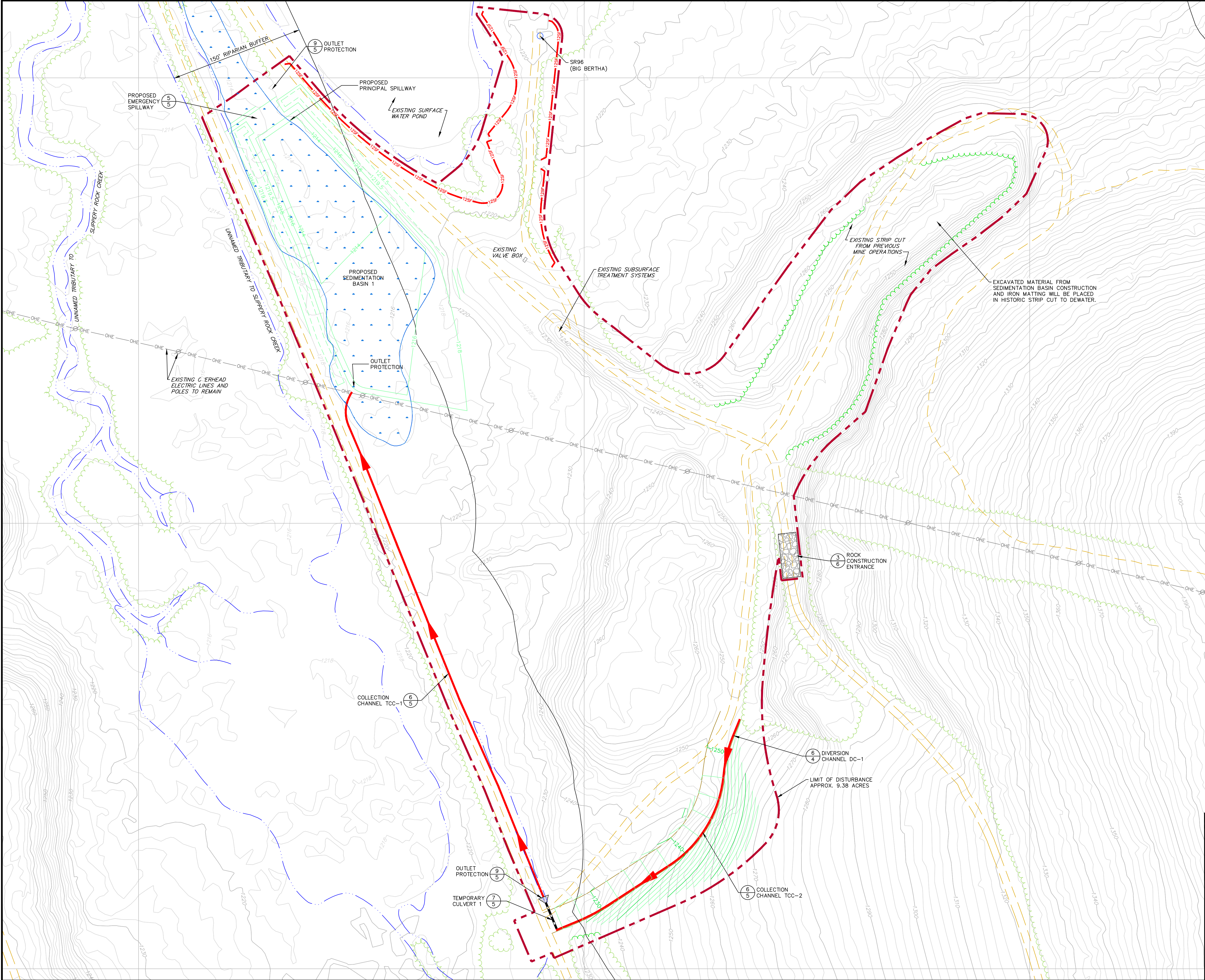


## DRAWINGS









PHASE I E&S CONSTRUCTION SEQUENCE

1. INSTALL ROCK CONSTRUCTION ENTRANCE
2. INSTALL COMPOST FILTER SOCK OR FILTER FABRIC FENCE.
3. CONSTRUCTION OF SEDIMENTATION BASIN 1.
4. REMOVE EXISTING 8-INCH DIAMETER PVC PIPE CULVERT.
5. CONSTRUCTION OF TEMPORARY CHANNEL TCC-1.
6. INSTALL TEMPORARY CULVERT 1.
7. CONSTRUCTION OF TEMPORARY COLLECTION CHANNEL TCC-2.
8. CONSTRUCTION OF PROPOSED ACCESS ROAD.
9. STABILIZE DISTURBED AREAS.

NOTES

1. BASEMAP TOPOGRAPHY DOWNLOADED FROM PENNSYLVANIA SPATIAL DATA ACCESS WEBSITE. LIDAR TILE NUMBERS 65001380PAS AND 65001390PAS DATED APRIL 2007.
2. A 150' RIPARIAN BUFFER ZONE IS SHOWN HEREIN. HOWEVER, REVEGETATION OF THESE AREAS AFTER CONSTRUCTION IS NOT NECESSARY AS THIS IS NOT A HQ/EV WATERSHED.
3. CONTRACTOR IS RESPONSIBLE FOR KEEPING THE ADJACENT PUBLIC ROADS CLEAN FROM DIRT, MUD, ETC. FOR THE DURATION OF THE PROJECTS CONSTRUCTION.


LEGEND

- LIMIT OF DISTURBANCE/PERMIT AREA
- EXISTING GRADE CONTOURS (C.I.=2'/10')
- PROPOSED GRADE CONTOURS (C.I.=2'/10')
- EXISTING ACCESS ROAD
- EXISTING TRAIL
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING WATER SURFACE
- EXISTING OVERHEAD ELECTRIC LINES
- EXISTING POWER POLE
- EXISTING STREAM
- EXISTING CULVERT PIPE
- EXISTING WETLAND
- RIPARIAN BUFFER
- PROPOSED TEMPORARY STORMWATER COLLECTION CHANNEL

