OF THOSE THAT HAVE FAILED OR ARE FILLED. BAGS TO BE PLACED ON STRAPS TO FACILITATE REMOVAL UNLESS BAGS COME WITH LIFTING STRAPS ALREADY ATTACHED.

BAGS SHALL BE LOCATED IN WELL-VEGETATED (GRASSY) AREA, AND DISCHARGE ONTO STABLE, EROSION RESISTANT AREAS. WHERE THIS IS NOT POSSIBLE, A GEOTEXTILE UNDERLAYMENT AND FLOW PATH SHALL BE PROVIDED. BAGS MAY BE PLACED ON FILTER STONE TO INCREASE DISCHARGE CAPACITY. BAGS SHALL NOT BE PLACED ON SLOPES GREATER THAN 5%. FOR SLOPES EXCEEDING 5%, CLEAN ROCK OR OTHER NON-ERODIBLE AND NON-POLLUTING MATERIAL MAY BE PLACED UNDER THE BAG TO REDUCE SLOPE STEEPNESS.

NO DOWNSLOPE SEDIMENT BARRIER IS REQUIRED FOR MOST INSTALLATIONS. COMPOST BERM OR COMPOST FILTER SOCK SHALL BE INSTALLED BELOW BAGS LOCATED IN HQ OR EV WATERSHEDS, WITHIN 50 FEET OF ANY RECEIVING SURFACE WATER OR WHERE GRASSY AREA IS NOT AVAILABLE.

THE PUMP DISCHARGE HOSE SHALL BE INSERTED INTO THE BAGS IN THE MANNER SPECIFIED BY THE MANUFACTURER AND SECURELY CLAMPED. A PIECE OF PVC PIPE IS RECOMMENDED FOR THIS PURPOSE.

THE PUMPING RATE SHALL BE NO GREATER THAN 750 GPM OR ½ THE MAXIMUM SPECIFIED BY THE MANUFACTURER, WHICHEVER IS LESS. PUMP INTAKES SHALL BE FLOATING AND SCREENED.

FILTER BAGS SHALL BE INSPECTED DAILY. IF ANY PROBLEM IS DETECTED, PUMPING SHALL CEASE IMMEDIATELY AND NOT RESUME UNTIL THE PROBLEM IS CORRECTED.

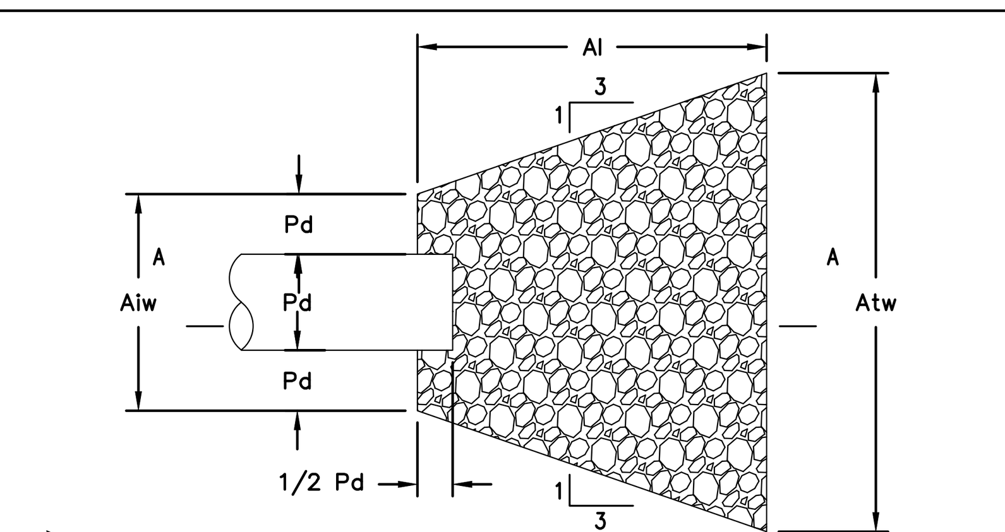
ADAPTED FROM PADEP

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

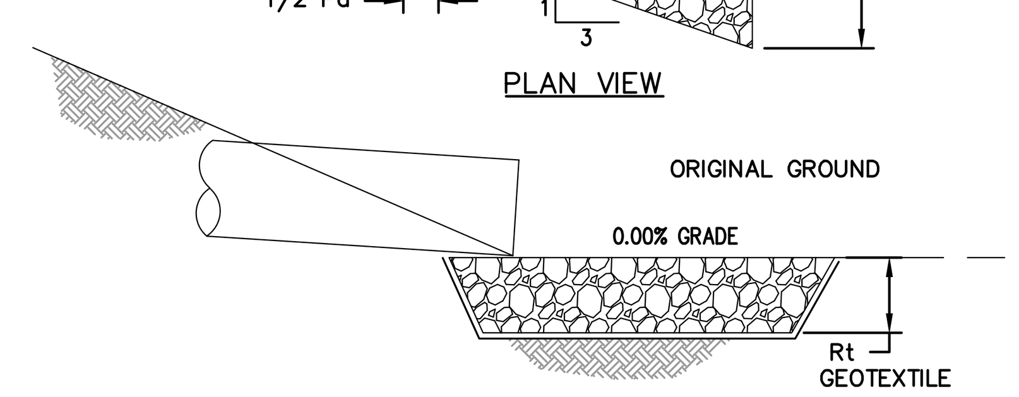
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

PWB PUMP WATER FILTER BAG

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #9-2.



PLAN VIEW



SECTION A–A

OUTLET NO.	PIPE DIA PD (IN)	RIPRAP		APRON		
		SIZE (R-_)	THICK. Rt (IN)	LENGTH Al (FT)	INITIAL WIDTH Aiw (FT)	TERMINAL WIDTH Atw (FT)
* ALL INFORMATION CAN BE FOUND ON ACCESS ROAD AND EROSION AND SEDIMENT CONTROL PLANS. REFER TO NOTES 4 AND 5 FOR DIMENSION LOCATIONS.						

NOTES:

1. ALL APRONS SHALL BE CONSTRUCTED TO THE DIMENSIONS SHOWN ON THE PLANS. TERMINAL WIDTHS SHALL BE ADJUSTED AS NECESSARY TO MATCH RECEIVING CHANNELS.

2. ALL APRONS SHALL BE INSPECTED AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DISPLACED RIPRAP WITHIN THE APRON SHALL BE REPLACED IMMEDIATELY.

3. EXTEND RIPRAP ON BACK SIDE OF APRON TO AT LEAST 1/2 DEPTH OF PIPE ON BOTH SIDES TO PREVENT SCOUR AROUND THE PIPE.

4. FOR APRONS ON ACCESS ROADS, THE DIMENSIONS FOR THE APRONS ARE GIVEN AS FOLLOWS: L x D x W/W
WHERE: L = LENGTH OF APRON OR "Al" AS SHOWN IN THE PLAN VIEW ABOVE
D = DEPTH OF RIP RAP OR "Rt" AS SHOWN IN THE SECTION ABOVE
W/W = WIDTH OF SHORT END OF APRON/WIDTH OF LONG END OF APRON OR "Aiw"/"Atw" AS SHOWN IN THE PLAN VIEW ABOVE

5. FOR APRON ON SWALES AND FLUME CROSSINGS, THE DIMENSIONS FOR THE APRONS ARE AS FOLLOWS:
DIMENSIONS LOCATED ON TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY:
a. RIP RAP SIZE (R-_) UNDER WATERBODY AND FLUME (CLEAN WATER CROSSING)
b. APRON INITIAL WIDTH (Aiw) IS EQUAL TO BOTTOM WIDTH OF DIVERSION SWALES AND IS TWO FEET FOR FILTER SOCK DIVERSIONS.
c. APRON TERMINAL WIDTH (Atw) IS EQUAL TO LEVEL SPREADER LENGTH
DIMENSIONS LOCATED ON CLEAN WATER CROSSING DETAIL
a. RIP RAP THICKNESS (Rt)
b. APRON LENGTH (Al)

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RAO RIP RAP APRON AT PIPE OUTLET WITHOUT FLARED END SECTION

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL SUZANNE MARIE KING ENGINEER PE082757

[illegible]

SUZANNE KING REG NO. PE 082757

BL Companies ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY: ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY: JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: 2
APPROVED BY: SMK	DATE: 07/08/15	DRAWING NUMBER: ASR–BMP	SHEET 5
WO:			OF 11

Drawn By & Date/Time: joutlaw Nov 13, 2016 – 2:09pm
Drawing Location & Name: G:\JOBS14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(20S)_LA-BMP-05.dwg

TABLE 6.6
Riprap Gradation, Filter Blanket Requirements, Maximum Velocities

Class, Size NO. / Rock Size (Inches)	Percent Passing (Square Openings) R-8	R-7	R-6	R-5	R-4	R-3
42	100					
30		100				
24	15-50		100			
18		15-50		100		
15	0-15					
12		0-15	15-50		100	
9				15-50		
6			0-15		15-50	100
4				0-15		
3					0-15	15-50
2						0-15
Nominal Placement Thickness (inches)	63	45	36	27	18	9
Filter Stone[1]	AASHTO #1	AASHTO #1	AASHTO #1	AASHTO #3	AASHTO #3	AASHTO #57
V_{max} (ft/sec)	17.0	14.5	13.0	11.5	9.0	6.5

Adapted from PennDOT Pub. 408, Section 703.2(c), Table C

1 This is a general standard. Soil conditions at each site should be analyzed to determine actual filter size. A suitable woven or non-woven geotextile underlayment, used according to the manufacturer's recommendations, may be substituted for the filter stone for gradients < 10%.

TABLE 6.7
Comparison of Various Gradations of Coarse Aggregates

AASHTO NUMBER	Total Percent Passing 6 ½	4"	3 ½"	2 ½	2"	1 ½ "	1"	¾ "	½"	⅜"	#4	#8	#16	#30	#100
1		100	90-100	25-60		0-15		0-5							
3				100	90-100	35-70	0-15		0-5						
5						100	90-100	20-55	0-10	0-5					
57						100	90-100		25-60		0-10	0-5			
67							100	90-100		20-55	0-10	0-5			
7								100	90-100	40-70	0-15	0-5			
8									100	85-100	10-30	0-10	0-5		
10										100	75-100				10-30

PennDOT Publication 408, Section 703.2(c), Table C

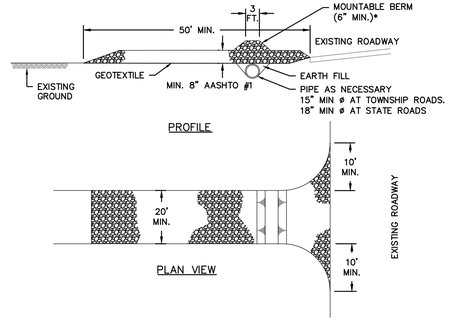
Tables 6.6 and 6.7 should be placed on the plan drawings of all sites where riprap channel linings are proposed.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RAP — RIP RAP GRADATION

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-1.



* MOUNTABLE BERM USED TO PROVIDE PROPER COVER FOR PIPE

NOTES:

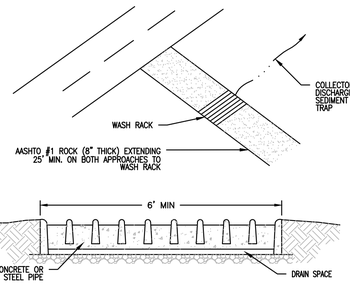
1. REMOVE TOPSOIL PRIOR TO INSTALLATION OF ROCK CONSTRUCTION ENTRANCE. EXTEND ROCK OVER FULL WIDTH OF ENTRANCE.
2. RUNOFF SHALL BE DIVERTED FROM ROADWAY TO A SUITABLE SEDIMENT REMOVAL BMP PRIOR TO ENTERING ROCK CONSTRUCTION ENTRANCE.
3. MOUNTABLE BERM SHALL BE INSTALLED WHEREVER OPTIONAL CULVERT PIPE IS USED AND PROPER PIPE COVER AS SPECIFIED BY MANUFACTURER IS NOT OTHERWISE PROVIDED. PIPE SHALL BE SIZED APPROPRIATELY FOR SIZE OF DITCH BEING CROSSED.
4. MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. IF EXCESSIVE AMOUNTS OF SEDIMENT ARE BEING DEPOSITED ON ROADWAY, EXTEND LENGTH OF ROCK CONSTRUCTION ENTRANCE BY 50 FOOT INCREMENTS UNTIL CONDITION IS ALLEVIATED OR INSTALL WASH RACK. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.
5. RCE WITH WASH RACK, SEE DETAIL RCW, TO BE INSTALLED IN, OR WITHIN 100 FEET OF, SPECIAL PROTECTION WATERSHEDS AS WELL AS WITHIN 50 FEET OF WETLANDS.
6. WITHIN WETLANDS RCE AND/OR RCE WITH WASHRACK SHALL BE REPLACED WITH TIMBER MAT AND CLASS 1 GEOTEXTILE UNDERLAYMENT.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RCE — ROCK CONSTRUCTION ENTRANCE

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-2.



PADEP STANDARD NOTES:

1. WASH RACK SHALL BE 20 FEET (MIN.) WIDE OR TOTAL WIDTH OF ACCESS.
2. WASH RACK SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE ANTICIPATED CONSTRUCTION VEHICULAR TRAFFIC.
3. A WATER SUPPLY SHALL BE MADE AVAILABLE TO WASH THE WHEELS OF ALL VEHICLES EXITING THE SITE.
4. MAINTENANCE: ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE OF ROCK MATERIAL SHALL BE MAINTAINED ON SITE FOR THIS PURPOSE. DRAIN SPACE UNDER WASH RACK SHALL BE KEPT OPEN AT ALL TIMES. DAMAGE TO THE WASH RACK SHALL BE REPAIRED PRIOR TO FURTHER USE OF THE RACK. ALL SEDIMENT DEPOSITED ON ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE IMMEDIATELY. WASHING THE ROADWAY OR SWEEPING THE DEPOSITS INTO ROADWAY DITCHES, SEWERS, CULVERTS, OR OTHER DRAINAGE COURSES IS NOT ACCEPTABLE.

SUPPLEMENTAL NOTES:

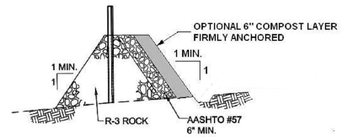
1. RCW TO BE INSTALLED IN, OR WITHIN 100 FEET OF, SPECIAL PROTECTION WATERSHEDS AS WELL AS WITHIN 50 FEET OF WETLANDS.
2. WASH RACK SHALL BE INSTALLED IN COORDINATION WITH THE NOXIOUS AND INVASIVE PLANT MANAGEMENT PLAN. ALTERNATIVE WHEEL WASHING METHODS, SUCH AS PRESSURE WASHING, BRUSHING, OR USE OF COMPRESSED AIR AND/OR AN ELEVATED WASH RACK, MAY BE USED IN CERTAIN LOCATIONS DEPENDING ON THE ANTICIPATED SEDIMENT AND LOCAL VEGETATION.
3. VACUUM SWEEPING MAY BE USED TO MITIGATE THE SPREAD OF SEDIMENT BEYOND THE RCES. RCES WILL BE INSPECTED FOR SEDIMENT TRACKING ONTO PUBLIC ROADWAYS. IF SEDIMENT IS OBSERVED IN THE PUBLIC ROADWAY, THE ROADWAY SHALL BE VACUUM SWEPT UPON DISCOVERY. ANY LARGE CLUMPS OF DIRT THAT ACCUMULATE ON THE ROAD SURFACE WILL NEED TO BE HAND CLEARED BEFORE VACUUM SWEEPING. ALL VEHICLES LEAVING THE RCE SHALL BE INSPECTED FOR LARGE CLUMPS OF DEBRIS. IF DEBRIS, LARGER THAN 4" DIAMETER IS OBSERVED, IT SHALL BE MANUALLY REMOVED FROM THE VEHICLE. DIRT ROADS SHALL BE INSPECTED WEEKLY FOR RUTTING. THERE SHALL BE NO MORE THAN A MAXIMUM OF 6" OF RUTTING ON ACCESS ROADS. IF RUTTING IN EXCESS OF 6" IS OBSERVED, THE ROAD SHALL BE ROLLED AS SOON AS FEASIBLE. DUMP TRUCKS HAULING MATERIAL FROM RCES IN SPECIAL PROTECTION WATERSHEDS WILL BE COVERED WITH A TARPAULIN.
4. WITHIN WETLANDS RCE AND/OR RCE WITH WASHRACK SHALL BE REPLACED WITH TIMBER MAT AND CLASS 1 GEOTEXTILE UNDERLAYMENT.

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

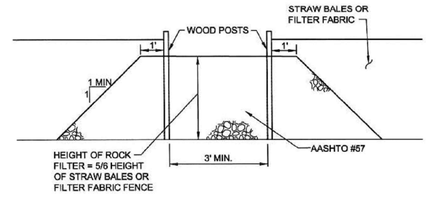
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RCW — ROCK CONSTRUCTION ENTRANCE WITH WASH RACK

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-6.



OUTLET CROSS-SECTION
N.T.S.



UP-SLOPE FACE
N.T.S.

ADAPTED FROM MARYLAND DOE

NOTES:

1. A ROCK FILTER OUTLET SHALL BE INSTALLED WHERE FAILURE OF A STRAW BALE BARRIER OR FILTER FABRIC FENCE HAS OCCURRED DUE TO CONCENTRATED FLOW.
2. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/3 THE HEIGHT OF THE OUTLET.

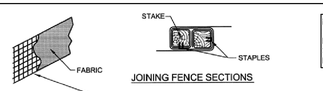
PADEP SUPPLEMENTAL NOTE:

1. ANCHORED COMPOST LAYER SHALL BE USED ON UP SLOPE FACE IN HQ AND EV WATERSHEDS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

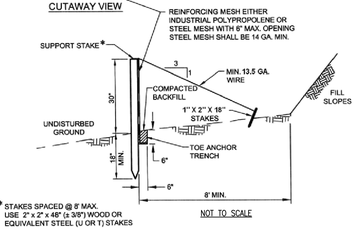
RFO — ROCK FILTER OUTLET



JOINING FENCE SECTIONS

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-8.

CUTAWAY VIEW



* STAKES SPACED @ 8' MAX. USE 2" x 2" x 48" (± 3/8") WOOD OR EQUIVALENT STEEL (U OR T) STAKES

NOT TO SCALE

AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PSI)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR REINFORCED SILT FENCE:

SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	500
5	250
10	150
15	100
20	70
25	55
30	45
35	40
40	35
45	30
50	25

1. FABRIC WIDTH SHALL BE 42" MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES. 18" SUPPORT STAKE SHALL BE DRIVEN 12" MIN. INTO UNDISTURBED GROUND.
2. SILT FENCE SHALL BE INSTALLED AT EXISTING LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION SHALL BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
3. SEDIMENT SHALL BE REMOVED WHERE ACCUMULATIONS REACH ½ THE ABOVE GROUND HEIGHT OF THE FENCE.
4. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET (RFO).
5. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
6. SILT FENCE SHOULD BE PLACED ON CONTOURS TO THE EXTENT PRACTICAL. SILT FENCE SHOULD NOT BE USED TO DELINEATE THE LIMITS OF THE CONSTRUCTION RIGHT-OF-WAY.
7. SILT FENCE IS NOT ALLOWED IN CERTAIN SPECIAL PROTECTION WATERSHEDS; COMPOST FILTER SOCKS SHALL BE USED.

ADAPTED FROM PADEP

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RSF — REINFORCED SILT FENCE (30" HIGH)

SUZANNE KING REG NO. PE 082757

BLE Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
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1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	02/04/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
3	03/28/2016	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	AJB
4	*Oct 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*AJB*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	4
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	6
W.O:				OF	11

Drawn By & Date/Time: joutlaw Nov 13, 2016 - 2:11pm
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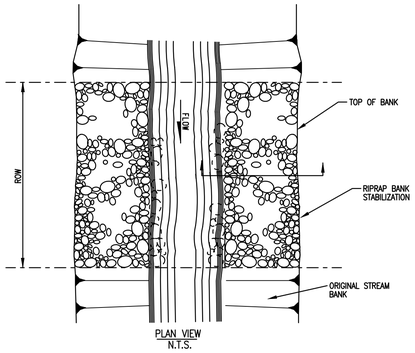
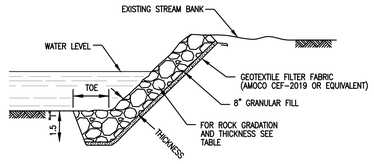


PLAN VIEW
N.T.S.



SECTION
SCALE: N.T.S.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RSS — RIP RAP STREAM BANK STABILIZATION

1 OF 2

RIP RAP GRADATION TABLE
REFER TO TABLE 6.6 RIP RAP GRADATION, FILTER BLANKET REQUIREMENTS, MAXIMUM VELOCITES ON PAGE 6 OF THIS SET.
REFER TO TABLE 6.7 COMPARISON OF VARIOUS GRADATIONS OF COARSE AGGREGATES ON PAGE 6 OF THIS SET.