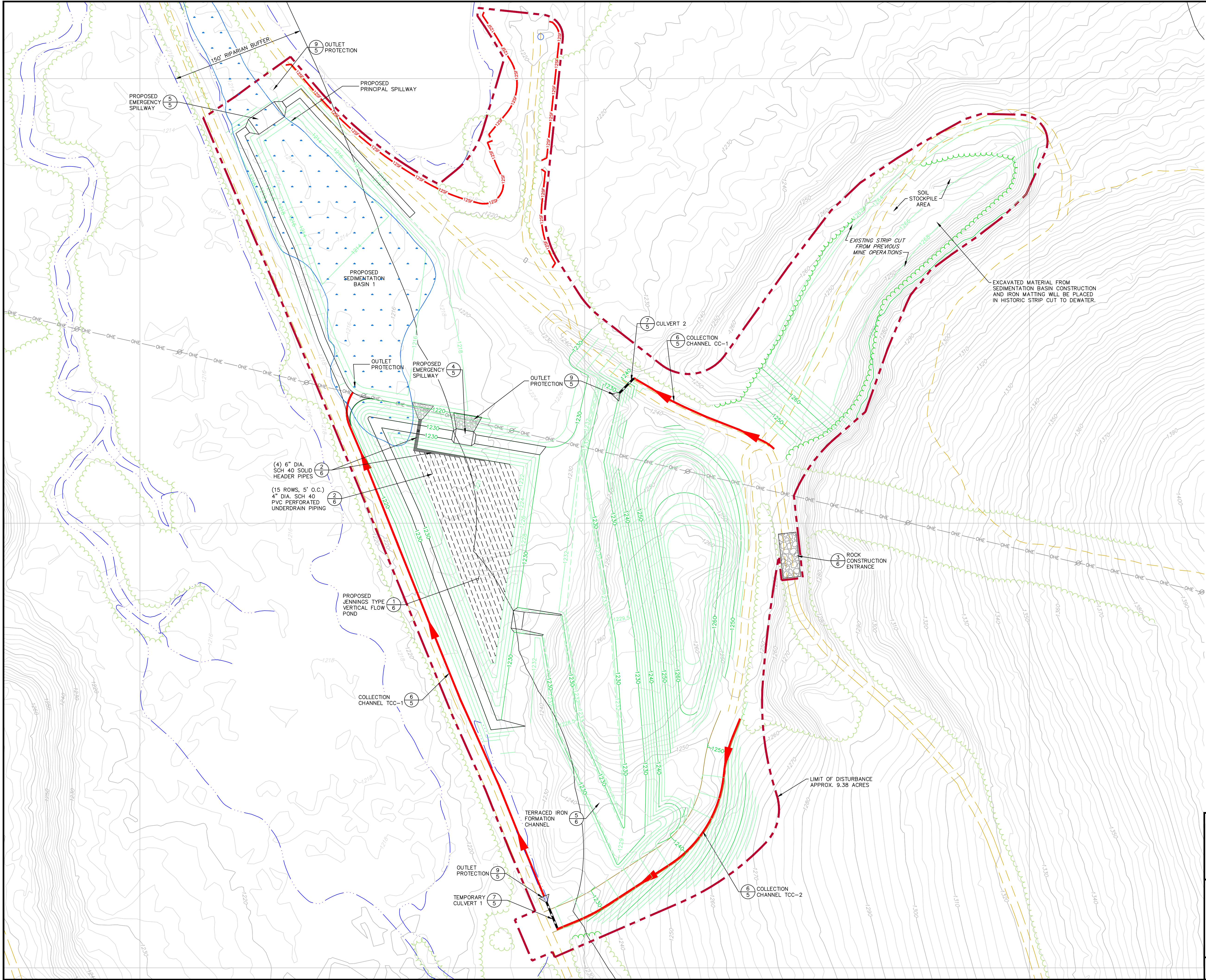
GRAPHIC SCALE



( IN FEET )  
1 inch = 50 ft.

 Balanced Environmental Solutions	REVISIONS		
	5/24/2018	RIPARIAN BUFFER NOTE ADDED	CMB
<b>VOGEL LANDFILL, INC.</b> <b>SR89 PROJECT</b> <b>PA STATE GAME LANDS NO. 95</b> WASHINGTON TOWNSHIP BUTLER COUNTY PENNSYLVANIA		DATE: <b>4/08/15</b>	
<b>EROSION AND SEDIMENTATION CONTROL PLAN</b> <b>PHASE I</b>		DRAWN BY: <b>SWH</b>	
State College Office (814) 238-2060 Delaware Valley Office (610) 495-5585		CHECKED: <b>PW</b>	
		BAI DRAWING NO: <b>VOGEL-108D001C R1</b>	
		SHEET NO. <b>3 OF 7</b>	





#### PHASE II E&S CONSTRUCTION SEQUENCE

1. PERFORM CLEARING OF EXISTING TREES, STUMPS, AND BRUSH LOCATED WITHIN THE LIMIT OF DISTURBANCE.
2. CONSTRUCT VERTICAL FLOW POND.
3. PERFORM EXCAVATION OF CONSTRUCTION AREA MINE SPOIL PILE. EXCAVATED SPOIL MATERIALS WILL BE STOCKPILED IN THE EXISTING STRIP CUT.
4. CONSTRUCT TERRACED IRON FORMATION CHANNEL.
5. UPON STABILIZATION OF UPGRADIENT AREAS, CONVERT TCC-2 INTO DC-1 AND CONSTRUCT THE REMAINDER OF DC-1. INSTALL CULVERT 1 UNDER LOWER ACCESS ROAD.
6. UPON STABILIZATION OF UPGRADIENT AREA, REMOVE TCC-1 AND TEMPORARY CULVERT 1.
7. CONVERT SEDIMENT BASIN 1 INTO WETLAND.
8. PERFORM FINAL GRADING OF PROJECT AREA AND PERMANENTLY STABILIZE ALL SURFACES.
9. REPAIR E&S CONTROL STRUCTURES AS NECESSARY.
10. REMOVE REMAINING TEMPORARY E&S CONTROL MEASURES ONCE VEGETATION HAS BECOME ESTABLISHED (>70% COVER).