NOTES:

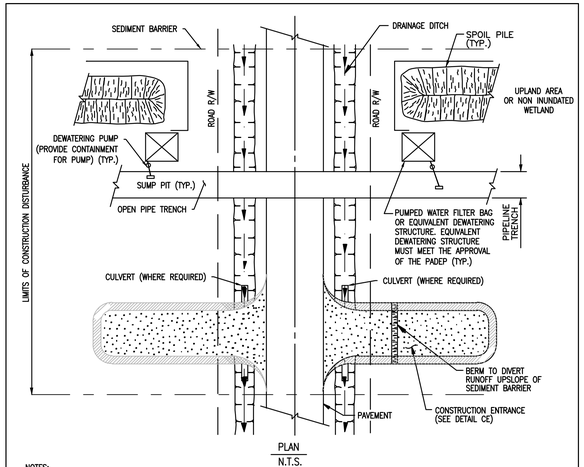
1. ROCK UTILIZED FOR RIPRAP SHALL CONSIST OF SOUND, DURABLE ROCK, INSOLUBLE IN WATER, AND RESISTANT TO WEATHERING.
2. ALL MATERIAL SHALL BE FREE OF STRUCTURAL DEFECTS, SHALE SEAMS AND ORGANIC MATTER.
3. INDIVIDUAL PIECES SHOULD BE SHARPLY ANGULAR, BLOCK SHAPED AND HAVE A MINIMUM SPECIFIC GRAVITY OF 2.5.
4. NO PIECE SHALL HAVE A LENGTH EXCEEDING THREE (3) TIMES ITS WIDTH OR DEPTH.
5. EACH LOAD OF ROCK SHALL BE OF WELL-GRADED MIXTURE. A WELL-GRADED MIXTURE, AS USED HEREIN, IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF LARGER STONE, BUT WITH A SUFFICIENT MIXTURE OF SMALLER SIZES TO FILL THE VOIDS.
6. MATERIAL SHALL MEET NSA SPECIFICATIONS – SEE TABLE ABOVE.
7. IF STREAM WIDTH IS EQUAL TO OR LESS THAN 2 TIMES THE TOE WIDTH, RIPRAP SHALL BE PLACED ACROSS THE ENTIRE STREAM WIDTH.
8. RIPRAP SHALL BE PLACED TO THE FULL COURSE THICKNESS IN ONE CONTINUOUS OPERATION. OPERATIONS WHICH CAUSE SEGREGATION OF THE MATERIALS SHALL NOT BE PERMITTED. INDIVIDUAL ROCKS MAY BE REARRANGED, AND THE VOIDS FILLED WITH HAND PLACED SMALLER ROCK IN ORDER TO ACHIEVE THE DESIRED UNIFORM ARMOR.
9. SLOPE SHALL BE GRADED TO 2:1 OR FLATTER PRIOR TO PLACING GRANULAR FILL, FILTER FABRIC, OR RIPRAP.
10. ENDS OF THE RIPRAP SHALL BE KEYED INTO A STABLE BANK. WHEN TYING INTO OTHER STRUCTURES, LARGER RIPRAP CAN BE LAID IN STEPS OR STACKED AS NEEDED TO FIT. STONES LARGER THAN THOSE DESIGNED FOR FLOW SHALL BE USED FOR THIS PURPOSE.
11. REMAINING DISTURBED AREAS SHALL BE GRADED AND PERMANENTLY SEEDED AND MULCHED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RSS — RIP RAP STREAM BANK STABILIZATION

2 OF 2



PLAN
N.T.S.

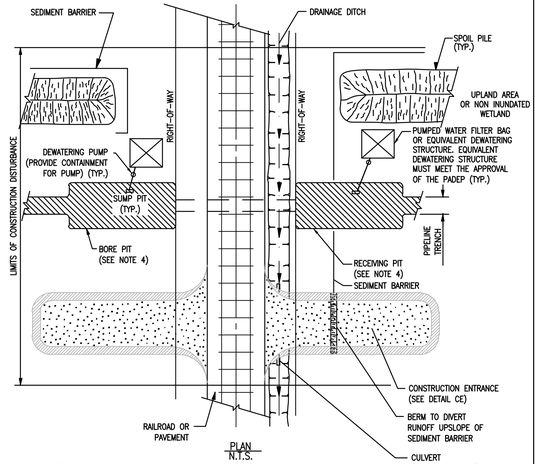
NOTES:

1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF. TEMPORARILY RELOCATE SEDIMENT BARRIERS WITHIN LIMITS OF TRENCH OPENING AS NEEDED TO INSTALL PIPE. IMMEDIATELY REPLACE BARRIERS AFTER BACKFILLING TRENCH.
2. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
4. CULVERTS TO BE SIZED AND PLACED WHERE REQUIRED TO MAINTAIN WATER FLOW.
5. CONTRACTOR SHALL BE REQUIRED TO KEEP THE ROAD CLEAN OF DEBRIS AT ALL TIMES.
6. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE PIPE TRENCH.
7. CONTRACTOR MAY ELECT TO UTILIZE WELL-POINTS IN ORDER TO REDUCE THE WATER TABLE PRIOR TO COMMENCING EXCAVATION.
8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT-OF-WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.
9. CONSTRUCTION ENTRANCE NEEDED AS SHOWN ON SPECIFIC PLAN.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RX.1 — TRENCHED ROAD CROSSING



PLAN
N.T.S.

NOTES:

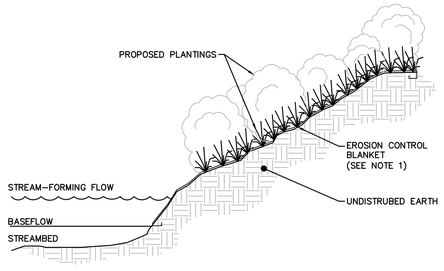
1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF.
2. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
4. WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
5. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS, CONTRACTOR SHALL CONSULT WITH COMPANY'S ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK IN ORDER TO DETERMINE PROPER DEWATERING LOCATION.
6. CONTRACTOR SHALL BE REQUIRED TO KEEP THE CROSSING CLEAN OF DEBRIS AT ALL TIMES.
7. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE BORE PITS.
8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT OF WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

RX.2 — BORED ROAD/ RAILROAD CROSSING

NOTE: THIS WILLIAMS STANDARD DETAIL IS ADAPTED FROM PADEP FIGURE #15.10



SECTION
N.T.S.

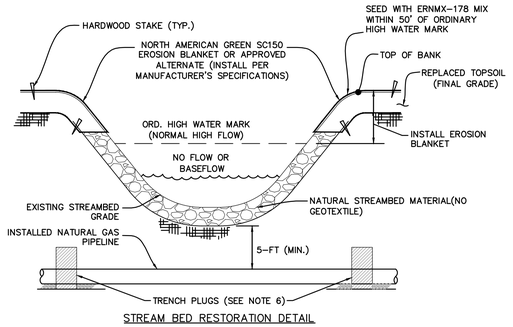
NOTES:

1. ON STREAM BANKS WITH SLOPES 2:1 OR LESS, EROSION CONTROL BLANKET NAG SC150 OR APPROVED EQUAL SHALL BE USED. FOR ALL OTHER SLOPES, EROSION CONTROL BLANKET NAG C125 OR APPROVED EQUAL SHALL BE UTILIZED. REFER TO EROSION CONTROL BLANKET DETAIL (ECB) FOR INSTALLATION.
2. STREAM BANK STABILIZATION SHALL UTILIZE REINFORCEMENT BLANKET EXCEPT WHEN STABILIZATION CANNOT BE ACHIEVED IN THE FIELD, IN WHICH CASE, RIP RAP STREAM BANK STABILIZATION SHALL BE IMPLEMENTED. REFER TO THE RIP RAP STREAM BANK STABILIZATION DETAIL, RSS, IN THIS PLAN SET.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SBR — STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET



STREAM BED RESTORATION DETAIL

NOTES:

1. REMOVE EXISTING STREAMBED MATERIAL AND STOCKPILE SEPARATELY.
2. ONCE PIPELINE IS INSTALLED, REPLACE SUBSTRATE BACK IN STREAMBED AND RESTORE TO EXISTING CONDITION.
3. SEE RECOMMENDED SEED MIXTURES TABLES FOR SEED MIXES.
4. ON STREAMBANKS WITH SLOPES 2:1 OR LESS, EROSION CONTROL BLANKET NAG SC150 OR APPROVED EQUAL SHALL BE USED. FOR ALL OTHER SLOPES, EROSION CONTROL BLANKET NAG C125 OR APPROVED EQUAL SHALL BE UTILIZED.
5. THE USE OF EROSION CONTROL BLANKET IS NOT ALLOWED ON STATE GAME LANDS. HYDRAULICALLY APPLIED SLOPE STABILIZATION MUST BE USED.
6. REFER TO TRENCH PLUG INSTALLATION DETAIL (TP) FOR MORE INFORMATION.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SBR — STREAM BANK STABILIZATION WITH REINFORCEMENT BLANKET

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — SUZANNE MARIE KING — ENGINEER — PE082757

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	*2*
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	7
W.O:				OF	11

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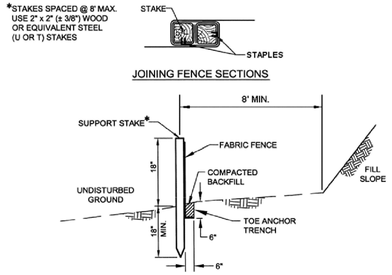


ELEVATION VIEW
N.T.S.

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-7.

AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PSI)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR SILT FENCE

SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	150
5	100
10	50
15	35
20	25
25	20
30	15
35	15
40	15
45	10
50	10

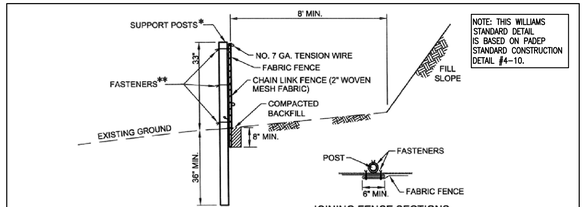
ADAPTED FROM PA DEP

1. FABRIC WIDTH SHALL BE 30" MINIMUM. STAKES SHALL BE HARDWOOD OR EQUIVALENT STEEL (U OR T) STAKES.
2. SILT FENCE MUST BE PLACED AT LEVEL EXISTING GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
3. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH ½ THE ABOVE GROUND HEIGHT OF THE FENCE.
4. ANY SECTION OF SILT FENCE WHICH HAS BEEN UNDERMINED OR TOPPED SHALL BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET @RFO.
5. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
6. SILT FENCE SHOULD BE PLACED ON CONTOURS TO THE EXTENT PRACTICAL. SILT FENCE SHOULD NOT BE USED TO DELINEATE THE LIMITS OF THE CONSTRUCTION RIGHT-OF-WAY.
7. SILT FENCE IS NOT ALLOWED IN CERTAIN SPECIAL PROTECTION WATERSHEDS; COMPOST FILTER SOCKS SHALL BE USED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SF — STANDARD SILT FENCE (18" HIGH)



NOT TO SCALE

JOINING FENCE SECTIONS

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #4-10.

*POSTS SPACED @ 10' MAX. USE 2 1/2" DIA. HEAVY DUTY GALVANIZED OR ALUMINUM POSTS.

**CHAIN LINK TO POST FASTENERS SPACED @ 14" MAX. USE NO. 9 GA. ALUMINUM WIRE OR NO. 9 GALVANIZED STEEL PRE-FORMED CLIPS. CHAIN LINK TO TENSION WIRE FASTENERS SPACED @ 60" MAX. USE NO. 13.5 GA. GALVANIZED STEEL WIRE. FABRIC TO CHAIN FASTENERS SPACED @ 24" MAX C. TO C.

AT A MINIMUM, THE FABRIC SHALL HAVE THE FOLLOWING PROPERTIES:

FABRIC PROPERTY	MINIMUM ACCEPTABLE VALUE	TEST METHOD
GRAB TENSILE STRENGTH (LB)	120	ASTM D1682
ELONGATION AT FAILURE (%)	20% MAX.	ASTM D1682
MULLEN BURST STRENGTH (PSI)	200	ASTM D 3786
TRAPEZOIDAL TEAR STRENGTH (LB)	50	ASTM 5141
PUNCTURE STRENGTH (LB)	40	ASTM D 751 (MODIFIED)
SLURRY FLOW RATE (GAL/MIN/SF)	0.3	ASTM 5141
EQUIVALENT OPENING SIZE	30	US STD. SIEVE CW-02215
ULTRAVIOLET RADIATION STABILITY (%)	80	ASTM G-26

ADAPTED FROM NEW YORK DEC AND PENN-DOT PUB 408

MAXIMUM SLOPE LENGTHS FOR SUPER SILT FENCE

SLOPE-PERCENT	MAXIMUM SLOPE LENGTH (FT)
2 (OR LESS)	1000
5	550
10	325
15	215
20	175
25	135
30	100
35	85
40	75
45	60
50	50

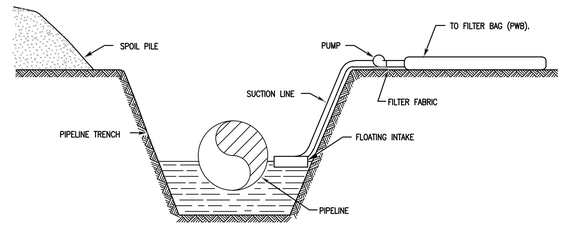
ADAPTED FROM PA DEP

1. FILTER FABRIC WIDTH SHALL BE 42" MINIMUM.
2. POSTS SHALL BE INSTALLED USING A POSTHOLE DRILL.
3. CHAIN LINK SHALL BE GALVANIZED NO. 11.5 GA. STEEL WIRE WITH 2¼" OPENING, NO. 11 GA. ALUMINUM COATED STEEL WIRE IN ACCORDANCE WITH ASTM-A-491, OR GALVANIZED NO. 9 GA. STEEL WIRE TOP AND BOTTOM WITH GALVANIZED NO. 11 GA. STEEL INTERMEDIATE WIRES. NO. 7 GAGE TENSION WIRE TO BE INSTALLED HORIZONTALLY THROUGH HOLES AT TOP AND BOTTOM OF CHAIN-LINK FENCE OR ATTACHED WITH HOG RINGS AT 5' (MAX.) CENTERS.
4. SILT FENCE SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE FENCE SHALL BE EXTENDED AT LEAST 8 FEET UPSLOPE AT 45 DEGREES TO MAIN BARRIER ALIGNMENT.
5. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATIONS REACH ½ THE ABOVE GROUND HEIGHT OF THE FENCE.
6. FENCE SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN TRIBUTARY AREA IS PERMANENTLY STABILIZED.
7. SILT FENCE SHOULD BE PLACED ON CONTOURS TO THE EXTENT PRACTICAL. SILT FENCE SHOULD NOT BE USED TO DELINEATE THE LIMITS OF THE CONSTRUCTION RIGHT-OF-WAY.
8. SILT FENCE IS NOT ALLOWED IN CERTAIN SPECIAL PROTECTION WATERSHEDS; COMPOST FILTER SOCKS SHALL BE USED.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

SSF — SUPER SILT FENCE (33" HIGH)



ELEVATION
N.T.S.

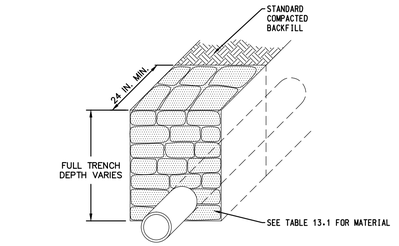
NOTES:

1. WATER PUMPED OUT OF TRENCH SHALL NOT BE DISCHARGED INTO WATERWAYS. WATER SHALL BE DISCHARGED INTO A FILTER BAG OR DEWATERING STRUCTURE.
2. PUMP SHALL BE CONTROLLED SO THAT DISCHARGE DOES NOT OVERFLOW DEWATERING STRUCTURE.
3. PUMP SUCTION HOSE MUST NOT BE ALLOWED TO COME IN CONTACT WITH TRENCH BOTTOM. PROVISIONS MUST BE MADE TO ELEVATE THE SUCTION HOSE TO AT LEAST ONE FOOT ABOVE THE BOTTOM OF THE PIPE TRENCH UNTIL BOTTOM DEWATERING IS NECESSARY.
4. DEWATERING SHALL NOT OCCUR DURING TIMES OF HEAVY RAINFALL EXCEPT AS REQUIRED TO PREVENT FLOODING OF CONSTRUCTION EQUIPMENT LOCATED IN BORE PITS AND TRENCHES.
5. PUMP WATER FILTER BAG (PWB) SHALL BE PLACED ON A WELL VEGETATED AREA AWAY FROM CONSTRUCTION SO THAT FILTERED WATER IS NOT RETURNED TO THE TRENCH.

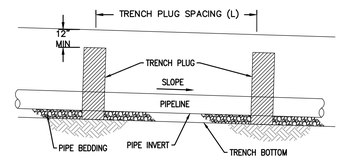
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TD — TRENCH DEWATERING



SECTION VIEW
NOT TO SCALE



PROFILE VIEW
NOT TO SCALE

TABLE 13.1
MAXIMUM SPACING AND MATERIALS FOR TRENCH PLUGS

TRENCH SLOPE (%)	SPACING L (FT)	TRENCH PLUG MATERIAL FOR FILLED SACKS
<5	1,000	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
5 – 15	500	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
15 – 25	300	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
25 – 35	200	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
35 – 100	100	* CLAY, BENTONITE, OR CONCRETE FILLED SACKS
>100	50	CEMENT FILLED BAGS (WETTED)) OR MORTARED STONE

*TOPSOIL MAY NOT BE USED TO FILL SACKS.

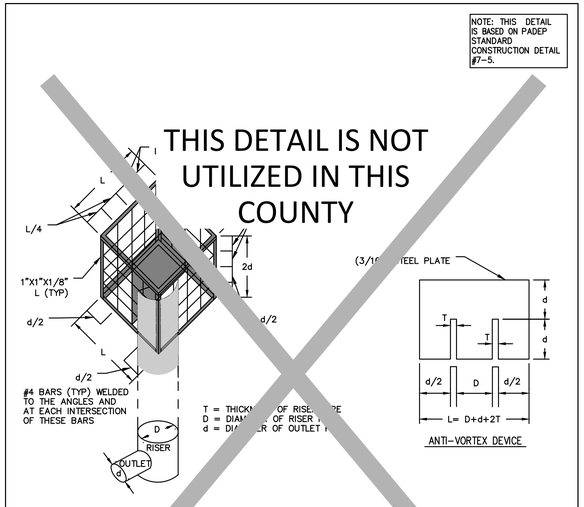
IMPERVIOUS TRENCH PLUGS ARE REQUIRED FOR ALL STREAM, RIVER, WETLAND, OR OTHER WATER BODY CROSSINGS. FOAM TRENCH PLUGS ARE NOT TO BE USED IN WETLANDS.

ADAPTED FROM MARYLAND DOE

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TP — TRENCH PLUG INSTALLATION



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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TRV — TRASH RACK AND ANTI-VORTEX DEVICE

SUZANNE KING, REG. NO. PE 082757
BL Companies — ARCHITECTURE, ENGINEERING, ENVIRONMENTAL, LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	*2*
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	8
W.O:				OF	11

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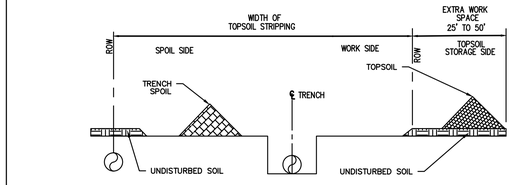
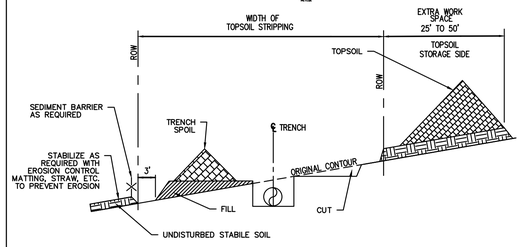


FULL RIGHT-OF-WAY TOPSOIL STRIPPING ADJACENT EXISTING PIPELINE
N.T.S.



FULL RIGHT-OF-WAY TOPSOIL STRIPPING-SIDE SLOPES
N.T.S.

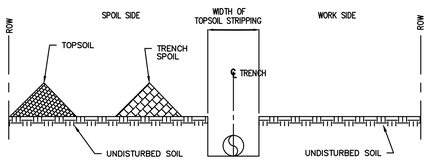
NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

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

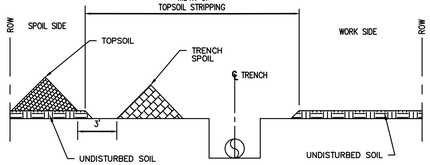
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TS.1 TOPSOIL SEGREGATION (1)



DITCH LINE TOPSOIL STRIPPING
N.T.S.

ALSO USED IN NON-SATURATED WETLANDS



DITCH PLUS SPOIL SIDE SEGREGATION
N.T.S.

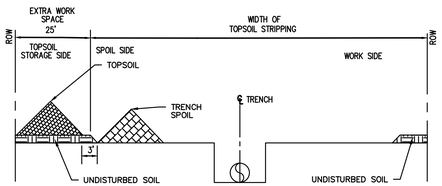
NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED.
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

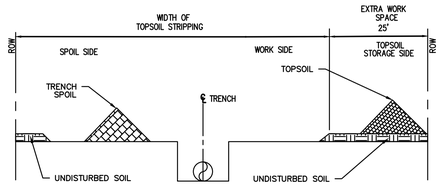
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TS.2 TOPSOIL SEGREGATION (2)



FULL RIGHT-OF-WAY TOPSOIL STRIPPING - A
N.T.S.