#### NOTES

1. BASEMAP TOPOGRAPHY WAS DIGITIZED FROM EXISTING CONDITIONS PLAN CREATED BY YOUNG & YOUNG, INC. DRAWING NUMBER P153-087-1, DATED MARCH 2002.
2. ACCESS ROAD SHALL BE CONSTRUCTED WITH A 2 PERCENT (MIN.) CROSS SLOPE TO PROMOTE POSITIVE DRAINAGE OF STORMWATER RUNOFF TO THE EROSION AND SEDIMENTATION CONTROLS.
3. TEMPORARY COLLECTION CHANNEL TCC No. 2 SHALL BE UTILIZED AS A PERMANENT STORMWATER DIVERSION CHANNEL AND CONNECTED TO CULVERT No. 1 ONCE UPSLOPE DISTURBED AREAS ARE STABILIZED.
4. A 150' RIPARIAN BUFFER ZONE IS SHOWN HEREIN. HOWEVER, REVEGETATION OF THESE AREAS AFTER CONSTRUCTION IS NOT NECESSARY AS THIS IS NOT A HQ/EV WATERSHED.
5. CONTRACTOR IS RESPONSIBLE FOR KEEPING THE ADJACENT PUBLIC ROADS CLEAN FROM DIRT, MUD, ETC. FOR THE DURATION OF THE PROJECTS CONSTRUCTION.

#### LEGEND

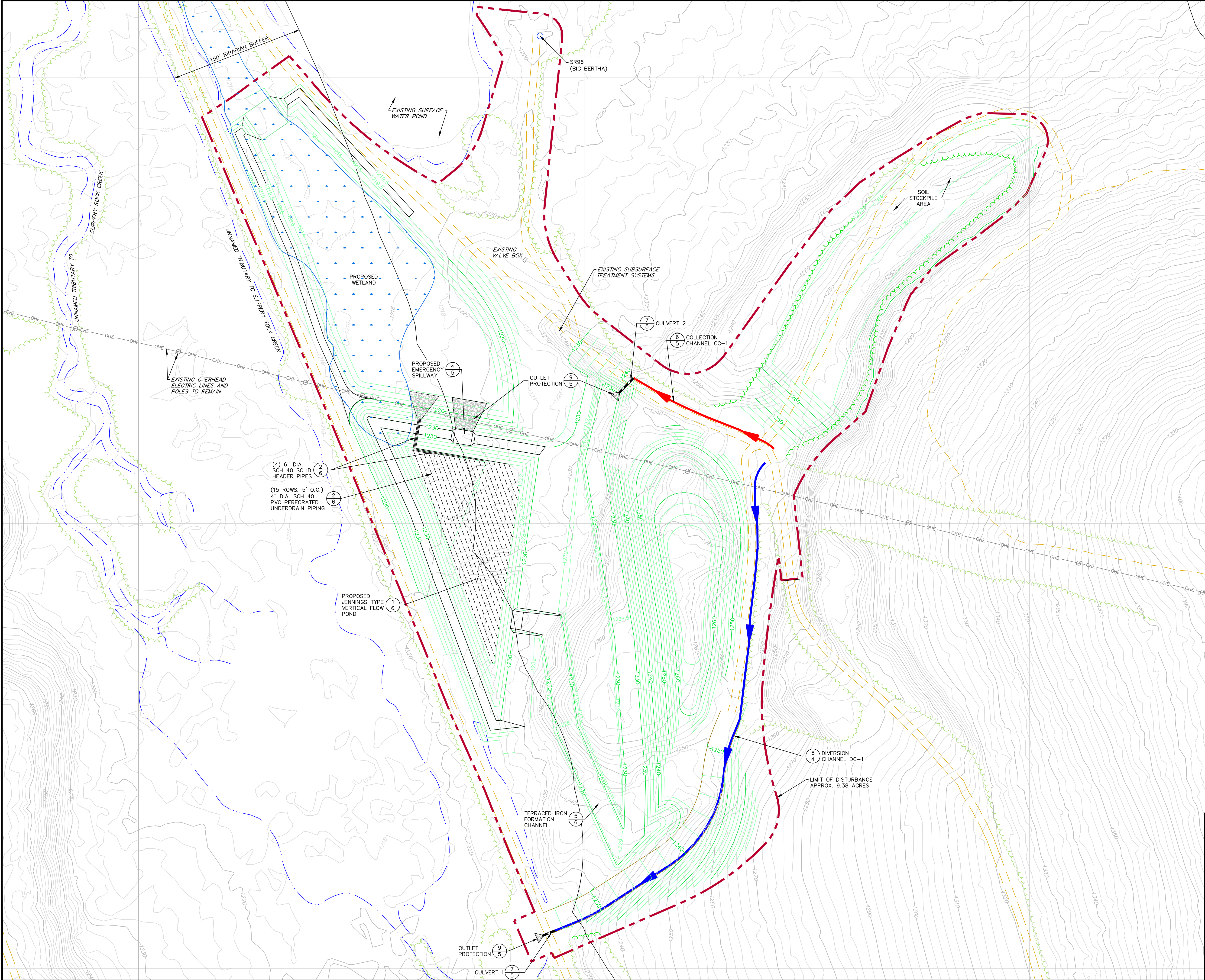
- LIMIT OF DISTURBANCE/PERMIT AREA
- EXISTING GRADE CONTOURS (C.I.=2'/10')
- PROPOSED GRADE CONTOURS (C.I.=2'/10')
- EXISTING ACCESS ROAD
- EXISTING TRAIL
- EXISTING TREE LINE
- PROPOSED TREE LINE
- EXISTING WATER SURFACE
- EXISTING OVERHEAD ELECTRIC LINES
- EXISTING POWER POLE
- EXISTING STREAM
- EXISTING CULVERT PIPE
- EXISTING WETLAND
- RIPARIAN BUFFER
- PROPOSED STORMWATER COLLECTION CHANNEL
- PROPOSED SILTFENCE/SOCK

#### GRAPHIC SCALE



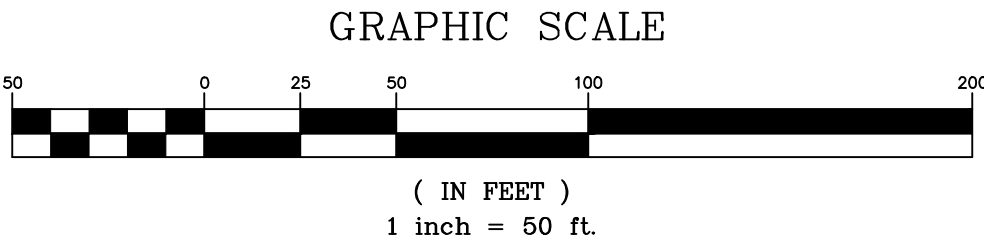
REVISIONS		
5/24/2018	RIPARIAN BUFFER NOTE ADDED	CMB
<b>VOGEL LANDFILL, INC.</b>		DATE: 4/09/15
<b>SR89 PROJECT</b>		DRAWN BY: SWH
<b>PA STATE GAME LANDS NO. 95</b>		CHECKED: PW
WASHINGTON TOWNSHIP BUTLER COUNTY PENNSYLVANIA		BAI DRAWING NO: VOGEL-108D001D R1
<b>EROSION AND SEDIMENTATION CONTROL PLAN</b>		SHEET NO. 4 OF 7
<b>PHASE II</b>		
State College Office (814) 238-2060	Delaware Valley Office (610) 495-5585	