FULL RIGHT-OF-WAY TOPSOIL STRIPPING - B
N.T.S.

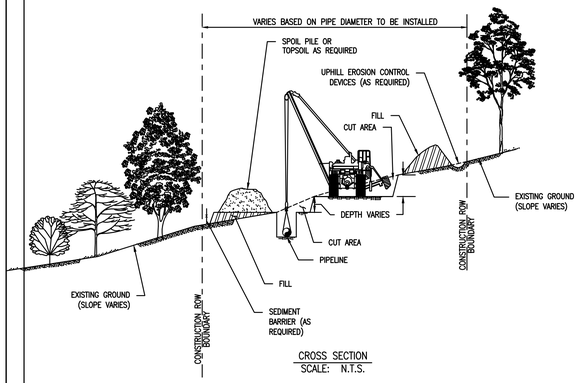
NOTES:

1. ALLOW FOR A 3' SEPARATION BETWEEN THE TOPSOIL PILE AND THE TRENCH SPOIL.
2. RETURN TRENCH SPOIL TO TRENCH AND COMPACT. FEATHER OUT EXCESS SPOIL OVER STRIPPED AREA LEAVING A LOW CROWN CENTERED OVER THE TRENCH. ALLEVIATE COMPACTION OF SUBSOILS OVER THE STRIPPED AREA.
3. RETURN TOPSOIL EVENLY OVER THE STRIPPED AREA AFTER TRENCH HAS SUFFICIENTLY SETTLED OR HAS BEEN COMPACTED.
4. ALLEVIATE COMPACTION OF TOPSOIL OVER ENTIRE RIGHT-OF-WAY.
5. SEGREGATED TOPSOIL MAY NOT BE USED FOR PADDING THE PIPE.
6. INSTALL SEDIMENT BARRIER AS SHOWN ON PLAN.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TS.3 TOPSOIL SEGREGATION (3)



CROSS SECTION
SCALE: N.T.S.

NOTES:

1. TWO-TONE THE RIGHT-OF-WAY TO LIMIT THE NEED FOR DEEP CUTS AND ADDITIONAL RIGHT-OF-WAY ON STEEP SLOPES. THE MINIMUM WORKSPACE WIDTH ALONG STEEP SIDE SLOPES WILL VARY DEPENDING ON THE DIAMETER OF PIPE TO BE INSTALLED. ADDITIONAL TEMPORARY WORKSPACE MAY BE REQUIRED FOR WORKER SAFETY DEPENDING ON THE SEVERITY OF THE GRADE.
2. EMPLOY EROSION CONTROL MEASURES SUCH AS WATERBARS, CROSS DITCHES, TEMPORARY DRAINAGE PIPES, TEMPORARY SWALES, TEMPORARY OUTLET PROTECTION, ETC. AS REQUIRED TO PREVENT EROSION AND SEDIMENTATION OUTSIDE OF THE CONSTRUCTION RIGHT-OF-WAY. CLEAR AND STAKE ATWS TO ALLOW FOR EXTRA SPOIL.
3. ENSURE SIDE BOOM TRACTORS ARE EQUIPPED WITH BOOM EXTENDERS AND COUNTERWEIGHTS IF REQUIRED.
4. USE BACKHOE TO ASSIST BULLDOZERS WITH REPLACING CUTS.
5. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL MEASURES AS REQUIRED.
6. REVEGETATE / SEED DISTURBED AREAS AS NOTED IN THE CONSTRUCTION DOCUMENTS OR AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

TTS SIDE SLOPE (TWO-TONE) CONSTRUCTION PROCEDURE

COMMONWEALTH OF PENNSYLVANIA
REGISTERED PROFESSIONAL
SUZANNE MARIE KING
Engineer
PE082757

SUZANNE KING REG NO. PE 082757

BLE Companies
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

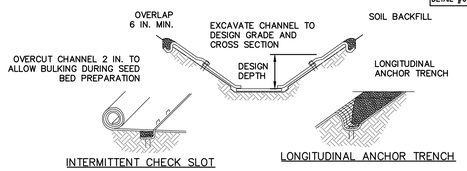
BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: *2*
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP	SHEET 9 OF 11
W.O:					

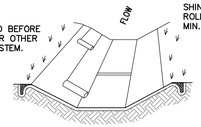
NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #6-1.



INTERMITTENT CHECK SLOT

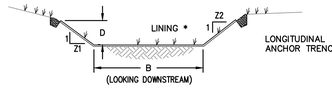
LONGITUDINAL ANCHOR TRENCH

PREPARE SOIL AND APPLY SEED BEFORE INSTALLING BLANKETS, MATS, OR OTHER TEMPORARY CHANNEL LINER SYSTEM.



SHINGLE-LAP SPLICED ENDS OR BEGIN NEW ROLL IN AN INTERMITTENT CHECK SLOT MIN. SHINGLE LAP=6 IN.

ISOMETRIC VIEW



LONGITUDINAL ANCHOR TRENCH

CHANNEL CROSS-SECTION

* SEE MANUFACTURER'S LINING INSTALLATION DETAIL FOR STAPLE PATTERNS, VEGETATIVE STABILIZATION FOR SOIL AMENDMENTS, SEED MIXTURES AND MULCHING INFORMATION

NOTES:
ANCHOR TRENCHES SHALL BE INSTALLED AT BEGINNING AND END OF CHANNEL IN THE SAME MANNER AS LONGITUDINAL ANCHOR TRENCHES.

CHANNEL DIMENSIONS SHALL BE CONSTANTLY MAINTAINED. CHANNEL SHALL BE CLEANED WHENEVER TOTAL CHANNEL DEPTH IS REDUCED BY 25% AT ANY LOCATION.
SEDIMENT DEPOSITS SHALL BE REMOVED WITHIN 24 HOURS OF DISCOVERY OR AS SOON AS SOIL CONDITIONS PERMIT ACCESS TO CHANNEL WITHOUT FURTHER DAMAGE. DAMAGED LINING SHALL BE REPAIRED OR REPLACED WITHIN 48 HOURS OF DISCOVERY.

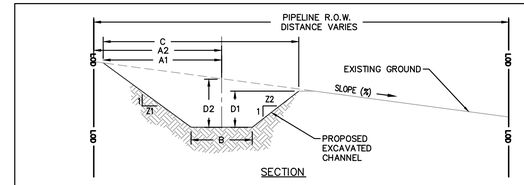
NO MORE THAN ONE THIRD OF THE SHOOT (GRASS LEAF) SHALL BE REMOVED IN ANY MOWING. GRASS HEIGHT SHALL BE MAINTAINED BETWEEN 2 AND 3 INCHES UNLESS OTHERWISE SPECIFIED. EXCESS VEGETATION SHALL BE REMOVED FROM PERMANENT CHANNELS TO ENSURE SUFFICIENT CHANNEL CAPACITY.

REFER TO "TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY" AT THE END OF THIS PLAN SET FOR CHANNEL INFORMATION CHART FOR THE DIVERSION SWALES ALONG THE PIPELINE RIGHT OF WAY.

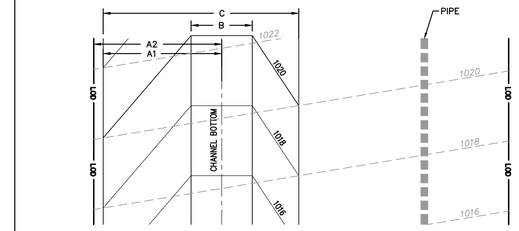
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

VCH — VEGETATED CHANNEL



SECTION



PLAN VIEW

VEGETATED CHANNEL DIMENSIONS

SLOPE ACROSS R.O.W. % (SLOPE)	CENTERLINE OF SWALE TO EDGE OF GRADING FT (A1)	CENTERLINE OF SWALE TO LOD FT (A2)	BOTTOM WIDTH OF SWALE FT (B)	TOTAL WIDTH OF SWALE AT EDGE OF GRADING FT (C)	SWALE DEPTH FT (D1)	SWALE DEPTH AT EXISTING GRADE FT (D2)	SIDE SLOPES OF SWALE (Z1 AND Z2)
0–5	6.11	7	2	11.1100	2	2.25	2:1
0–5	7.33	8	2	13.3300	2.5	2.80	2:1
0–5	8.56	9	2	15.5600	3	3.35	2:1
5–15	9.28	10	2	14.2800	2	2.75	2:1
5–15	11.14	12	2	17.1400	2.5	3.40	2:1
5–15	13	13	2	20	3	4.05	2:1
15–25	15	15	2	20	2	3.25	2:1
15–25	18	18	2	24	2.5	4.00	2:1
15–25	21	21	2	28	3	4.75	2:1
25–33	25	25	2	30	2	3.65	2:1
25–33	30	30	2	36	2.5	4.48	2:1
25–33	35	35	2	42	3	5.31	2:1

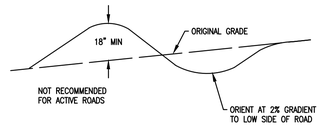
NOTES:
1. SWALES SHALL BE CONSTRUCTED AT A STANDARD DEPTH (D2) FROM CENTERLINE OF SWALE BOTTOM TO EXISTING GRADE.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

VCH — VEGETATED CHANNEL GRADING

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-5.



PLAN VIEW
N.T.S

PADEP STANDARD NOTES:

1. WATERBARS SHALL DISCHARGE TO A STABLE AREA.
2. WATERBARS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED OR ERODED WATERBARS SHALL BE RESTORED TO ORIGINAL DIMENSIONS WITHIN 24 HOURS OF INSPECTION.
3. MAINTENANCE OF WATERBARS SHALL BE PROVIDED UNTIL ROADWAY, SKIDTRAIL, OR RIGHT-OF-WAY HAS ACHIEVED PERMANENT STABILIZATION.
4. WATERBARS ON RETIRED ROADWAYS, SKIDTRAILS, AND RIGHT-OF-WAYS SHALL BE LEFT IN PLACE AFTER PERMANENT STABILIZATION HAS BEEN ACHIEVED.

WILLIAMS STANDARD NOTES:

1. ALL WATERBARS SHOWN ON THE PLANS ARE INTENDED TO BE PERMANENT BMPS.
2. ADDITIONAL WATERBARS MAY BE INSTALLED AS APPROPRIATE DURING CONSTRUCTION.
3. WATERBARS SHOULD BE CONSTRUCTED TO DISCHARGE TO ALTERNATE SIDES OF THE ROW, WHERE POSSIBLE/PRACTICAL.
4. A 'SOFT' TRENCH PLUG MAY BE USED TO CONTROL INSTANCES WHERE A WATERBAR DISCHARGES TO THE TRENCH IN STEEP SLOPE AREAS.
5. A 'J-HOOK' OUTLET MAY BE USED AT WATERBARS TO CONTROL THE FLOW OF RUNOFF. STRAW BALES, SILT SOCKS OR SUPER SILT FENCE TRENCHED IN MAY BE USED AS 'J-HOOK' OUTLETS.
6. THE POST CONSTRUCTION STORMWATER MANAGEMENT PLAN (PCSM) FOR THE LINEAR PORTION OF THIS PROJECT IS TO RESTORE THE CONSTRUCTION RIGHT-OF-WAY TO ITS ORIGINAL CONTOURS FOLLOWING PIPELINE INSTALLATION AND RESTORATION. THE ENTIRE AREA WILL BE PERMANENTLY RE-VEGETATED OR STABILIZED WITH PERVIOUS MATERIAL. WATER BARS INSTALLED DURING CONSTRUCTION ACTIVITIES WILL REMAIN AS PERMANENT WATER BARS AND ACT AS PCSM BMPS.

SUPPLEMENTAL NOTE:

1. DO NOT EXCAVATE UPHILL SWALE WITHIN 10' OF CENTERLINE OF PIPE TO MAINTAIN MINIMUM 3' COVER OVER THE PIPE. SLIGHTLY MODIFY WATERBAR FLOWLINE GRADING TO PROMITE POSITIVE DRAINAGE TO LOW SIDE OF WATERBAR.
2. ALL WATERBARS ARE PERMANENT EXCEPT FOR THOSE LOCATED IN AGRICULTURAL AREAS, WETLANDS, TRANSPORATION FACILITIES, AND LAWNS. ALL WATERBARS IN THESE AREAS ARE TO BE REMOVED DURING FINAL RESTORATION.

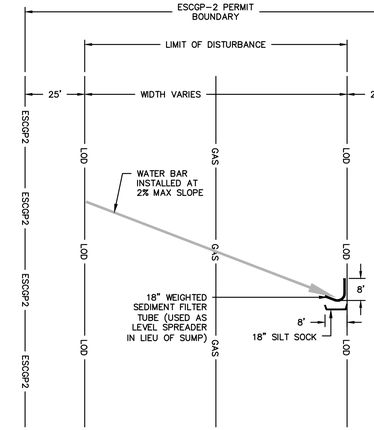
TABLE 3.1 – MAXIMUM WATERBAR SPACING

PERCENT SLOPE	SPACING (FT)
<5	200
5–15	150
>15–30	100
>30	50

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WB — WATERBAR

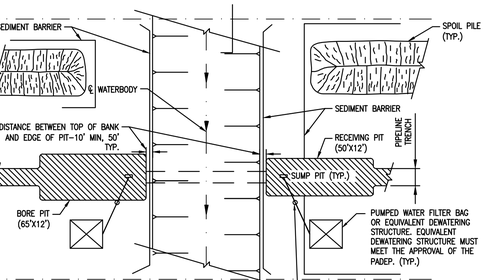


NOTE:
1. DO NOT USE WITHIN 100' OF ANY REGULATED WETLANDS OR STREAMS
2. 18 INCH WEIGHTED SEDIMENT FILTER TUBE SHALL BE INSTALLED WITH ONE END RESTING ON THE WATERBAR, ALLOWING FOR 8 FEET OF EFFECTIVE LENGTH.
3. THE 5 FOOT WIDE X 96 INCH LONG X 14.5 INCH EFFECTIVE HEIGHT WEIGHTED SEDIMENT FILTER TUBE WILL PROVIDE 48 CUBIC FEET OF STORAGE. THE APPROVED ALTERNATE PROVIDES 40 CUBIC FEET OF STORAGE.
4. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
5. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE TUBE AND DISPOSED IN ACCORDANCE WITH WILLIAMS STANDARDS. TUBES SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED TUBES SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WB.1 — WATERBAR END TREATMENT NON-SPECIAL PROTECTION WATERSHED



NOTES:

1. 10 LINEAR FEET OF 18 INCH COMPOST FILTER SOCK (CFS) SHALL BE INSTALLED WITH ONE END RESTING ON THE WATERBAR AS PER DETAIL CFS, ALLOWING FOR 8 FEET OF EFFECTIVE LENGTH AND A SPECIFIED FLOW THROUGH RATE OF 15 GALLONS PER MINUTE PER LINEAR FOOT. A PASS THROUGH FLOW OF 0.26 CUBIC FEET PER SECOND CAN BE ACCOMMODATED THROUGH THE FILTER SOCK. THIS FLOW RATE IS ADEQUATE FOR 20,000 SQUARE FEET OF DRAINAGE AREA FOR THE 2-YEAR, 24-HOUR STORM, 5 MINUTE TIME OF CONCENTRATION (RATIONAL METHOD).
2. CONSTRUCTION OF A 24" WIDE AND 24" DEEP SUMP AT THE DISCHARGE END OF THE WATERBAR WILL REDUCE VELOCITY AND PROVIDE A SHEET FLOW CONDITION TO THE CFS. THE SUMP SHALL BE MAINTAINED AND CLEANEDOUT WHEN IT BECOMES A MINIMUM OF 12" DEEP. THE SUMP SHALL BE FILLED AND STABILIZED WHEN THE CFS IS REMOVED AFTER SITE STABILIZATION.
3. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
4. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN ACCORDANCE WITH WILLIAMS STANDARDS. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
5. BIODEGRADABLE FILTER SOCK SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WB.2 — COMPOST FILTER SOCK AND SUMP AT WATERBAR DISCHARGE (PADEP APPROVED ALTERNATE DETAIL)

PLAN
N.T.S

PROFILE
N.T.S

NOTES:
1. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF SLOPES ADJACENT TO ROAD CROSSINGS WHERE VEGETATION IS DISTURBED, TO INTERCEPT SURFACE RUNOFF.
2. PROTECTION FOR SPOIL PILES SHALL BE INSTALLED ONLY WHERE SEDIMENT BARRIERS ACROSS THE ENTIRE DISTURBED AREA ARE NOT REQUIRED.
3. SEDIMENT BARRIERS SHALL REMAIN IN PLACE UNTIL PERMANENT REVEGETATION IS ESTABLISHED.
4. WATER REMOVED FROM BORE PIT AND RECEIVING PIT SHALL BE FILTERED THROUGH A DEWATERING STRUCTURE OR FILTER BAG.
5. IF WELL POINTING IS REQUIRED PRIOR TO EXCAVATING BORE PITS, CONTRACTOR SHALL CONSULT WITH THE ENVIRONMENTAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK IN ORDER TO DETERMINE PROPER DEWATERING LOCATION.
6. CONTRACTOR SHALL BE REQUIRED TO KEEP THE AREA CLEAN OF DEBRIS AT ALL TIMES.
7. CONTRACTOR MAY ELECT TO UTILIZE SHEET PILING IN ORDER TO STABILIZE BORE PITS.
8. DEPENDING ON TOPOGRAPHY AND STATE REQUIREMENTS, SEDIMENT BARRIER MAY BE REQUIRED ACROSS THE ENTIRE CONSTRUCTION RIGHT OF WAY AT THE EDGE OF ROAD. IN ADDITION TO THIS DETAIL, REFER TO THE ENVIRONMENTAL ALIGNMENT DRAWINGS FOR PLACEMENT OF SEDIMENT BARRIERS.

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TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WBX.1 — BORED WATERBODY CROSSING

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL — SUZANNE MARIE KING — ENGINEER — PE082757

SUZANNE KING REG NO. PE 082757

BLE Corporation — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	*2*
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: ASR-BMP	SHEET	10
WO:				OF	11

Drawn By & Date/Time: joutlaw Nov 13, 2016 - 2:17pm
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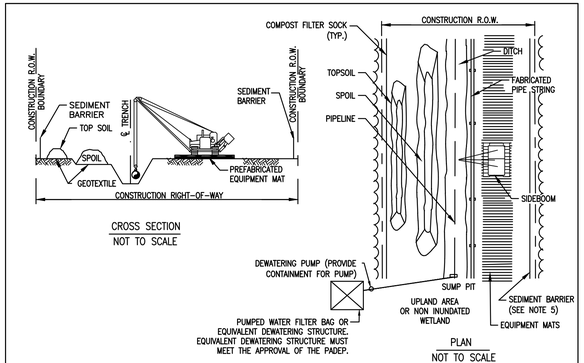


CROSS SECTION
NOT TO SCALE

PLAN
NOT TO SCALE

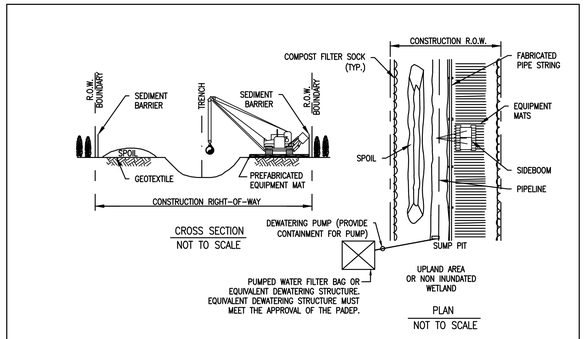
CONSTRUCTION PROCEDURE NOTES:

1. FLAG WETLAND BOUNDARIES AND INSTALL BOUNDARY SIGNS PRIOR TO CLEARING.
2. NO OVERNIGHT PARKING OR REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY. INSTALL TEMPORARY SLOPE BREAKERS UPSLOPE OF WETLAND BOUNDARIES AS SHOWN ON DRAWINGS AND SPECIFICATIONS.
3. INSTALL PREFABRICATED EQUIPMENT MATS THROUGH ENTIRE WETLAND AREA ON THE WORKING SIDE OF THE CONSTRUCTION CORRIDOR.
4. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS AT OUTER BOUNDARIES OF THE WETLAND. INSTALL SEDIMENT BARRIERS ALONG THE EDGE OF THE SPOIL SIDE OF THE CONSTRUCTION CORRIDOR THROUGH THE WETLAND AND ALONG THE DOWN SLOPE EDGE OF THE WETLAND. IF THE DOWN SLOPE EDGE OF THE WETLAND IS THE SPOIL SIDE, THEN SEDIMENT BARRIERS ARE NOT REQUIRED ON THE WORKING SIDE OF THE CORRIDOR UNLESS EQUIPMENT TRAVERSING THROUGH THE WETLAND CAUSES SPOIL AND SEDIMENT TO EXIT THE CONSTRUCTION CORRIDOR.
5. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER THE TRENCH LINE. DO NOT GRADE OR REMOVE STUMPS OR ROOT SYSTEMS FROM THE REST OF THE RIGHT-OF-WAY IN WETLANDS UNLESS THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE THAT SAFETY RELATED CONSTRUCTION CONSTRAINTS REQUIRE REMOVAL OF TREE STUMPS FROM UNDER THE WORKING SIDE OF THE RIGHT-OF-WAY.
6. CONDUCT TRENCH LINE TOPSOIL STRIPPING (IF TOPSOIL IS NOT SATURATED). SALVAGE TOPSOIL TO ACTUAL DEPTH OR A MAXIMUM DEPTH OF 12 INCHES, AS DETERMINED BY THE ENVIRONMENTAL INSPECTOR. SEGREGATED TOPSOIL PILE MAY BE LOCATED ON SPOIL SIDE, AS REQUIRED.
7. LEAVE HARD PLUGS AT THE EDGES OF WETLAND UNTIL JUST PRIOR TO TRENCHING.
8. TRENCHING THROUGH WETLANDS MAY PROCEED WHEN THE PIPE SECTION IS FABRICATED AND READY TO LAY. ONCE TRENCHING COMMENCES, CONSTRUCTION THROUGH THE WETLAND IS TO PROCEED CONTINUOUSLY UNTIL THE CROSSING IS COMPLETED, BACK FILLED AND RESTORED IN ORDER TO MINIMIZE THE LENGTH OF TIME THE TRENCH IS OPEN.
9. PIPE SECTION MAY BE FABRICATED WITHIN THE WETLAND ADJACENT TO PIPE TRENCH, OR IN STAGING AREA OUTSIDE THE WETLAND AND WALKED IN. NO CONCRETE COATING ACTIVITY WITHIN 100 FEET OF WETLAND BOUNDARY UNLESS APPROVED BY ENVIRONMENTAL INSPECTOR.
10. LOWER-IN PIPE. PRIOR TO BACK FILLING TRENCH, INSTALL TRENCH PLUGS IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.
11. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY, REPLACE TOPSOIL AND INSTALL PERMANENT EROSION CONTROL.
12. REMOVE PREFABRICATED MATS FROM WETLANDS UPON COMPLETION.
13. SEED DISTURBED WETLANDS AREAS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WCC.1 "UNSATURATED WETLAND" INSTALLATION PROCEDURE



CROSS SECTION
NOT TO SCALE

PLAN
NOT TO SCALE

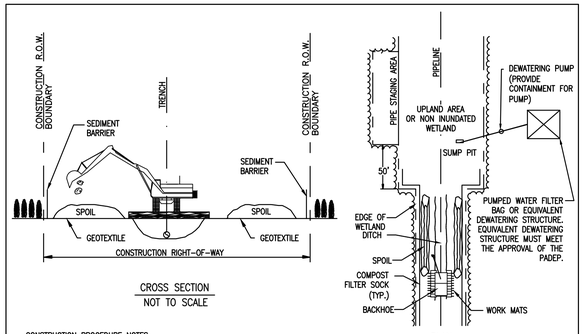
CONSTRUCTION PROCEDURE NOTES:

1. FLAG WETLAND BOUNDARIES AND INSTALL BOUNDARY SIGNS PRIOR TO CLEARING.
2. NO OVERNIGHT PARKING OR REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY.
3. INSTALL TEMPORARY SLOPE BREAKERS UPSLOPE OF WETLAND BOUNDARIES AS SHOWN ON DRAWINGS AND SPECIFICATIONS.
4. INSTALL PREFABRICATED EQUIPMENT MATS THROUGH ENTIRE WETLAND AREA ON THE WORKING SIDE OF THE CONSTRUCTION CORRIDOR.
5. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS AT OUTER BOUNDARIES OF WETLAND AND ALONG BOTH WETLAND EDGES.
6. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER THE TRENCH LINE. DO NOT GRADE OR REMOVE STUMPS OR ROOT SYSTEMS FROM THE REST OF THE RIGHT-OF-WAY IN WETLANDS UNLESS THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE THAT SAFETY RELATED CONSTRUCTION CONSTRAINTS REQUIRE REMOVAL OF TREE STUMPS FROM UNDER THE WORKING SIDE OF THE RIGHT-OF-WAY.
7. TOPSOIL STRIPPING SHALL NOT BE REQUIRED IN SATURATED SOIL CONDITIONS.
8. LEAVE HARD PLUGS AT THE EDGES OF WETLAND UNTIL JUST PRIOR TO TRENCHING.
9. TRENCHING THROUGH WETLANDS MAY PROCEED WHEN THE PIPE SECTION IS FABRICATED AND READY TO LAY. ONCE TRENCHING COMMENCES, CONSTRUCTION THROUGH THE WETLAND IS TO PROCEED CONTINUOUSLY UNTIL THE CROSSING IS COMPLETED, BACK FILLED AND RESTORED IN ORDER TO MINIMIZE THE LENGTH OF TIME THE TRENCH IS OPEN.
10. PIPE SECTION MAY BE FABRICATED WITHIN THE WETLAND ADJACENT TO PIPE TRENCH, OR IN STAGING AREA OUTSIDE THE WETLAND AND WALKED IN. NO CONCRETE COATING ACTIVITY WITHIN 100 FEET OF WETLAND BOUNDARY, UNLESS APPROVED BY ENVIRONMENTAL INSPECTOR.
11. LOWER-IN PIPE. PRIOR TO BACKFILLING, INSTALL TRENCH PLUGS.
12. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY AND INSTALL PERMANENT EROSION CONTROL.
13. REMOVE PREFABRICATED MATS FROM WETLANDS UPON COMPLETION.
14. SEED DISTURBED WETLAND AREA.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WCC.2 "SATURATED WETLAND" INSTALLATION PROCEDURE



CROSS SECTION
NOT TO SCALE

PLAN
NOT TO SCALE

CONSTRUCTION PROCEDURE NOTES:

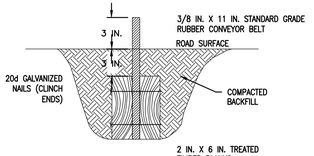
1. FLAG WETLAND BOUNDARIES AND INSTALL WETLAND BOUNDARY SIGNS PRIOR TO CLEARING.
2. NO OVERNIGHT PARKING OR REFUELING OF MOBILE EQUIPMENT IS ALLOWED WITHIN 100 FEET OF WETLAND. PLACE "NO FUELING" SIGN POSTS 100 FEET BACK FROM WETLAND BOUNDARY.
3. INSTALL TEMPORARY SLOPE BREAKERS UPSLOPE OF WETLAND BOUNDARIES AS SHOWN ON DRAWINGS AND SPECIFICATIONS.
4. AVOID ADJACENT WETLANDS. INSTALL SEDIMENT BARRIERS AT OUTER BOUNDARIES OF WETLAND AND ALONG BOTH WETLAND EDGES.
5. LIMIT PULLING OF TREE STUMPS AND GRADING ACTIVITIES TO DIRECTLY OVER TRENCH LINE. DO NOT GRADE OR REMOVE STUMPS OR ROOT SYSTEMS FROM THE REST OF THE RIGHT-OF-WAY IN WETLANDS UNLESS THE CHIEF INSPECTOR AND ENVIRONMENTAL INSPECTOR DETERMINE THAT SAFETY RELATED CONSTRUCTION CONSTRAINTS REQUIRE REMOVAL OF TREE STUMPS FROM UNDER THE WORKING SIDE OF THE RIGHT-OF-WAY.
6. TOPSOIL STRIPPING SHALL NOT BE REQUIRED IN SATURATED SOIL CONDITIONS.
7. UTILIZE AMPHIBIOUS EXCAVATORS (PONTOON MOUNTED BACKHOES) OR TRACKED BACKHOES SUPPORTED BY PREFABRICATED EQUIPMENT MATS OR FLOATS, TO EXCAVATE TRENCH. IF PREFABRICATED EQUIPMENT MATS ARE USED FOR STABILIZATION, THE BACKHOE SHALL GRADUALLY MOVE ACROSS THE WETLAND BY MOVING THE MATS FROM IMMEDIATELY BEHIND TO IMMEDIATELY IN FRONT OF THE BACKHOE'S PATH.
8. FABRICATE PIPE IN A STAGING AREA OUTSIDE THE TYPE III WETLAND. NO CONCRETE COATING ACTIVITY WITHIN 100 FEET OF WETLAND BOUNDARY, UNLESS APPROVED BY ENVIRONMENTAL INSPECTOR.
9. LEAVE HARD PLUGS AT THE EDGE OF "INUNDATED WETLAND UNTIL JUST PRIOR TO PIPE PLACEMENT.
10. FLOAT PIPE IN PLACE, LOWER-IN, INSTALL TRENCH PLUGS. AND BACKFILL.
11. RESTORE GRADE TO NEAR PRE-CONSTRUCTION TOPOGRAPHY AND INSTALL PERMANENT EROSION CONTROL.
12. REMOVE ANY MATS UTILIZED TO SUPPORT AMPHIBIOUS EQUIPMENT FROM WETLANDS UPON COMPLETION.
13. WETLANDS CROSSED USING PUSH/PULL METHOD TEND TO BE TOO WET FOR EFFECTIVE SEEDING. HOWEVER, IF THE SITE IS DRY ENOUGH AND IF DIRECTED BY THE ENVIRONMENTAL INSPECTOR, THE RIGHT-OF-WAY SHALL BE SEEDED.

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

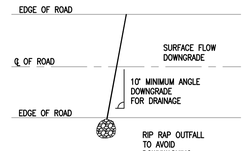
TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WCC.3 "INUNDATED WETLAND" INSTALLATION PROCEDURE

NOTE: THIS WILLIAMS STANDARD DETAIL IS BASED ON PADEP STANDARD CONSTRUCTION DETAIL #3-9.



TYPICAL CROSS-SECTION



TYPICAL PLAN VIEW

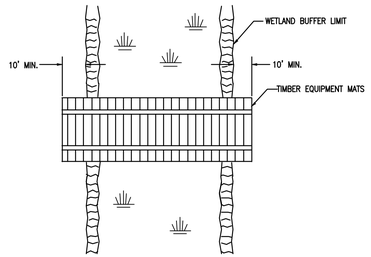
NOTES:

1. DEFLECTORS SHALL BE USED ON TEMPORARY ACCESS ROADS WITH SLOPES GREATER THAN 10 PERCENT. MAXIMUM DEFLECTOR SPACING SHALL BE 100 FEET.
2. DEFLECTOR SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT.
3. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM DEFLECTOR WITHIN 24 HOURS OF INSPECTION.
4. BELT SHALL BE REPLACED WHEN WORN AND NO LONGER EFFECTIVE.

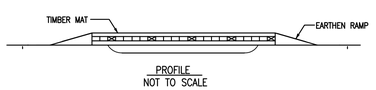
NO.	DATE	BY	REVISION DESCRIPTION	W.O. NO.	CHK.	APP.

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WD WATER DEFLECTOR



PLAN
NOT TO SCALE



PROFILE
NOT TO SCALE

NOTES:

1. PERIODICALLY CHECK INSTALLATION AND REMOVE BUILD-UP OF SEDIMENT OR DEBRIS.
2. MATERIALS PLACED IN WETLANDS SHALL BE COMPLETELY REMOVED DURING FINAL CLEAN-UP. REMOVAL OF THIS STRUCTURE IS NOT CONTINGENT UPON ESTABLISHMENT OF PERMANENT VEGETATION.
3. IF A WATERBODY IS LOCATED WITHIN A WETLAND SYSTEM, EXTEND TIMBER EQUIPMENT MATS TO THE BRIDGE EQUIPMENT CROSSING (BEC) USED TO CROSS THE WATERBODY IN ORDER TO ALLOW FOR CONTINUOUS TIMBER EQUIPMENT MAT COVERAGE THROUGH THE WETLAND AND WATERBODY AREA.
4. USE ADDITIONAL TIMBER MAT LAYERS TO RAISE CROSSING ABOVE GRADE WHERE POOR SOIL CONDITIONS EXIST.
5. TIMBER EQUIPMENT MATS SHALL EXTEND A MINIMUM OF 10 FEET OUTSIDE OF THE WETLAND BOUNDARIES.
6. INSTALL EARTHEN RAMP APPROACHES TO TIMBER EQUIPMENT MATS. EARTHEN RAMPS TO BE CONSTRUCTED OF UPLAND MATERIAL, TOP SOIL SHALL NOT BE USED TO CONSTRUCT EARTHEN RAMPS.

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
STANDARD ENVIRONMENTAL DETAIL

WEC WETLAND EQUIPMENT CROSSING

SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE, ENGINEERING, ENVIRONMENTAL AND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT

BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET

BEST MANAGEMENT PRACTICES DETAILS

Williams GAS PIPELINE

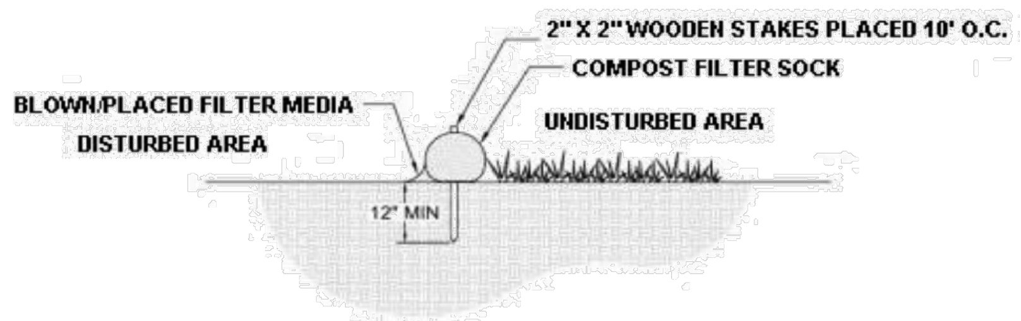
DRAWN BY:	ELZ	DATE:	05/15/15	ISSUED FOR BID:	SCALE:
CHECKED BY:	JLK	DATE:	07/02/15	ISSUED FOR CONSTRUCTION:	REVISION: *2*
APPROVED BY:	SMK	DATE:	07/08/15	DRAWING NUMBER: ASR-BMP	SHEET 11 OF 11
WO:					

Drawn By & Date/Time: joutlaw Nov 13, 2016 - 2:19pm
Drawing Location & Name: G:\JOBS\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(20S)_LA-BMP-11.dwg

TABLE 1: SEDIMENT BARRIER SUMMARY (CONTINUED)

E&S WORKSHEET #1
#N/A

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

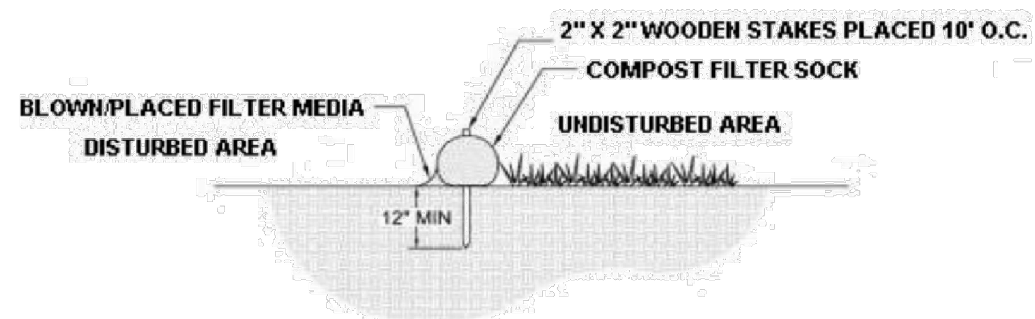


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
0	24	5+00	to	12+75		22	75
	12	12+75	to	13+50	Stream	8	63
	24	14+00	to	16+25		22	100
	32	16+75	to	19+25		12	327
	24	19+50	to	22+25		13	170
	12	22+25	to	23+00	Road	11	112
	24	27+50	to	31+00		11	150
	24	32+25	to	41+50		8	150
	24	41+50	to	45+75		2	780
	12	43+75	to	46+75	Road	6	140
M-0147	24	45+50	to	0+00		7	150
	32	0+00	to	4+25		8	365
	12	4+50	to	6+00		11	129
1	24	6+25	to	12+00		10	140
	12	12+25	to	16+00		7	145
	24	16+00	to	19+25		7	90
	12	19+25	to	25+75		9	150
	24	26+00	to	28+50		23	100
	12	28+50	to	30+50		5	160
	12	29+50	to	32+00	Wetland/Stream	6	152
	24	33+00	to	40+50		14	150
	24	40+50	to	41+25	Road	5	200
	24	41+25	to	100+50		5	150
	24	42+00	to	44+50	Road	5	200
	12	102+00	to	102+00	Road	4	50
2	12	106+25	to	109+00		14	44
	24	109+00	to	110+00		9	83
	18	110+50	to	111+00	Road	30	45
	24	111+00	to	116+75		20	100
	12	115+75	to	116+75	Road	22	54
M-0324	24	0+00	to	3+00		6	426
	12	3+00	to	3+25	Road	7	105
	24	3+25	to	6+00		6	426
	24	6+50	to	8+25		9	130
	12	8+50	to	9+25		9	89
	12	9+25	to	10+00	Road	9	100
	12	10+00	to	11+60	Road	10	107
M-0224	24	3+00	to	4+75		9	150
	24	5+00	to	147+00		4	518

- Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

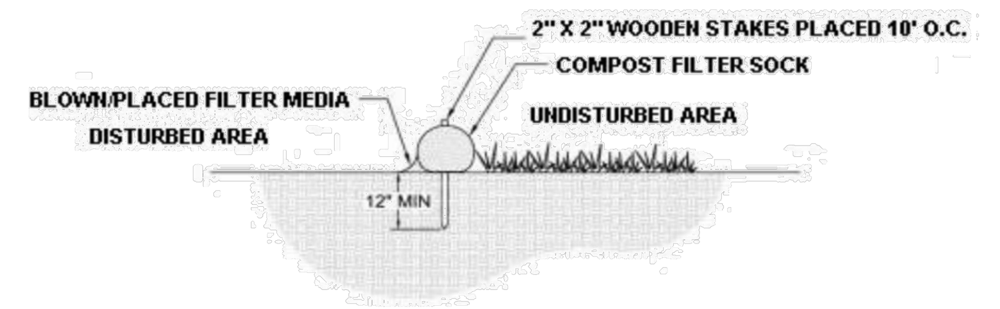


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
6	24	322+00	to	324+50		13	150
	12	324+00	to	324+50	Road	9	112
	24	326+00	to	327+00		4	187
	12	327+50	to	331+00		7	137
	12	331+50	to	331+75	Road	17	42
	24	333+00	to	335+25		9	234
	12	335+50	to	338+50		2	98
	12	338+75	to	339+00	Road	2	217
	12	338+50	to	340+00		2	103
	18	340+25	to	345+00		4	346
	24	345+50	to	350+00		9	200
	12	350+00	to	352+50	Road	10	119
	32	360+00	to	361+50		15	300
	24	361+50	to	362+50		18	100
	24	365+00	to	366+00		40	50
	24	366+00	to	366+50	Road	39	66
	24	367+50	to	368+00		22	31
	12	368+25	to	369+00	Road	20	20
7	24	368+75	to	371+50		25	89
	12	372+00	to	373+00	Road	27	16
	24	372+75	to	373+50		58	48
	12	373+50	to	374+50	Road	27	16
	32	374+50	to	378+25	Wetland/Stream	15	325
	24	378+75	to	382+50		45	50
	24	382+00	to	383+50	Road	11	50
M-0227	24	382+75	to	6+25		28	100
	12	6+00	to	393+00	Road	2	150
	12	393+00	to	395+00	Wetland/Stream	4	170
	12	395+00	to	403+00	Road	4	90
	12	403+00	to	407+00		2	126
	18	408+00	to	410+50		11	150
	18	409+50	to	410+75	Road	50	27
	24	411+00	to	412+25		48	50
	32	412+25	to	416+00		29	120
	12	416+00	to	419+25		12	75
	24	419+50	to	421+50		31	51
8	24	421+50	to	422+75	Stream	28	54

Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

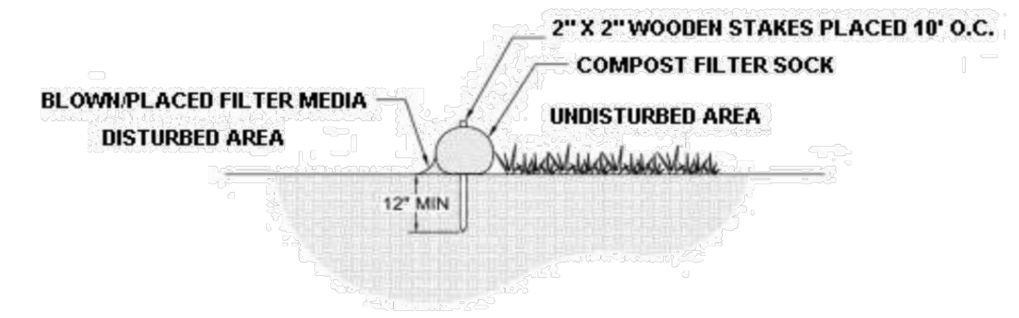


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
8	32	422+75	to	425+00		5	128
	32	425+25	to	428+25		14	350
	18	428+25	to	428+50	Stream	5	255
	32	428+50	to	432+25		14	350
	24	433+00	to	434+00	Stream/Road	2	500
	24	434+00	to	438+00		5	290
M- 0405	24	438+25	to	5+25		17	156
	32	4+00	to	8+00		6	474
	18	8+50	to	12+00		11	131
	12	12+00	to	12+75		8	40
	18	12+75	to	22+00		16	107
9	12	22+25	to	22+75	Road	9	69
	18	22+75	to	23+50		35	46
	18	13+50	to	25+25		12	133
	18	25+50	to	29+75		23	75
	18	29+75	to	30+00	Wetland/Stream	68	26
	18	32+25	to	36+75		17	122
	32	37+00	to	42+50		20	223
	18	43+25	to	46+25		6	291
	12	46+50	to	47+50		18	28
	32	47+00	to	51+00		20	235
	24	51+25	to	55+75		24	114
	18	56+00	to	59+50		18	85
	12	59+50	to	60+00	Stream	22	40
	12	60+00	to	62+00		30	34
	32	62+25	to	64+00		11	298
	32	64+25	to	68+25		27	141
	18	70+25	to	71+50	Road	11	140
	12	71+00	to	72+00		12	122
	12	75+75	to	76+50	Stream/Road	40	12
	18	76+50	to	84+29		14	125
M-0417	18	0+00	to	0+25		13	108
	18	2+50	to	3+50	Stream	32	42
	24	325+00	to	533+75		18	200
10	18	533+75	to	533+50	Stream	46	25
	24	535+00	to	536+50		19	96
	18	536+50	to	539+50		7	279
	18	539+75	to	539+75	Road	5	250
	12	540+00	to	540+00	Road	33	14
	12	540+25	to	545+50		8	145
	12	547+00	to	550+00		8	134
	24	550+00	to	555+00		7	328
	24	553+75	to	563+00		19	87

SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

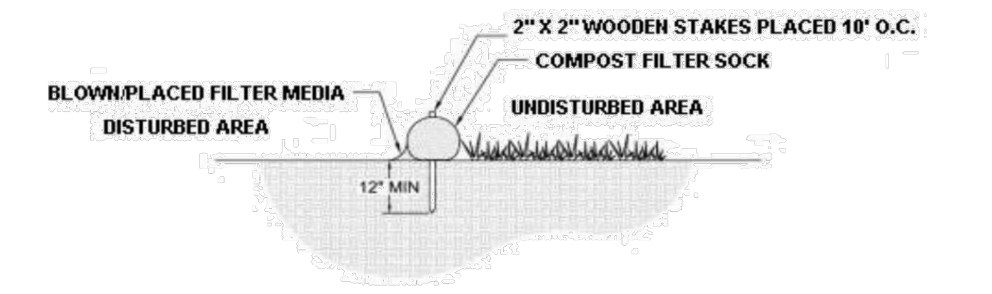


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
	18	563+00	to	569+75		16	146
	24	569+75	to	574+00		8	147
	12	574+50	to	575+00	Stream	2	138
11	32	575+25	to	580+00		6	521
	12	580+25	to	581+25	Wetland/Stream	3	36
	12	581+50	to	586+75		4	141
	12	586+75	to	587+75	Wetland/Stream	5	70
	12	587+75	to	589+75		8	77
	24	589+75	to	597+00		7	147
	18	597+25	to	599+25		10	223
	12	600+75	to	602+00		7	105
	18	602+50	to	603+50	Road	25	83
	12	604+00	to	604+00	Road	36	10
	18	604+25	to	608+75		12	150
12	24	609+00	to	639+00		9	148
	12	673+00	to	677+00		12	70
	24	677+00	to	681+00		10	137
	18	681+50	to	684+50		11	175
M-0248	18	684+75	to	2+00		14	135
13	18	0+00	to	0+00	HDD Pull Back Area	16	109
	24	2+00	to	7+75		15	90
	18	7+50	to	9+25	Road/Stream	18	82
	18	9+50	to	16+50		20	86
	18	16+50	to	18+25		23	62
	32	17+50	to	20+75	Road	29	152
	18	20+75	to	714+00		19	131
M-0434	12	714+00	to	2+00		17	72
	12	715+00	to	715+00	Road	18	72
	12	0+00	to	2+25		15	69
	12	2+25	to	3+00	Wetland/Road	14	71
	12	2+75	to	4+75		13	95
	12	4+75	to	5+25	Stream	8	87
	12	5+25	to	7+00		9	113
	12	7+00	to	9+25	Wetland/ Stream/Road	11	102
	12	8+50	to	13+00		19	69
	18	13+00	to	13+50	Stream	19	86
	12	13+50	to	14+00	Road	18	45
	24	14+00	to	731+75		16	185
	18	731+75	to	732+75	Road	14	155
	12	732+75	to	734+00	Wetland	15	90

- Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

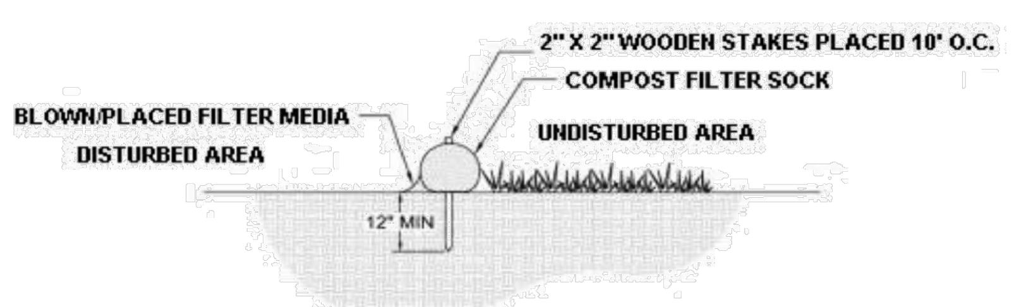


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
13	24	734+00	to	736+00		14	110
14	12	735+00	to	740+75	Road	12	73
	18	736+25	to	741+75		17	123
	24	741+75	to	746+50		12	91
	12	749+00	to	749+75	Road	7	83
M-0206	24	750+50	to	1+50		13	105
	12	2+25	to	2+50	Road	4	66
	12	2+25	to	3+00	Wetland	12	46
M-0206 to M-0188	18	3+25	to	3+75		12	159
	18	3+75	to	5+00	Wetland	23	97
	18	5+25	to	5+50	Road	23	72
	12	5+50	to	6+25	Wetland	13	48
	18	6+25	to	11+00		10	169
	18	11+00	to	12+25	Wetland	12	100
	18	12+50	to	769+25		12	147
	24	769+25	to	772+00		24	89
	12	772+50	to	773+25	Stream	6	59
	24	773+25	to	787+75		10	139
	12	787+75	to	787+75	Road	3	13
	18	788+00	to	788+00	Road	19	82
15	18	788+25	to	795+50		12	180
	12	795+00	to	796+25	Road	7	35
	12	795+50	to	796+75	Road	8	167
	18	796+75	to	799+75		15	131
	24	799+75	to	801+25		15	96
	18	801+25	to	806+00		14	130
	24	806+00	to	809+25		32	46
	18	809+25	to	810+25	Stream	10	150
	18	809+75	to	810+50		36	40
	18	810+50	to	811+50	Road	10	183
	18	811+00	to	815+75		14	129
	24	815+50	to	817+50		20	98
	32	817+50	to	820+00		8	424
	12	821+00	to	821+25	Road	3	286
	12	822+00	to	824+00		2	281
16	24	824+00	to	848+75		7	122
	12	848+75	to	849+00	Road	3	12
	24	849+00	to	850+75		4	157

- Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

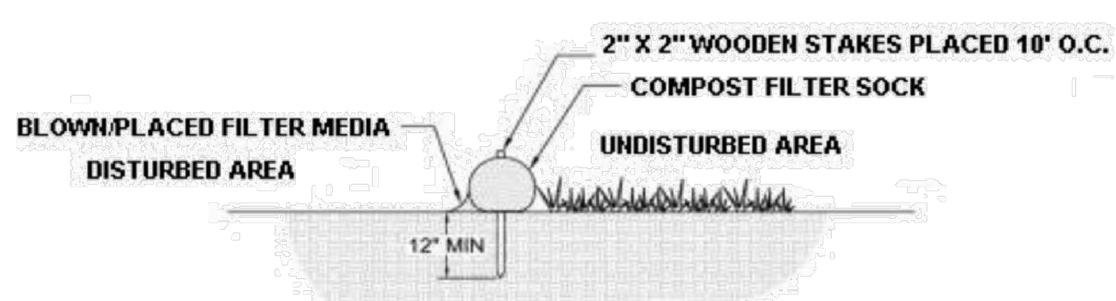


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
2	12	147+00	to	147+50	Road	3	75
3	24	148+00	to	158+75		4	612
M-0184	24	159+75	to	3+75		9	208
	24	4+00	to	5+00		5	260
	24	5+00	to	5+00	Road	5	260
	24	5+00	to	13+25		3	162
	12	13+25	to	14+00	Road	4	110
	24	14+75	to	20+50		5	200
	12	21+50	to	21+50	Road	3	160
	24	21+25	to	25+00		5	191
	24	25+00	to	31+00		10	150
	24	31+25	to	32+75		5	164
	12	33+00	to	35+25		2	206
	12	33+25	to	33+50	Road	2	155
	12	34+50	to	35+25		2	206
	24	44+00	to	44+50		12	140
	12	44+75	to	44+75	Stream	11	40
	24	45+00	to	50+75		15	100
	12	51+00	to	51+00	Road	13	50
4	24	51+75	to	53+50		6	150
	24	54+50	to	56+00		6	150
	24	56+00	to	221+75	Road	3	284
	24	56+00	to	236+50		4	200
	24	236+50	to	239+25		4	150
	24	239+50	to	245+00		10	162
	12	246+00	to	248+00		2	336
	24	248+00	to	253+50		18	80
	18	253+50	to	258+50		11	200
	24	258+75	to	262+50		18	100
5	24	262+50	to	271+50		13	220
	24	271+50	to	280+50		13	147
	12	280+50	to	281+00	Road	13	93
M-0354	12	281+75	to	0+25	Wetland/Stream	6	55
	12	0+25	to	6+50		11	131
	12	6+50	to	294+25		4	162
	12	294+50	to	298+50		2	389
	12	302+50	to	303+00	Road	8	103
	12	303+25	to	308+50		12	141
	24	308+50	to	315+00		12	150
6	24	318+00	to	321+75		6	287

- Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

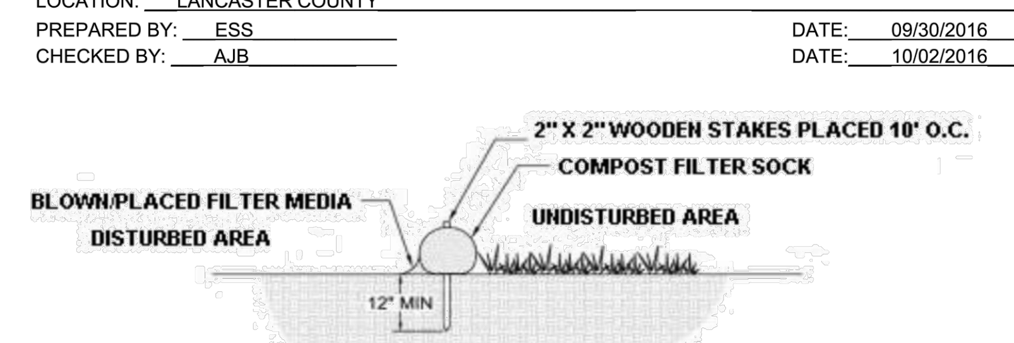


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
19	24	1019+00	to	1031+25		2	316
	12	1031+50	to	1038+00		2	324
	12	1038+25	to	1039+00	Road	12	109
	24	1039+00	to	1+50		2	316
	24	4+50	to	5+50	Railroad	28	101
	12	5+75	to	5+75	Wetland	2	191
	12	5+75	to	7+25		2	283
20	12	7+25	to	8+00	Stream	2	276
	24	8+00	to	1068+00		16	159
	32	1068+50	to	1073+00		5	625
	12	1073+25	to	1073+25	Road	5	220
	12	1073+50	to	1073+50	Road	2	352
	12	1073+50	to	1077+50		2	429
	24	1078+75	to	1079+75		4	273
	32	1080+25	to	1088+50		2	1028
	12	1088+75	to	1088+75	Road	3	123
	12	1089+50	to	1090+00	Road	2	135
	32	1089+75	to	1098+75		2	1100
	12	1089+75	to	1099+00	Stream	6	167
	32	1099+00	to	1107+50		2	1148
	12	1107+25	to	1107+75	Road	2	150
21 M-0396	12	1107+75	to	5+00		2	75
	12	5+00	to	8+00		9	98
	12	8+00	to	10+25	Wetland/Stream	3	180
	12	10+50	to	16+50		9	126
	18	15+75	to	1135+00		8	257
	12	1135+00	to	1144+75		2	431
	24	1144+75	to	1148+25		18	204

-Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

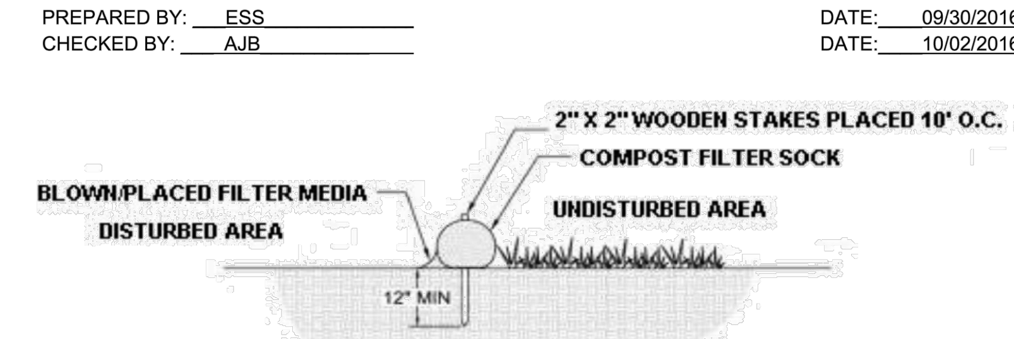


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
21	24	1148+50	to	1152+75	Stream	10	269
	24	1150+00	to	1161+50		5	230
22	12	1161+75	to	1162+00	Wetland	5	184
	12	1162+00	to	1170+50		4	171
	24	1171+00	to	1173+25		30	95
	12	1173+50	to	1173+75	Road	39	24
	24	1173+75	to	1179+00		10	109
	12	1179+00	to	1179+00	Road	5	158
	12	1179+25	to	1179+25	Road	2	169
	12	1180+75	to	1181+25	Stream	3	411
	24	1181+00	to	1191+00		12	145
	12	1192+50	to	1192+50	Road	2	58
	12	1192+75	to	1192+75	Road	7	59
M-0192	24	1192+75	to	1203+50		9	243
	12	1202+75	to	1205+00	Road	4	127
	12	1204+00	to	1207+25		9	159
	12	1206+75	to	1207+50	Road	9	70
	12	1207+25	to	1208+00	Road	9	90
23	18	1208+00	to	1211+50		12	141
	18	1215+00	to	1215+50	Stream	18	142
	32	1215+50	to	1218+75		13	284
M-0209	24	1218+75	to	0+75		14	145
	12	2+25	to	4+00		3	286
	18	5+50	to	14+25		13	120
	12	15+50	to	16+25	Stream	15	16
	18	16+50	to	27+75		11	144
	12	28+00	to	28+00	Road	12	81
	18	30+50	to	1250+50		4	417
	24	1250+50	to	1261+00		5	351
	12	1261+25	to	1262+00	Stream	4	147
	12	1262+00	to	1263+50		2	209
24	24	1267+00	to	1268+75		4	590
	24	1271+00	to	1277+50		3	321
	32	1278+00	to	1292+00		2	1083
	32	1292+25	to	1292+25	Road	6	560
	32	1292+50	to	1292+50	Road	7	405
	12	1292+75	to	1296+75		2	325
	24	1301+00	to	1305+50		2	352
	32	1305+50	to	1309+00		3	848
	24	1309+00	to	1311+00		7	128

-Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016

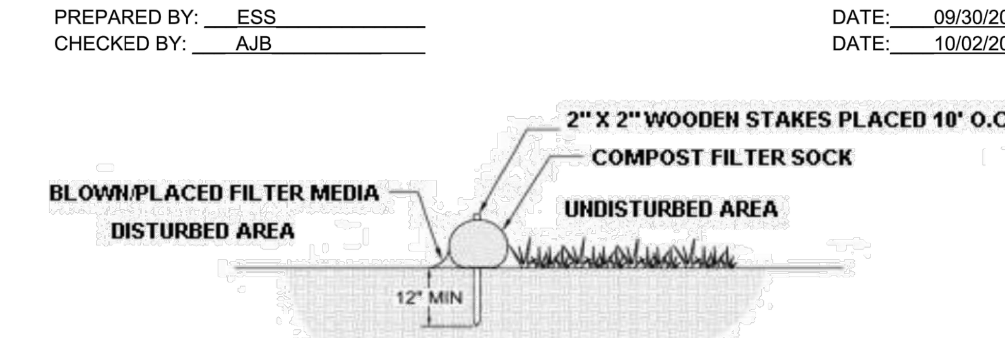


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
24	32	1311+00	to	1315+00		3	1041
25	24	1315+50	to	1322+50		3	511
	24	1322+75	to	1330+50		2	847
	12	1336+75	to	1336+75	Road	2	334
	12	1337+00	to	1337+00	Road	2	246
	24	1337+00	to	1344+25		3	800
	12	1344+75	to	1348+25	Road	2	282
	12	1349+00	to	1351+00	Road	2	194
	12	1349+50	to	1354+50		4	315
	12	1358+00	to	1372+50		2	260
26	24	1373+25	to	1375+50		3	270
	12	1376+25	to	1376+25	Road	2	489
	12	1376+50	to	1376+50	Road	2	355
	24	1378+00	to	1385+50		2	975
	12	1385+75	to	1385+75	Road	2	489
	12	1386+00	to	1386+00	Road	2	355
	24	1386+00	to	1388+75		2	975
	12	1390+75	to	1402+50		2	329
	12	1402+00	to	1402+75	Road	2	232
	12	1403+00	to	1405+50		2	232
	24	1405+50	to	1409+00		2	287
	12	1409+75	to	1411+25		2	287
	12	1413+00	to	1417+50		2	210
27	24	1418+00	to	1435+25		2	615
	12	1436+25	to	1439+75		3	199
	24	1440+00	to	1445+25		3	205
	12	1446+25	to	1446+75	Railroad	10	14
	12	1447+00	to	1447+00	Road	3	65
	12	1457+00	to	1457+50	Road	3	65
	12	1457+50	to	1458+50	Road	3	65
	24	1458+50	to	1471+25		2	341
	32	1471+25	to	1474+25		2	1226
28	12	1474+25	to	1482+00		2	300
	12	1481+50	to	1483+00	Road	4	320
M-0162	24	1+00	to	7+50		4	460
	12	7+50	to	13+25		2	150
	12	13+25	to	14+50	Road	17	25
	12	14+50	to	24+50		3	289
	24	24+50	to	31+75		2	270
	12	32+50	to	45+50		2	478

Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

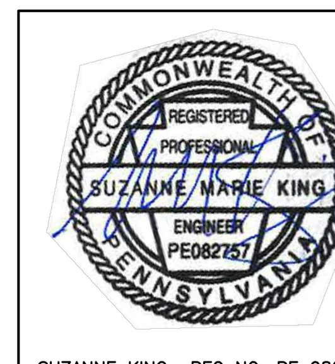
E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS DATE: 09/30/2016
CHECKED BY: AJB DATE: 10/02/2016



MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
	12	45+50	to	51+00		3	285
29 M-0162	18	51+00	to	1533+00		3	470
	12	1533+00	to	1533+50	Road	2	300
	12	1533+50	to	1535+00		2	300
	24	1535+00	to	1538+25		3	192
	12	1538+25	to	1543+50		2	400
	24	1543+50	to	1558+00		11	112
	12	1558+75	to	1560+00	Road	6	40
	12	1556+00	to	1564+75		6	200
	12	1564+75	to	1568+00	Road	2	215
	32	1567+00	to	1572+00		5	630
	24	1572+50	to	1580+75		9	145
30	12	1581+00	to	1585+50		9	130
	18	1585+50	to	1587+25		11	140
	24	1587+25	to	1590+50		24	72
	18	1590+75	to	1591+00	Stream	19	90
	18	1591+50	to	1591+75	Road	19	90
	24	1592+50	to	1594+00		20	99
	24	1594+00	to	1600+00		7	420
M-0308	24	1600+50	to	2+00		20	119
	24	2+25	to	4+50	Road/Stream/ Wetland	40	35
	12	4+50		1617+25		3	420
	18	1617+25	to	1617+25	Stream	18	125
	24	1617+75	to	1625+75		10	200
	12	1627+00	to	1628+75	Road	4	87
	24	1628+00	to	1629+25		7	152
	32	1629+50	to	1631+50		12	145
	32	1629+25	to	1632+50	Road	8	453
	32	1632+50	to	1634+50		7	500
31	24	1636+00	to	1646+00		6	100
	12	1646+25	to	1647+25	Stream/Wetland	20	21
	18	1647+25	to	1652+50		15	140
	24	1652+00	to	1660+00		5	190
	18	1660+00	to	1662+25		4	420
	24	1662+25	to	1666+50		18	25
	12	1667+50	to	1667+50	Stream/Wetland	15	50
	24	1668+50	to	1672+50		9	162
	24	1677+50	to	1678+50		3	209
	12	1679+25	to	1685+00		2	208
	24	1686+00	to	1688+00		3	219

-Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372



SUZANNE KING REG NO. PE 082757

BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	Oct. 2016	BL	PADEP TECHNICAL DEFICIENCY RESPONSE #1	W0572385	JLK	SMK

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PROPOSED 42" CENTRAL PENN LINE SOUTH PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
LANCASTER COUNTY, PENNSYLVANIA
QUANTITY, CROSSING AND ACIDIC SOIL TABLES

Williams GAS PIPELINE

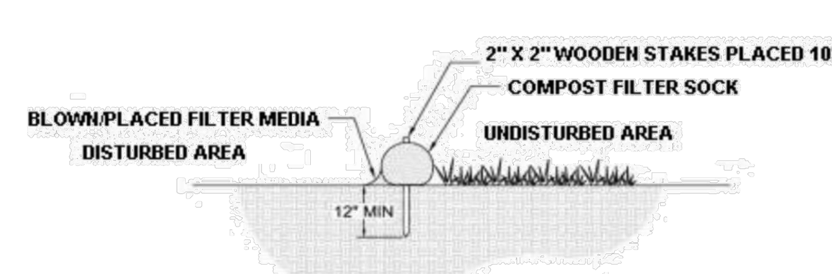
DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	2
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: 24-1600-70-28-A/LL113_9-BMP-LA-TB	SHEET 1 OF 3	
WO:					

Drawn By & Date/Time: joutlaw Nov 13, 2016 – 2:20pm
Drawing Location & Name: G:\JOBS14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(20S)_LA-TB.dwg

TABLE 1: SEDIMENT BARRIER SUMMARY

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS — DATE: 09/30/2016
CHECKED BY: AJB — DATE: 10/02/2016



MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
16	12	851+00	to	853+25		2	144
M-0185	24	*0+25*	*to*	*4+00*		4	136
	12	*5+00*	*to*	*5+00*	*Road*	9	121
	24	*5+00*	*to*	*868+50*		6	242
M-0289	24	*869+00*	*to*	*0+75*		4	615
	18	*0+75*	*to*	*4+75*		13	151
	12	*4+75*	*to*	*6+00*		2	133
	12	*6+50*	*to*	*7+00*	*Road*	10	17
M-0289	12	*7+50*	*to*	*8+50*		3	132
	12	*8+50*	*to*	*10+00*		8	139
	12	*12+75*	*to*	*14+25*	*Road*	4	62
	12	*18+25*	*to*	*21+00*		7	116
17	24	895+75	to	897+25		7	145
	12	897+75	to	898+00	Stream	12	71
	24	898+00	to	907+50		12	118
	18	907+50	to	910+50		9	248
	12	910+50	to	910+50	Road	9	42
	24	911+00	to	*2+00*		20	108
	32	923+75	to	925+00		2	1200
	18	929+50	to	932+00		8	257
	24	933+75	to	938+25		10	301
	12	938+25	to	941+50		4	307
	12	941+75	to	941+75	Road	4	121
	18	942+25	to	942+25	Road	8	264
	32	942+25	to	944+50		4	764
	12	944+50	to	955+25		6	139
18	12	955+25	to	956+00	Stream	3	126
	24	955+75	to	958+50		7	190
	32	959+00	to	964+50		5	600
	12	964+50	to	964+50	Road	8	163
	12	964+75	to	964+75	Road	8	103
	24	965+00	to	974+50		5	374
	12	973+75	to	975+25	Road	3	40
	24	978+50	to	994+75		2	400
	12	994+75	to	995+25	Stream	5	186
19	24	995+50	to	1008+00		7	203
	12	1007+75	to	1008+25	Road	9	81
	24	1008+25	to	1018+00		8	193
	12	1018+25	to	1018+25	Road	5	90
	12	1018+75	to	1018+75	Road	2	222

Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
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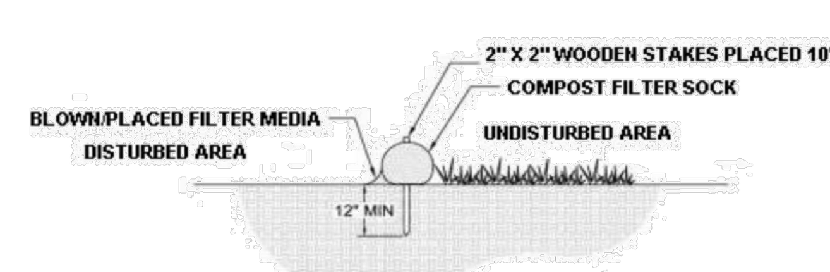
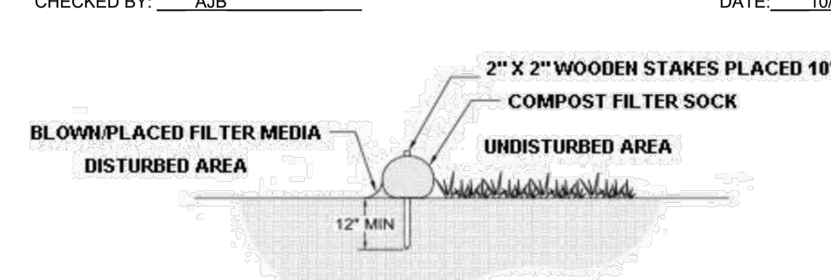


MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
32	18	1688+00	to	1690+75		7	280
	12	1690+75	to	1691+25	Road	5	100
	12	1691+25	to	1698+25		7	180
	24	1698+50	to	1703+25		8	149
	12	1703+50	to	1704+25	Wetland/Stream	6	160
	24	1704+25	to	1707+50		13	177
	24	1708+00	to	1718+00		6	455
	24	1718+00	to	1722+25		8	126
	24	1722+25	to	1728+25		6	386
	24	1728+75	to	1730+00		6	200
33	12	1740+25	to	1743+00	Stream	2	200
	24	1745+50	to	1747+00		6	117
	12	1747+50	to	1747+50	Road	4	85
	24	1747+75	to	1761+25		9	114
	12	1761+50	to	1765+00		4	301
	12	1763+00	to	1765+50	Road	3	200
	24	1765+50	to	1771+75		4	221
	12	1772+50	to	1772+75	Stream	10	30
	12	1772+75	to	1775+00		9	113
	12	1775+00	to	1779+25	Wetland	3	69
	24	1779+50	to	1787+50		4	177
	12	1789+00	to	1789+00	Road	2	50
	12	1791+00	to	1794+50		11	85
34	24	1795+00	to	1797+25	Stream	15	230
M-0164	32	*1797+50*	*to*	*2+25*		10	315
	24	*2+25*	*to*	*10+25*		6	149
	12	*10+25*	*to*	*17+50*	*Road*	6	135
	18	*17+00*	*to*	*1817+00*		7	272
	24	1818+00	to	1820+00		2	197
	12	1820+00	to	1820+50	Stream	4	81
	24	1820+50	to	1825+00		5	225
	12	1825+00	to	1825+75	Road	2	175
	24	1826+00	to	1830+00		3	189
	12	1830+25	to	1831+00	Road	4	5
	24	1830+75	to	1843+25		4	166
35	18	1843+25	to	1849+50		3	424
	24	1849+50	to	1851+00		10	75
	12	1851+75	to	1852+50	Road	9	122
	32	1852+50	to	1862+50		11	336
	24	1862+75	to	1866+75		5	157

Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

E&S WORKSHEET #1
Compost Filter Sock

PROJECT NAME: ATLANTIC SUNRISE PROPOSED GAS PIPELINE
LOCATION: LANCASTER COUNTY
PREPARED BY: ESS — DATE: 09/30/2016
CHECKED BY: AJB — DATE: 10/02/2016



MILEPOST NO.	Dia. In.	LOCATION BEGIN STA.		END STA.	TYPE	SLOPE PERCENT	SLOPE LENGTH ABOVE BARRIER (FT)
35	12	1867+25	to	1871+50		3	231
	24	1871+75	to	1874+75		3	309
	12	1875+25	to	1876+75		3	243
M-0278	12	1+00	to	3+00		3	185
	12	*4+50*	*to*	*4+50*	*Road*	8	68
	12	*4+50*	*to*	*4+75*	*Road*	8	57
	12	*4+75*	*to*	*14+75*	*Road*	7	181
	12	*6+50*	*to*	*16+25*		5	93
36	24	1897+75	to	1902+50		4	207
	12	1903+00	to	1904+25	Stream/Wetland	5	158
	12	1904+50	to	1905+00	Road	7	40
	24	1905+00	to	1914+25		9	122
	32	1914+50	to	1919+50		6	434
	32	1919+75	to	1921+00		10	377
	24	1923+50	to	1927+00		26	62

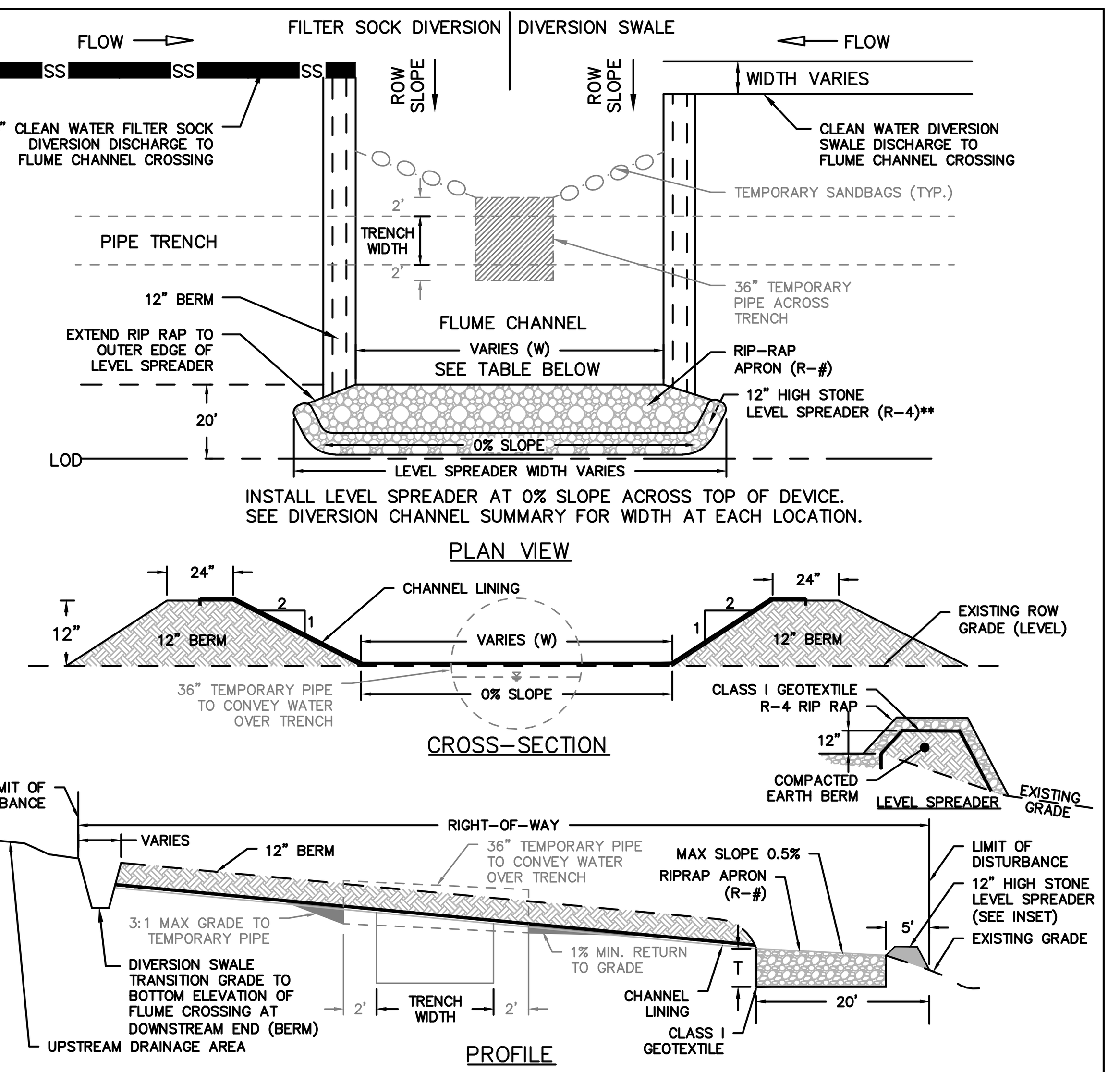
Reroute Area
SOURCE: Pennsylvania Erosion and Sediment Pollution Control Manual, Page 372

TABLE 2: TEMPORARY CLEAN WATER DIVERSION SUMMARY

TEMPORARY DIVERSION SUMMARY - LANCASTER COUNTY, PENNSYLVANIA

MILE POST	DIVERSION: DIVERSION ID	DIVERSION TYPE	BOTTOM WIDTH B (FT)	DEPTH D (FT)	TOP WIDTH W (FT)	Z1 (FT)	Z2 (FT)	TEMPORARY LINING	PERMANENT LINING	DISCHARGE TYPE	WATERBODY**: WIDTH (FT)	LENGTH (FT)	RIP RAP SIZE***	FLUME (CLEAN WATER) CROSSING: FLUME SLOPE (%)	FLUME CHANNEL WIDTH	FLUME CHANNEL LINING	RIP RAP SIZE***	LEVEL SPREADER: Q (CFS)	H (FT)	C_W	LENGTH (FT)	DOWNSTREAM COVER	ALLOWABLE VELOCITY (FT/S)	ACTUAL VELOCITY (FT/S)
0	0.01*	SWALE	2	2	10	2	10	SC150	REINFORCED VEGETATION	WATERBODY	2	8	R-4	-	-	-	-	1.58	N/A	N/A	N/A	N/A	N/A	N/A
	0.02*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	12	8	R-4	12	12	W3000	R-4	9.68	N/A	N/A	N/A	N/A	N/A	N/A
	0.03*	SWALE	2	3	14	2	2	SC150	REINFORCED VEGETATION	FLUME/OFF-SITE	14	18	R-4	6	14	P550	R-4	26.78	N/A	N/A	N/A	N/A	N/A	N/A
	0.04*	SWALE	2	2	10	2	2	W3000	REINFORCED VEGETATION	FLUME/OFF-SITE	14	26	R-6	6	14	P550	R-4	49.28	N/A	N/A	N/A	N/A	N/A	N/A
1	1.01	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	14	8	R-4	10	14	P550	R-4	9.92	N/A	N/A	N/A	N/A	N/A	N/A
	1.02	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	7	14	P550	R-4	2.4	0.15	3.0	14	GRASS	4	1.74
	1.03	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME/OFF-SITE	14	12	R-4	5	14	P550	R-4	15.04	N/A	N/A	N/A	N/A	N/A	N/A
	1.04	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	9	14	P550	R-4	2.08	0.135	3.0	14	GRASS	4	1.65
2	2.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	10	14	P550	R-4	9.28	0.195	3.0	36	FOREST	2	1.99
4	4.01*	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	14	18	R-4	5	14	P550	R-4	20.48	N/A	N/A	N/A	N/A	N/A	N/A
	4.02*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	16	12	W3000	R-4	6.08	0.195	3.0	24	FOREST	2	1.99
5	5.01*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	13	12	W3000	R-4	8.78	0.195	3.0	34	FOREST	2	1.99
	5.02*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	15	12	W3000	R-4	3.83	0.195	3.0	15	FOREST	2	1.99
	5.03*	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	2	17	C125	R-4	7.43	0.31	3.0	14	GRASS	4	2.51
6	6.01	SWALE	2	3	14	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	14	26	R-6	7	14	P550	R-4	49.44	N/A	N/A	N/A	N/A	N/A	N/A
	6.02	FILTER SOCK	0	2	13	0	6.5	SC150	REINFORCED VEGETATION	FLUME/OFF-SITE	12	8	R-4	11	12	W3000	R-4	2.56	N/A	N/A	N/A	N/A	N/A	N/A
	6.03	FILTER SOCK	0	2	18	0	9	SC150	REINFORCED VEGETATION	FLUME	-	-	-	9	14	P550	R-4	0.96	0.08	3.0	14	GRASS	4	1.27
	6.04	SWALE	2	2	10	2	2	W3000	REINFORCED VEGETATION	OFF-SITE	2	12	R-4	-	-	-	R-7	19.2	N/A	N/A	N/A	N/A	N/A	N/A
7	7.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	WATERBODY	2	8	R-4	-	-	-	-	2.24	N/A	N/A	N/A	N/A	N/A	N/A
	7.02	SWALE	2	3	14	2	2	SC150	REINFORCED VEGETATION	FLUME/OFF-SITE	17	22	R-5	1	17	C125	R-4	34.88	N/A	N/A	N/A	N/A	N/A	N/A
	7.03	FILTER SOCK	0	2	14	0	7	SC150	REINFORCED VEGETATION	FLUME	-	-	-	21	10	W3000	R-5	0.8	0.09	3.0	10	FOREST	2	1.35
8	8.01	SWALE	0	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	18	12	W3000	R-4	1.76	0.125	3.0	13	GRASS	4	1.59
	8.02	FILTER SOCK	0	2	16	0	8	S75	UNREINFORCED VEGETATION	FLUME/OFF-SITE	14	8	R-4	8	14	P550	R-4	1.28	N/A	N/A	N/A	N/A	N/A	N/A
9	9.01	FILTER SOCK	0	2	9	0	4.5	SC150	REINFORCED VEGETATION	FLUME	-	-	-	18	12	W3000	R-4	1.44	0.115	3.0	12	GRASS	4	1.53
	9.02	FILTER SOCK	0	2	10	0	5	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	22	10	W3000	R-5	0.8	0.09	3.0	10	GRASS	4	1.35
	9.03	FILTER SOCK	0	2	6	0	3	W3000	REINFORCED VEGETATION	FLUME	-	-	-	20	12	W3000	R-4	0.96	0.10	3.0	10	GRASS	4	1.42
	9.04	FILTER SOCK	0	2	5	0	2.5	W3000	REINFORCED VEGETATION	FLUME/OFF-SITE	14	8	R-4	7	14	P550	R-4	0.32	N/A	N/A	N/A	N/A	N/A	N/A
10	10.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME	-	-	-	13	12	W3000	R-4	3.04	0.19	3.0	12	GRASS	4	1.96
	10.02	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	10	14	P550	R-4	3.04	0.17	3.0	14	GRASS	4	1.86
	10.03	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME	-	-	-	18	12	W3000	R-4	7.2	0.35	3.0	12	GRASS	4	2.66
11	11.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	WATERBODY	2	8	R-4	-	-	-	-	5.12	N/A	N/A	N/A	N/A	N/A	N/A
	11.02	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME/OFF-SITE	14	8	R-4	8	14	P550	R-4	2.72	N/A	N/A	N/A	N/A	N/A	N/A
13	13.01	SWALE	2	2	10	2	2	P550	REINFORCED VEGETATION	FLUME	-	-	-	22	10	W3000	R-5	6.4	0.195	3.0	25	FOREST	2	1.99
	13.02	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	18	12	W3000	R-4	6.72	0.33	3.0	12	GRASS	4	2.59
	13.03	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	WATERBODY	2	12	R-4	-	-	-	-	14.24	N/A	N/A	N/A	N/A	N/A	N/A
	13.04	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME/WATERBODY	12	18	R-4	11	12	W3000	R-4	21.6	N/A	N/A	N/A	N/A	N/A	N/A
	13.05	FILTER SOCK	0	2	13	0	6.5	SC150	REINFORCED VEGETATION	FLUME	-	-	-	19	12	W3000	R-4	0.64	0.062	3.0	14	FOREST	2	1.12
	13.06	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	WATERBODY	2	8	R-4	-	-	-	-	7.04	N/A	N/A	N/A	N/A	N/A	N/A
14	14.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME	-	-	-	13	12	W3000	R-4	7.68	0.35	3.0	12	GRASS	4	2.66
	14.02	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME/WATERBODY	12	12	R-4	12	12	W3000	R-4	12	N/A	N/A	N/A	N/A	N/A	N/A
	14.03	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME/WATERBODY	14	12	R-4	9	14	P550	R-4	11.2	N/A	N/A	N/A	N/A	N/A	N/A
	14.04	SWALE	2	2	10	2	2	P550	REINFORCED VEGETATION	WATERBODY	2	22	R-5	-	-	-	-	34.72	N/A	N/A	N/A	N/A	N/A	N/A
15	15.01	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	FLUME/OFF-SITE	14	8	R-4	9	14	P550	R-4	5.76	N/A	N/A	N/A	N/A	N/A	N/A
	15.02	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME/OFF-SITE	12	12	R-4	14	12	W3000	R-4	11.2	N/A	N/A	N/A	N/A	N/A	N/A
	15.03	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME/OFF-SITE	12	8	R-4	11	12	W3000	R-4	3.2	N/A	N/A	N/A	N/A	N/A	N/A
16	16.01	SWALE	2	2.5	12	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	17	22	R-5	2	17	C125	R-4	35.2	N/A	N/A	N/A	N/A	N/A	N/A
	16.02	SWALE	2	2.5	12	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	17	22	R-5	2	17	C125	R-4	38.08	N/A	N/A	N/A	N/A	N/A	N/A
	16.03	SWALE	2	2.5	12	2	2	S75	UNREINFORCED VEGETATION	FLUME/OFF-SITE	14	12	R-4	3	14	P550	R-4	15.04	N/A	N/A	N/A	N/A	N/A	N/A
17	17.01	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	14	8	R-4	5	14	P550	R-4	9.6	N/A	N/A	N/A	N/A	N/A	N/A
	17.02	SWALE	0	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME/OFF-SITE	14	8	R-4	5	14	P550	R-4	3.52	N/A	N/A	N/A	N/A	N/A	N/A
21	21.01	FILTER SOCK	0	2	7	0	3.5	P550	REINFORCED VEGETATION	FLUME	-	-	-	26	10	W3000	R-5	0.8	0.09	3.0	10	GRASS	4	1.35
	21.02	FILTER SOCK	0	2	8	0	4	W3000	REINFORCED VEGETATION	WATERBODY	2	8	R-4	-	-	-	-	3.04	N/A	N/A	N/A	N/A	N/A	N/A
23	23.01	FILTER SOCK	0	2	8	0	4	SC250	REINFORCED VEGETATION	WATERBODY	2	8	R-4	-	-	-	-	0.64	N/A	N/A	N/A	N/A	N/A	N/A
	23.02	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	12	12	R-4	12	12	W3000	R-4	17.92	N/A	N/A	N/A	N/A	N/A	N/A
24	24.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	5	14	P550	R-4	3.68	0.2	3.0	14	GRASS	4	2.01
	24.02	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	FLUME/OFF-SITE	17	12	R-4	2	17	C125	R-4	13.44	N/A	N/A	N/A	N/A	N/A	N/A
30	30.01	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	14	12	R-4	9	14	P550	R-4	10.72	N/A	N/A	N/A	N/A	N/A	N/A
31	31.01	SWALE	2	2	10	2	2	C125	REINFORCED VEGETATION	WATERBODY	2	8	R-4	-	-	-	-	2.72	N/A	N/A	N/A	N/A	N/A	N/A
	31.02	SWALE	2	2	10	2	2	SC250	REINFORCED VEGETATION	FLUME/OFF-SITE	12	12	R-4	14	12	W3000	R-4	11.2	N/A	N/A	N/A	N/A	N/A	N/A
32	32.01	SWALE	2	2	10	2	2	SC150	REINFORCED VEGETATION	FLUME	-	-	-	7	14	P550	R-4	8.96	0.35	3.0	14	GRASS	4	2.66
35	35.01	SWALE	2	2	10	2	2	S75	UNREINFORCED VEGETATION	FLUME	-	-	-	2	17	C125	R-4	6.56	0.29	3.0	14	GRASS	4	2.42
	35.02	SWALE	2	2.5	12	2	2	SC150	REINFORCED VEGETATION	FLUME/OFF-SITE	14	22	R-5	3	14	P550	R-4	33.6	N/A	N/A	N/A	N/A	N/A	N/A

*High Quality or Exceptional Value Watershed
** Diversion End Treatment to Stream or Wetland
*** Sizing was determined using maximum allowable velocity outlined in Table 6.6 of the PA DEP Erosion and Sediment Pollution Control Program Manual, dated March 2012



SLOPE RANGE ID	RIGHT-OF-WAY SLOPE	Q, CFS	WIDTH (W), FT	CHANNEL LINING	* RIPRAP APRON, R-#	RIPRAP NOMINAL PLACEMENT THICKNESS (T), IN	RIPRAP APRON LENGTH, FT
①	0 – 2%	≤ 50	17	C125	R-4	18	15
②	2 – 10%	≤ 50	14	P550	R-4	18	15
③	10 – 20%	≤ 50	12	W3000	R-4	18	15
④	20 – 30%	≤ 50	10	W3000	R-5	27	15
⑤	30 – 40%	≤ 50	8	W3000	R-6	36	15
⑥	40 – 50%	≤ 50	8	W3000	R-7	45	15

* RIPRAP APRON SIZING WAS DETERMINED USING MAXIMUM ALLOWABLE VELOCITY OUTLINED IN TABLE 6.6 OF THE PA DEP EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, DATED MARCH 2012

** REFER TO TEMPORARY DIVERSION SUMMARY FOR LEVEL SPREADER DESIGN

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

TRANSCONTINENTAL GAS PIPE LINE COMPANY LLC
STANDARD ENVIRONMENTAL DETAIL
CWC — CLEAN WATER CROSSING
Williams.

TABLE 3: WATERBODIES CROSSED BY CPLS PIPELINE AND ACCESS ROADS IN LANCASTER COUNTY

Waterbody ID	Waterbody Name	Milepost	County	Township	Stream Type	State Water Quality Use Classification - Designated Use	State Fishery Classification	Crossing Method	Crossing Window
WW-T25-1001	UNT to Pequea Creek(WW-T25-1001)	M-04051.45	Lancaster	Conestoga	Intermittent	WWF, MF	None	Dam-and-Pump	None
WW-T65-1002	UNT to Pequea Creek(WW-T65-1002)	M-04170.06	Lancaster	Conestoga	Ephemeral	WWF, MF	None	Dam-and-Pump	None
WW-T10-1003	UNT to Pequea Creek(WW-T10-1003)	10.11	Lancaster	Conestoga	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T35-1002	UNT to Conestoga River(WW-T35-1002)	10.88	Lancaster	Conestoga	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T35-1002A	UNT to Conestoga River(WW-T35-1002A)	11.00	Lancaster	Conestoga	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-RS-120006	UNT to Pequea Creek(WW-RS-120006)	M-04050.6	Lancaster	Conestoga	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-RS-120005	UNT to Pequea Creek(WW-RS-120005)	M-04051.1	Lancaster	Conestoga	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-RS-1001	UNT to Conestoga River(WW-RS-1001)	11.13	Lancaster	Conestoga	Intermittent	WWF, MF	None	Flume	None
WW-T10-001	UNT to Fishing Creek(WW-T10-001)	0.25	Lancaster	Drumore	Perennial	HQ-CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T10-003	Muddy Run(WW-T10-003)	MOC-0147 0.59	Lancaster	Drumore	Perennial	TSF, MF	Approved Trout Waters	Dam-and-Pump	None
WW-T10-003	Muddy Run(WW-T10-003)	MOC-0147 0.59	Lancaster	Drumore	Perennial	TSF, MF	Approved Trout Waters	Dam-and-Pump	None
WW-T10-003A	UNT to Muddy Run(WW-T10-003A)	MOC-0147 0.59	Lancaster	Drumore	Ephemeral	TSF, MF	Approved Trout Waters	N/A	None
WW-T20-1001	Conestoga River(WW-T20-1001)	12.32	Lancaster	Manor	Perennial	WWF, MF	None	HDD	None
WW-T36-1001A	UNT to Conestoga River(WW-T36-1001A)	12.40	Lancaster	Manor	Perennial	WWF, MF	None	HDD	None
WW-T49-1001	UNT to Witmer Run(WW-T49-1001)	M-02480.16	Lancaster	Manor	Perennial	WWF, MF	None	Flume	None
WW-T92-1002	UNT to Witmers Run(WW-T92-1002)	M-0434 0.10	Lancaster	Manor	Ephemeral	WWF, MF	None	N/A	None
WW-T36-1004	UNT to Witmers Run(WW-T36-1004)	M-0434 0.16	Lancaster	Manor	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T92-1003	UNT to Witmer Run(WW-T92-1003)	13.80	Lancaster	Manor	Ephemeral	WWF, MF	None	Dam-and-Pump	None
WW-T36-1006	UNT to Witmers Run(WW-T36-1006)	13.88	Lancaster	Manor	Intermittent	WWF, MF	None	Dam-and-Pump	None
WW-T36-1007	Indian Run(WW-T36-1007)	14.64	Lancaster	Manor	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T20-1005	UNT to Indian Run(WW-T20-1005)	15.33	Lancaster	Manor	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T24-1001	Witmers Run(WW-T24-1001)	17.01	Lancaster	Manor	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T11-2001	Stamans Run(WW-T11-2001)	18.10	Lancaster	Manor	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T11-2002	UNT to Stamans Run(WW-T11-2002)	18.85	Lancaster	Manor	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T10-004	Tucquan Creek(WW-T10-004)	MOC-0184 0.849	Lancaster	Martic	Perennial	HQ-CWF, MF	Wild Trout Waters	Dam-and-Pump	January 1 through September 30
WW-T62-001	UNT to Trout Run(WW-T62-001)	5.34	Lancaster	Martic	Intermittent	HQ-CWF, MF	Class A Wild Trout	Dam-and-Pump	April 2 through September 30
WW-T10-100	UNT to Climbers Run(WW-T10-100)	7.15	Lancaster	Martic	Perennial	CWF, MF	None	Dam-and-Pump	None
WW-T20-002	Climbers Run(WW-T20-002)	7.47	Lancaster	Martic	Perennial	CWF, MF	None	Flume	None
WW-T31-002A	UNT to Pequea Creek(WW-T31-002A)	8.00	Lancaster	Martic	Ephemeral	WWF, MF	None	Dam-and-Pump	None
WW-T31-002	UNT to Pequea Creek(WW-T31-002)	8.00	Lancaster	Martic	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T65-001	UNT to Pequea Creek(WW-T65-001)	8.11	Lancaster	Martic	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T31-003	Pequea Creek(WW-T31-003)	8.20	Lancaster	Martic	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T30-4001	Shells Run(WW-T30-4001)	36.04	Lancaster	Mount Joy	Perennial	TSF, MF	None	Dam-and-Pump	None
WW-T31-3003	UNT to Back Run(WW-T31-3003)	30.13	Lancaster	Rapho	Perennial	TSF, MF	None	Dam-and-Pump	None
WW-T31-3004	Back Run(WW-T31-3004)	M-03080.06	Lancaster	Rapho	Perennial	TSF, MF	None	Dam-and-Pump	None
WW-T31-3009	UNT to Back Run(WW-T31-3009)	30.63	Lancaster	Rapho	Perennial	TSF, MF	None	Dam-and-Pump	None
WW-T31-3008	UNT to Back Run(WW-T31-3008)	31.18	Lancaster	Rapho	Perennial	TSF, MF	None	Dam-and-Pump	None
WW-T31-3007	UNT to Back Run(WW-T31-3007)	31.58	Lancaster	Rapho	Perennial	TSF, MF	None	Dam-and-Pump	None
WW-T31-3006	UNT to Brubaker Run(WW-T31-3006)	32.27	Lancaster	Rapho	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T31-3005	Brubaker Run(WW-T31-3005(	32.99	Lancaster	Rapho	Perennial	TSF, MF	None	Flume	None
WW-T31-3005	Brubaker Run(WW-T31-3005)	32.99	Lancaster	Rapho	Perennial	TSF, MF	None	Flume	None
WW-T31-3002A	UNT to Little Chiques Creek(WW-T31-3002A)	33.57	Lancaster	Rapho	Intermittent	TSF, MF	None	Dam-and-Pump	None
WW-T31-3002	UNT to Little Chiques Creek(WW-T31-3002)	33.57	Lancaster	Rapho	Perennial	TSF, MF	None	Dam-and-Pump	None
WW-T31-3001	UNT to Little Chiques Creek(WW-T31-3001)	34.02	Lancaster	Rapho	Ephemeral	TSF, MF	None	Dam-and-Pump	None
WW-T24-3001A	UNT to Little Chiques Creek(WW-T24-3001A)	34.40	Lancaster	Rapho	Perennial	TSF, MF	Approved Trout Waters, Trout Stocked Stream	Dam-and-Pump	June 16 through February 28
WW-T24-3001	Little Chiques Creek(WW-T24-3001)	34.47	Lancaster	Rapho	Perennial	TSF, MF	Approved Trout Waters, Trout Stocked Stream	Dam-and-Pump	June 16 through February 28
WW-T49-2001	UNT to Chiques Creek(WW-T49-2001)	M-02090.30	Lancaster	West Hempfield	Ephemeral	WWF, MF	None	Dam-and-Pump	None
WW-RS-2008	UNT to Strickler Run(WW-RS-2008)	M-0396 0.2	Lancaster	West Hempfield	Intermittent	WWF, MF	None	Flume	None
WW-RS-2002	UNT to Shawnee Run(WW-RS-2002)	21.76	Lancaster	West Hempfield	Intermittent	WWF, MF	None	Flume	None
WW-T24-2001	Strickler Run(WW-T24-2001)	M-03890.14	Lancaster	West Hempsfield	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T10-2005	UNT to Strickler Run(WW-T10-2005)	20.81	Lancaster	West Hempsfield	Perennial	WWF, MF	None	Flume	None
WW-T10-2004	Shawnee Run(WW-T10-2004)	22.36	Lancaster	West Hempsfield	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T10-2002	UNT to Chiques Creek(WW-T10-2002)	23.02	Lancaster	West Hempsfield	Perennial	WWF, MF	None	Dam-and-Pump	None
WW-T42-2003	Chiques Creek(WW-T42-2003)	23.89	Lancaster	West Hempsfield	Perennial	WWF, MF	None	Dam-and-Pump	None
Access Roads									
WW-T25-4002	Shells Run(WW-T25-4002)	AR-LA-030	Lancaster	Mount Joy	Perennial	TSF, MF	None	N/A	None
WW-T25-2001	UNT to Strickler Run(WW-T25-2001)	AR-LA-020	Lancaster	West Hempfield	Perennial	WWF, MF	None	N/A	None
River Primary									
WW-RS-99105	Conestoga River(WW-RS-99105)	11.6941	Lancaster	Conestoga	Perennial	WWF, MF	None	N/A	None
WW-RS-99106	Conestoga River(WW-RS-99106)	11.6941	Lancaster	Conestoga	Perennial	WWF, MF	None	N/A	None

Waterbody IDs with "RS" designations are in non-surveyed area and are based on remote sensing
Key:
CWF = Coldwater Fishes — HQ=High Quality — WWF=Warm Water Fishes
MF = Migratory Fishes — TSF=Trout Stocked Fishes
UNT = Unnamed Tributary — EV=Exceptional Value

CPLS PIPELINE ACCESS ROADS IN LANCASTER COUNTY

Wetland ID	Milepost	County	Township	Wetland Classes Impacted
W-T31-001	1.4	Lancaster	Drumore	PEM/PSS
W-T10-003	1.5	Lancaster	Drumore	PFO
W-T10-101	7.1	Lancaster	Martic	PEM/PFO
W-T10-100	7.2	Lancaster	Martic	PFO
W-T20-002	7.5	Lancaster	Martic	PSS
W-T35-1001	11.0	Lancaster	Conestoga	PEM
W-RS-1001	11.1	Lancaster	Conestoga	PEM
W-RS-1003	11.1	Lancaster	Conestoga	PEM
W-RS-1007	13.2	Lancaster	Manor	PFO
W-T36-1001	13.3	Lancaster	Manor	PEM
W-T36-1002	13.6	Lancaster	Manor	PEM
W-T36-1003	13.7	Lancaster	Manor	PSS
W-T36-1004	14.3	Lancaster	Manor	PEM
W-T36-1005	14.4	Lancaster	Manor	PEM
W-T32-2004	20.0	Lancaster	West Hempfield	PFO
W-T32-2001	21.1	Lancaster	West Hempfield	PEM
W-T32-2002	21.1	Lancaster	West Hempfield	PEM
W-RS-2001	22.0	Lancaster	West Hempfield	PFO
W-RS-2005	23.6	Lancaster	West Hempfield	PEM
W-RS-2002	23.9	Lancaster	Rapho	PEM
W-T31-3003	30.4	Lancaster	Rapho	PEM
W-T31-3006	31.2	Lancaster	Rapho	PEM
W-T31-3005	31.6	Lancaster	Rapho	PEM
W-T31-3004	32.3	Lancaster	Rapho	PEM
W-T31-3002	33.6	Lancaster	Rapho	PEM
W-T31-3001	34.0	Lancaster	Rapho	PEM
W-T30-4001	36.1	Lancaster	Mount Joy	PEM

Wetland IDs with "RS" designations are in non-surveyed area and are based on remote sensing
Key:
PEM = Palustrine Emergent
PFO = Palustrine Forested
PSS = Palustrine Scrub-Shrub
CPLS = Central Penn Line South

COMMONWEALTH OF PENNSYLVANIA — REGISTERED PROFESSIONAL ENGINEER — SUZANNE MARIE KING — PE082757
SUZANNE KING REG NO. PE 082757
BL Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC
ATLANTIC SUNRISE PROJECT
PROPOSED 42" CENTRAL PENN LINE SOUTH
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
LANCASTER COUNTY, PENNSYLVANIA
QUANTITY, CROSSING AND ACIDIC SOIL TABLES
Williams GAS PIPELINE

DRAWN BY: ELZ	DATE: 05/15/15	ISSUED FOR BID:		SCALE:
CHECKED BY: JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:		REVISION: 2
APPROVED BY: SMK	DATE: 07/08/15	DRAWING NUMBER: 24-1600-70-28-A/LL113_9-BMP-LA-TB		SHEET 2 OF 3
WO:				

Drawn By & Date/Time: joutlaw Nov 13, 2016 – 2:20pm
Drawing Location & Name: G:\JOBS14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(20S)_LA-TB.dwg

TABLE 5: LOCATIONS OF ACID SOILS ALONG CPLS PIPELINE IN LANCASTER COUNTY

MP Begin	MP End	County	Map Unit Symbol	pH
0.00	0.19	Lancaster	GbB	5.4
0.19	0.25	Lancaster	MaB	5.3
0.25	0.27	Lancaster	GdB	5.9
0.27	0.42	Lancaster	MaD	5.3
0.42	0.47	Lancaster	GbD	5.4
0.47	0.53	Lancaster	CbC	5.4
0.53	0.74	Lancaster	GbD	5.4
0.74	1.08	Lancaster	CbC	5.4
1.08	1.19	Lancaster	CbB	5
0.85	0.97	Lancaster	CbC	5.4
M-0147 0.00	M-0147 0.23	Lancaster	CbC	5.4
M-0147 0.23	M-0147 0.33	Lancaster	CbB	5
M-0147 0.33	M-0147 0.50	Lancaster	CbC	5.4
M-0147 0.50	M-0147 0.56	Lancaster	MbF	5.3
M-0147 0.56	M-0147 0.62	Lancaster	Hg	6.5
M-0147 0.62	M-0147 0.65	Lancaster	MbD	5.3
M-0147 0.65	M-0147 0.80	Lancaster	CbB	5
M-0147 0.80	M-0147 0.85	Lancaster	MaD	5.3
M-0147 0.85	M-0147 0.92	Lancaster	MaC	5.3
1.87	2.05	Lancaster	GbB	5.4
2.05	2.11	Lancaster	MaC	5.3
2.11	2.15	Lancaster	MbF	5.3
2.15	2.41	Lancaster	MbD	5.3
2.41	2.49	Lancaster	CbC	5.4
2.49	2.55	Lancaster	CbB	5
2.55	2.72	Lancaster	GbB	5.4
2.72	3.00	Lancaster	CbA	5.4
3.00	3.02	Lancaster	CbB	5
3.02	3.06	Lancaster	MaC	5.3
M-0184 0.00	M-0184 0.02	Lancaster	MaC	5.3
M-0184 0.02	M-0184 0.38	Lancaster	CbB	5
M-0184 0.38	M-0184 0.49	Lancaster	GbB	5.4
M-0184 0.49	M-0184 0.66	Lancaster	CbB	5
M-0184 0.66	M-0184 0.82	Lancaster	GbC	5.4
M-0184 0.82	M-0184 0.85	Lancaster	GdB	5.9
M-0184 0.85	M-0184 0.88	Lancaster	GbD	5.4
M-0184 0.88	M-0184 0.88	Lancaster	GbC	5.4
M-0184 0.88	M-0184 1.02	Lancaster	CbB	5
M-0184 1.02	M-0184 1.09	Lancaster	CbA	5.4
M-0184 1.09	M-0184 1.11	Lancaster	CbB	5
M-0184 1.11	M-0184 1.13	Lancaster	CbB	5
4.40	4.46	Lancaster	MaC	5.3
4.46	4.50	Lancaster	GbC	5.4
4.50	4.57	Lancaster	MbD	5.3
4.57	4.61	Lancaster	GbC	5.4
4.61	4.71	Lancaster	GbB	5.4
4.71	4.78	Lancaster	MaC	5.3
4.78	5.24	Lancaster	MbD	5.3
5.24	5.32	Lancaster	MaC	5.3
5.32	5.34	Lancaster	MbF	5.3
5.34	5.38	Lancaster	GbC	5.4
5.38	5.51	Lancaster	CbB	5
5.51	5.61	Lancaster	GbC	5.4
5.61	5.63	Lancaster	GbB	5.4
5.63	5.64	Lancaster	CbB	5
5.64	6.02	Lancaster	GbC	5.4
6.02	6.08	Lancaster	CbB	5
6.08	6.16	Lancaster	GbC	5.4
6.16	6.20	Lancaster	GdB	5.9
6.20	6.26	Lancaster	CbB	5
6.26	6.43	Lancaster	GbC	5.4
6.43	6.62	Lancaster	CbB	5
6.62	6.85	Lancaster	GbC	5.4
6.85	6.88	Lancaster	MaB	5.3
6.88	7.04	Lancaster	MbF	5.3
7.04	7.07	Lancaster	GdB	5.9
7.07	7.12	Lancaster	Nc	6.7
7.12	7.29	Lancaster	MbF	5.3
7.29	7.39	Lancaster	MaD	5.3
7.39	7.56	Lancaster	Nc	6.7
7.56	7.73	Lancaster	Hg	6.5
7.73	7.78	Lancaster	PeD	6.7
7.78	7.88	Lancaster	PeE	6.7
7.88	7.92	Lancaster	PeD	6.7
7.92	7.94	Lancaster	PeE	6.7
7.94	7.97	Lancaster	PeD	6.7
7.97	8.00	Lancaster	GdB	5.9
8.00	8.08	Lancaster	MbF	5.3
8.08	8.21	Lancaster	Cm	5.3
8.21	8.23	Lancaster	W	Water
8.23	8.44	Lancaster	MaD	5.3
8.44	8.56	Lancaster	MaC	5.3
8.56	8.75	Lancaster	MaD	5.3
8.75	8.92	Lancaster	MaC	5.3
8.92	9.00	Lancaster	CbB	5
9.00	9.11	Lancaster	MaC	5.3
9.11	9.20	Lancaster	MaD	5.3
9.20	9.26	Lancaster	GdB	5.9
9.26	9.32	Lancaster	MaD	5.3
9.32	9.51	Lancaster	MbF	5.3
9.51	9.58	Lancaster	HfC	6.5
9.58	9.64	Lancaster	PeD	6.7
9.64	9.83	Lancaster	PeC	6.7
9.83	9.89	Lancaster	PeD	6.7
9.89	9.91	Lancaster	PeE	6.7
9.91	9.96	Lancaster	PeC	6.7
9.96	10.00	Lancaster	PeE	6.7
10.00	10.09	Lancaster	PeC	6.7
10.09	10.15	Lancaster	PeE	6.7
10.15	10.23	Lancaster	PeD	6.7
10.23	10.30	Lancaster	GbB	5.4
10.30	10.57	Lancaster	GbC	5.4
10.57	10.89	Lancaster	MaD	5.3
10.89	11.06	Lancaster	Nc	6.7
11.06	11.19	Lancaster	PeD	6.7
11.19	11.29	Lancaster	PeC	6.7
11.29	11.31	Lancaster	GbD	5.4
11.31	11.38	Lancaster	MaC	5.3
11.38	11.42	Lancaster	GbD	5.4
11.42	11.48	Lancaster	GbC	5.4
11.48	11.55	Lancaster	MbD	5.3
11.55	11.69	Lancaster	GbC	5.4
11.69	11.77	Lancaster	MbF	5.3
11.77	12.00	Lancaster	MaC	5.3
12.00	12.05	Lancaster	MaD	5.3
12.05	12.19	Lancaster	CbC	5.4
12.19	12.26	Lancaster	MbF	5.3
12.26	12.28	Lancaster	GbB	5.4
12.28	12.30	Lancaster	Nc	6.7
12.30	12.32	Lancaster	W	Water
12.32	12.41	Lancaster	PeE	6.7
12.41	12.51	Lancaster	PeC	6.7
12.51	12.66	Lancaster	PeD	6.7
12.66	12.76	Lancaster	PeC	6.7
12.76	12.79	Lancaster	PeD	6.7
12.79	12.89	Lancaster	PeC	6.7
12.89	13.00	Lancaster	PeD	6.7
13.00	13.06	Lancaster	PeC	6.7
13.06	13.10	Lancaster	PeD	6.7
M-0152 0.00	M-0152 0.19	Lancaster	PeD	6.7
M-0152 0.19	M-0152 0.30	Lancaster	MaD	5.3
M-0152 0.30	M-0152 0.38	Lancaster	MbF	5.3
M-0152 0.38	M-0152 0.39	Lancaster	MaD	5.3
13.49	13.83	Lancaster	MaD	5.3
13.83	13.88	Lancaster	PeD	6.7
13.88	13.90	Lancaster	PeE	6.7
13.90	14.00	Lancaster	MaD	5.3
14.00	14.05	Lancaster	MbF	5.3
14.05	14.15	Lancaster	MaD	5.3
14.15	14.25	Lancaster	PeC	6.7
M-0188 0.00	M-0188 0.04	Lancaster	PeC	6.7
M-0188 0.04	M-0188 0.14	Lancaster	GbB	5.4
M-0188 0.14	M-0188 0.20	Lancaster	MaC	5.3
M-0188 0.20	M-0188 0.25	Lancaster	GbB	5.4
M-0188 0.25	M-0188 0.27	Lancaster	PeD	6.7
M-0188 0.27	M-0188 0.33	Lancaster	PeC	6.7
14.55	14.57	Lancaster	PeC	6.7
14.57	14.59	Lancaster	PeD	6.7
14.59	14.63	Lancaster	Ne	7.3
14.63	14.74	Lancaster	PeC	6.7
14.74	14.80	Lancaster	GbB	5.4
14.80	14.84	Lancaster	MaC	5.3
14.84	14.93	Lancaster	MaD	5.3
14.93	15.00	Lancaster	MaC	5.3
15.00	15.11	Lancaster	GbB	5.4
15.11	15.42	Lancaster	MaD	5.3
15.42	15.55	Lancaster	GbC	5.4
15.55	15.61	Lancaster	GbB	5.4
15.61	15.68	Lancaster	MaD	5.3
15.68	15.81	Lancaster	LdB	6.5
15.81	16.04	Lancaster	CkA	5.8
16.04	16.07	Lancaster	LdB	5.9
M-0185 0.00	M-0185 0.08	Lancaster	LdB	5.9
M-0185 0.08	M-0185 0.10	Lancaster	CnB	6.5
M-0185 0.10	M-0185 0.15	Lancaster	CnB	6.5
16.31	16.53	Lancaster	LdB	5.9
16.53	16.57	Lancaster	CkA	5.8
16.57	16.67	Lancaster	LdC	5.9
16.67	16.69	Lancaster	PeC	6.7
16.69	16.78	Lancaster	LdB	5.9
16.78	16.88	Lancaster	LdC	5.9
16.88	16.93	Lancaster	PeC	6.7
16.93	17.03	Lancaster	CkA	5.8
17.03	17.14	Lancaster	LdB	5.9
17.14	17.19	Lancaster	PeC	6.7
17.19	17.30	Lancaster	LdB	5.9
17.30	17.35	Lancaster	PeC	6.7
17.35	17.58	Lancaster	PeD	6.7
17.58	17.80	Lancaster	LdB	5.9
17.80	17.88	Lancaster	GdB	5.9
17.88	17.90	Lancaster	LdB	5.9
17.90	17.98	Lancaster	LdA	5.9
17.98	18.06	Lancaster	LdB	5.9
18.06	18.12	Lancaster	Ln	6.5
18.12	18.13	Lancaster	PeD	6.7
18.13	18.21	Lancaster	PeC	6.7
18.21	18.42	Lancaster	CnB	6.5
18.42	18.51	Lancaster	CbB	5
18.51	18.59	Lancaster	GbC	5.4
18.59	18.76	Lancaster	MaD	5.3
18.76	18.80	Lancaster	CbB	5
18.80	18.95	Lancaster	GbC	5.4
18.95	19.02	Lancaster	CbB	5
19.02	19.16	Lancaster	CbC	5.4
19.16	19.25	Lancaster	CbB	5
19.25	19.35	Lancaster	MaB	5.3
19.35	19.52	Lancaster	CbC	5.4
19.52	19.63	Lancaster	CbB	5
19.63	19.78	Lancaster	MaD	5.3
19.78	19.93	Lancaster	MbF	5.3
19.93	20.03	Lancaster	Ff	6
20.03	20.14	Lancaster	LdB	5.9
20.14	20.20	Lancaster	PeD	6.7
20.20	20.26	Lancaster	PeC	6.7
20.26	20.46	Lancaster	MaB	5.3
20.46	20.86	Lancaster	DbB	5.5
20.86	21.15	Lancaster	CbB	5
21.15	21.20	Lancaster	GdB	5.9
21.20	21.41	Lancaster	CbB	5
21.41	21.58	Lancaster	MaB	5.3
21.58	21.66	Lancaster	CbB	5
21.66	21.85	Lancaster	MbF	5.3
21.85	21.88	Lancaster	MaC	5.3
21.88	21.98	Lancaster	CbC	5.4
21.98	22.09	Lancaster	CbB	5
22.09	22.15	Lancaster	MaB	5.3
22.15	22.24	Lancaster	MbF	5.3
22.24	22.30	Lancaster	MaD	5.3
22.30	22.38	Lancaster	Ln	6.5
22.38	22.57	Lancaster	MaD	5.3
22.57	22.59	Lancaster	MbD	5.3
22.59	22.68	Lancaster	MaB	5.3
22.68	22.70	Lancaster	MbB	5.3
M-0192 0.00	M-0192 0.09	Lancaster	MbB	5.3
22.78	22.79	Lancaster	MbB	5.3
22.79	22.93	Lancaster	MaC	5.3
22.93	22.95	Lancaster	MbD	5.3
22.95	23.05	Lancaster	GdB	5.9
23.05	23.22	Lancaster	MbB	5.3
23.22	23.33	Lancaster	ClB	5.4
23.33	23.35	Lancaster	MbD	5.3
23.35	23.58	Lancaster	GbC	5.4
23.58	23.66	Lancaster	GdB	5.9
23.66	23.77	Lancaster	CbB	5
23.77	23.83	Lancaster	HaB	5.5
23.83	23.86	Lancaster	HbC	5.5
23.86	23.96	Lancaster	EcB	5.5
23.96	24.00	Lancaster	HbC	5.5
24.00	24.18	Lancaster	HaB	5.5
24.18	24.25	Lancaster	HbC	5.5
24.25	24.49	Lancaster	HaB	5.5
24.49	24.62	Lancaster	CbB	5
24.62	24.68	Lancaster	HbC	5.5
24.68	24.96	Lancaster	HaB	5.5
24.96	25.00	Lancaster	HaA	5.5
25.00	25.63	Lancaster	HaB	5.5
25.63	25.72	Lancaster	HbC	5.5
25.72	26.04	Lancaster	HaB	5.5
26.04	26.27	Lancaster	HaA	5.5
26.27	26.50	Lancaster	HaB	5.5
26.50	26.61	Lancaster	DbB	6.7
26.61	26.76	Lancaster	HaB	5.5
26.76	26.95	Lancaster	HbC	5.5
26.95	27.23	Lancaster	HaB	5.5
27.23	27.35	Lancaster	HaA	5.5
27.35	27.44	Lancaster	HaB	5.5
27.44	27.78	Lancaster	HaA	5.5
27.78	27.88	Lancaster	HaB	5.5
27.88	27.99	Lancaster	DbA	6.7
27.99	28.01	Lancaster	HaB	5.5
28.01	28.13	Lancaster	HaA	5.5
M-0162 0.00	M-0162 0.30	Lancaster	HaB	5.5
M-0162 0.30	M-0162 0.45	Lancaster	HaA	5.5
M-0162 0.45	M-0162 0.65	Lancaster	HaB	5.5
M-0162 0.65	M-0162 0.72	Lancaster	HaA	5.5
M-0162 0.72	M-0162 0.76	Lancaster	HaB	5.5
M-0162 0.76	M-0162 0.91	Lancaster	HaA	5.5
M-0162 0.91	M-0162 0.99	Lancaster	HaB	5.5
M-0162 0.99	M-0162 1.10	Lancaster	HaA	5.5
29.10	29.25	Lancaster	HaA	5.5
29.11	29.32	Lancaster	BdB	5.9
29.32	29.40	Lancaster	BdC	5.9
29.40	29.50	Lancaster	BdB	5.9
29.50	29.55	Lancaster	BdC	5.9
29.55	29.59	Lancaster	BdB	5.9
29.59	29.74	Lancaster	BdA	5.9
29.74	29.93	Lancaster	BdB	5.9
29.93	30.16	Lancaster	BeD	5.9
30.16	30.20	Lancaster	BdB	5.9
30.20	30.24	Lancaster	BdA	5.9
30.24	30.27	Lancaster	BdB	5.9
30.27	30.30	Lancaster	BdC	5.9
30.30	30.38	Lancaster	BeD	5.9
30.38	30.42	Lancaster	BdC	5.9
30.42	30.53	Lancaster	BdB	5.9
30.53	30.58	Lancaster	BdC	5.9
30.58	30.65	Lancaster	BeD	5.9
30.65	30.75	Lancaster	BdB	5.9
30.75	30.82	Lancaster	BdA	5.9
30.82	30.88	Lancaster	BdB	5.9
30.88	31.03	Lancaster	BdC	5.9
31.03	31.09	Lancaster	BdB	5.9
31.09	31.13	Lancaster	BdC	5.9
31.13	31.16	Lancaster	BeD	5.9
31.16	31.18	Lancaster	Bm	5.4
31.18	31.30	Lancaster	BeD	5.9
31.30	31.34	Lancaster	BdC	5.9
31.34	31.51	Lancaster	BdB	5.9
31.51	31.54	Lancaster	BeD	5.9
31.54	31.57	Lancaster	Bm	5.4
31.57	31.63	Lancaster	BdC	5.9
31.63	31.95	Lancaster	BdB	5.9
31.95	32.12	Lancaster	BdC	5.9
32.12	32.20	Lancaster	BdB	5.9
32.20	32.23	Lancaster	BdC	5.9
32.23	32.27	Lancaster	BdA	5.9
32.27	32.31	Lancaster	BeD	5.9
32.31	32.33	Lancaster	BdC	5.9
32.33	32.34	Lancaster	BdB	5.9
32.34	32.36	Lancaster	BdC	5.9
32.36	32.38	Lancaster	BeD	5.9
32.38	32.41	Lancaster	BdC	5.9
32.41	32.72	Lancaster	BdB	5.9
32.72	32.76	Lancaster	BdC	5.9
32.76	32.81	Lancaster	BeD	5.9
32.81	32.83	Lancaster	BdC	5.9
32.83	32.91	Lancaster	Bm	5.4
32.91	32.95	Lancaster	Rd	5.4
32.95	33.04	Lancaster	BuB	5.4
33.04	33.10	Lancaster	LaB	5.4
33.10	33.17	Lancaster	LaD	5.4
33.17	33.21	Lancaster	LaC	5.4
33.21	33.30	Lancaster	LaB	5.4
33.30	33.34	Lancaster	LaC	5.4
33.34	33.51	Lancaster	LaB	5.4
33.51	33.59	Lancaster	LaC	5.4
33.59	33.61	Lancaster	LaD	5.4
33.61	33.76	Lancaster	LaC	5.4
33.76	33.84	Lancaster	LaB	5.4
33.84	33.92	Lancaster	LaC	5.4
33.92	34.00	Lancaster	LaD	5.4
34.00	34.04	Lancaster	LaC	5.4
M-0164 0.00	M-0164 0.19	Lancaster	LaC	5.4
M-0164 0.19	M-0164 0.38	Lancaster	LaB	5.4
34.41	34.43	Lancaster	LaC	5.4
34.43	34.50	Lancaster	Rd	5.3
34.50	34.54	Lancaster	BuB	5.4
34.54	34.59	Lancaster	BuA	5.4
34.59	34.69	Lancaster	BuB	5.4
34.69	34.78	Lancaster	LaC	5.4
34.78	34.84	Lancaster	LaB	5.4
34.84	34.89	Lancaster	RaB	5.1
34.89	35.04	Lancaster	BuB	5.4
35.04	35.17	Lancaster	LaD	5.4
35.17	35.21	Lancaster	Rd	5.3
35.21	35.27	Lancaster	BuB	5.4
35.27	35.36	Lancaster	LaC	5.4
35.36	35.59	Lancaster	BuB	5.4
35.59	35.70	Lancaster	UaC	5.4
35.70	35.81	Lancaster	LaB	5.4
35.81	35.93	Lancaster	LaC	5.4
35.93	36.00	Lancaster	BuC	5.4
36.00	36.05	Lancaster	Rd	5.3
36.05	36.20	Lancaster	BuC	5.4
36.20	36.34	Lancaster	BuD	5.4
36.34	36.39	Lancaster	LaD	5.4
36.39	36.47	Lancaster	LbB	6.2
36.47	36.49	Lancaster	LbC	6.2
36.49	36.64	Lancaster	BrB	6

NOTE: SEE THE SUPPORTING PIPELINE AND ACCESS ROAD EROSION AND SEDIMENT CONTROL NARRATIVES FOR DEFINITIONS AND DESCRIPTIONS OF THE MAP UNIT SYMBOL ABBREVIATIONS.

TABLE 4: WETLANDS CROSSED BY CPLS PIPELINE AND ACCESS ROADS IN LANCASTER COUNTY

Wetland ID	Milepost	County	Township	Wetland Classes Impacted
W-T35-1001	11.00	Lancaster	Conestoga	PEM
W-RS-80013	M-04050.6	Lancaster	Conestoga	PFO
W-RS-1001	11.11	Lancaster	Conestoga	PEM
W-RS-1003	11.13	Lancaster	Conestoga	PEM
W-T10-003C	MOC-0147 0.60	Lancaster	Drumore	PFO
W-T36-1002	M-0434 0.05	Lancaster	Manor	PEM
W-T36-1004 /W-T36-1004-1 /W-T36-1004-2	M-02060.05	Lancaster	Manor	PEM
W-T36-1005	M-01880.22	Lancaster	Manor	PEM
W-T62-001A	M-03540.0	Lancaster	Martic	PEM
W-T62-001C	5.34	Lancaster	Martic	PFO
W-T10-101C	7.11	Lancaster	Martic	PFO
W-T10-101A	7.14	Lancaster	Martic	PEM
W-T30-4001	36.05459622	Lancaster	Mount Joy	PEM
W-T31-3003	M-03080.07	Lancaster	Rapho	PEM
W-T31-3006	31.19	Lancaster	Rapho	PEM
W-T31-3004	32.27	Lancaster	Rapho	PEM
W-T31-3002 / W-T31-3002-1	33.63	Lancaster	Rapho	PEM
W-T31-3001	34.03	Lancaster	Rapho	PEM
W-RS-2007	M-0396.0.2	Lancaster	West Hempfield	PEM
W-RS-99020	21.5	Lancaster	West Hempfield	PEM
W-T32-2004	M-03890.11	Lancaster	West Hempsfield	PFO

Wetland IDs with "RS" designations are in non-surveyed area and are based on remote sensing

Key:
PEM = Palustrine Emergent
PFO = Palustrine Forested
PSS = Palustrine Scrub-Shrub

TABLE 6: LOCATIONS OF ACIDIC BEDROCK ALONG CPLS PIPELINE IN LANCASTER COUNTY

Pipeline Facility/ County	Mile Post From	Mile Post To	Linear Distance	Bedrock Formation	Acid Potential	Karst	Rock Type	Rippability	MoC Number MP to MP	Formation	Rock Type
Lancaster	20.0	20.0	0.0	Vintage	Typically Non-acid sulfide bearing.	Formation associated with Karst	Limestone	Difficult	M-0147 0.0 to 0.92 M-0184 0.0 to 1.13 M-0152 0.0 to 0.1 M-0188 0.0 to 0.33 M-0185 0.0 to 0.15	Octoraro Octoraro Conestoga Conestoga and Octoraro Conestoga	schist schist phyllitic limestone phyll. Limest & schist phyllitic limestone
Lancaster	21.5	21.6	0.1	Vintage	Typically Non-acid sulfide bearing.	Formation associated with Karst	Shaly dolomite	Moderately easy to difficult			
Lancaster	23.4	23.8	0.4	Buffalo Springs	Typically Non-acid sulfide bearing.	Formation associated with Karst	Limestone & dolomite	Difficult	M-0192 0.0 to 0.09	Chickies	quartzite
Lancaster	30.1	30.2	0.1	Cocalico	Contain variable amount of pyrite or other sulfide minerals that may only be locally acid-producing, should be field verified.		Shaly and quartzose sandstone	Moderately easy	M-0162 0.0 to 1.1	Stonehenge	limestone
Lancaster	32.8	33.0	0.2								
Lancaster /Lebanon	36.8	37.3	0.5	Diabase	Typically Non-acid sulfide bearing.		Diabase (basalt)	Difficult	M-0164 0.0 to 0.38	New Oxford	shale, sndst. & congl.

COMMONWEALTH OF PENNSYLVANIA REGISTERED PROFESSIONAL SUZANNE MARIE KING ENGINEER PE082757

SUZANNE KING REG NO. PE 082757

BLE Companies — ARCHITECTURE ENGINEERING ENVIRONMENTAL LAND SURVEYING

REVISIONS

NO.	DATE	BY	DESCRIPTION	W.O. NO.	CHK.	APP.
0	08/28/2015	BL	ISSUED FOR PADEP SUBMITTAL	W0572385	JLK	SMK
1	12/02/2015	BL	ISSUED FOR PADEP RESUBMITTAL	W0572385	JLK	SMK
2	*Oct. 2016*	*BL*	*PADEP TECHNICAL DEFICIENCY RESPONSE #1*	*W0572385*	*JLK*	*SMK*

TRANSCONTINENTAL GAS PIPE LINE COMPANY, LLC

ATLANTIC SUNRISE PROJECT

PROPOSED 42" CENTRAL PENN LINE SOUTH
PENNSYLVANIA BEST MANAGEMENT PRACTICES AND QUANTITIES PLAN SET
LANCASTER COUNTY, PENNSYLVANIA

QUANTITY, CROSSING AND ACIDIC SOIL TABLES

Williams GAS PIPELINE

DRAWN BY:	ELZ	DATE: 05/15/15	ISSUED FOR BID:	SCALE:	
CHECKED BY:	JLK	DATE: 07/02/15	ISSUED FOR CONSTRUCTION:	REVISION:	*2*
APPROVED BY:	SMK	DATE: 07/08/15	DRAWING NUMBER: 24-1600-70-28-A/LL113_9-BMP-LA-TB	SHEET	3 OF 3
WO:					

Drawn By & Date/Time: tdelo Nov 15, 2016 - 2:21pm
Drawing Location & Name: G:\JOBS\14\14C\14C4909\DWG\BMPs&DETAILS\PL_DN14C4909(20S)_LA-TB.dwg