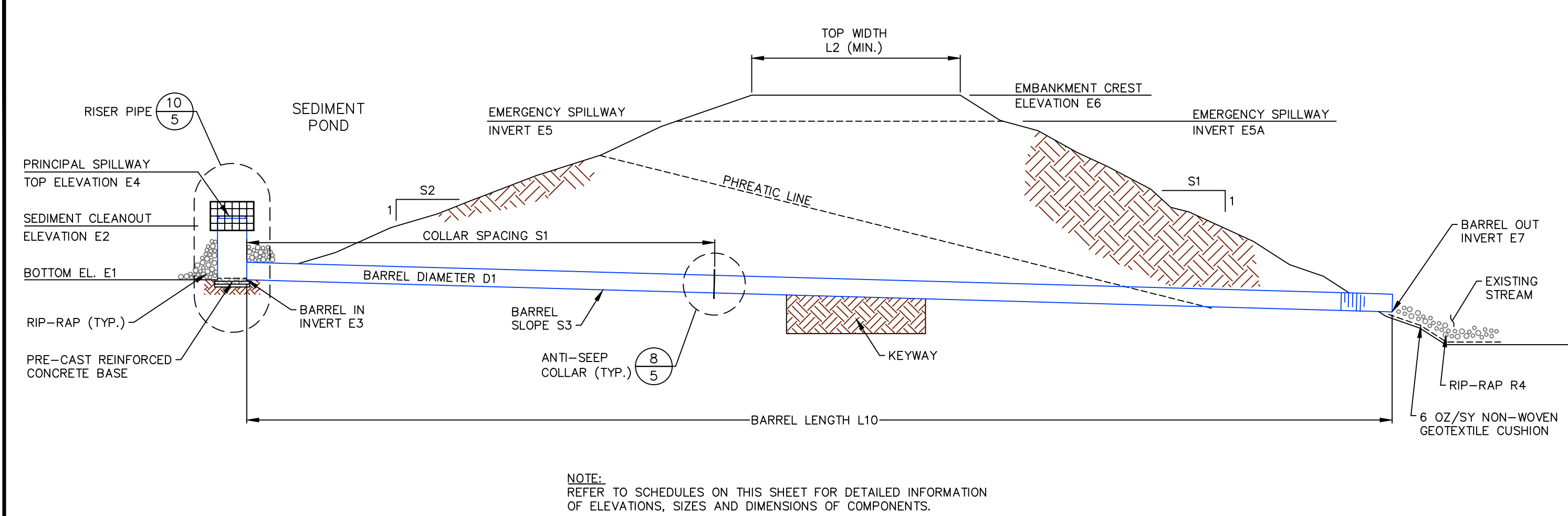
- NOTES**
1. BASEMAP TOPOGRAPHY DOWNLOADED FROM PENNSYLVANIA SPATIAL DATA ACCESS WEBSITE. LIDAR TILE NUMBERS 65001380PAS AND 65001390PAS DATED APRIL 2007.
  2. A 150' RIPARIAN BUFFER ZONE IS SHOWN HEREIN. HOWEVER, REVEGETATION OF THESE AREAS AFTER CONSTRUCTION IS NOT NECESSARY AS THIS IS NOT A HQ/EV WATERSHED.
  3. CONTRACTOR IS RESPONSIBLE FOR KEEPING THE ADJACENT PUBLIC ROADS CLEAN FROM DIRT, MUD, ETC. FOR THE DURATION OF THE PROJECTS CONSTRUCTION.

- LEGEND**
- LIMIT OF DISTURBANCE/PERMIT AREA
  - 1220- EXISTING GRADE CONTOURS (C.I.=2'/10')
  - 1230- PROPOSED GRADE CONTOURS (C.I.=2'/10')
  - EXISTING ACCESS ROAD
  - EXISTING TRAIL
  - EXISTING TREE LINE
  - PROPOSED TREE LINE
  - EXISTING WATER SURFACE
  - EXISTING OVERHEAD ELECTRIC LINES
  - EXISTING POWER POLE
  - EXISTING STREAM
  - EXISTING CULVERT PIPE
  - EXISTING WETLAND
  - RIPARIAN BUFFER
  - PROPOSED PERMANENT STORMWATER DIVERSION CHANNEL
  - PROPOSED PERMANENT STORMWATER COLLECTION CHANNEL

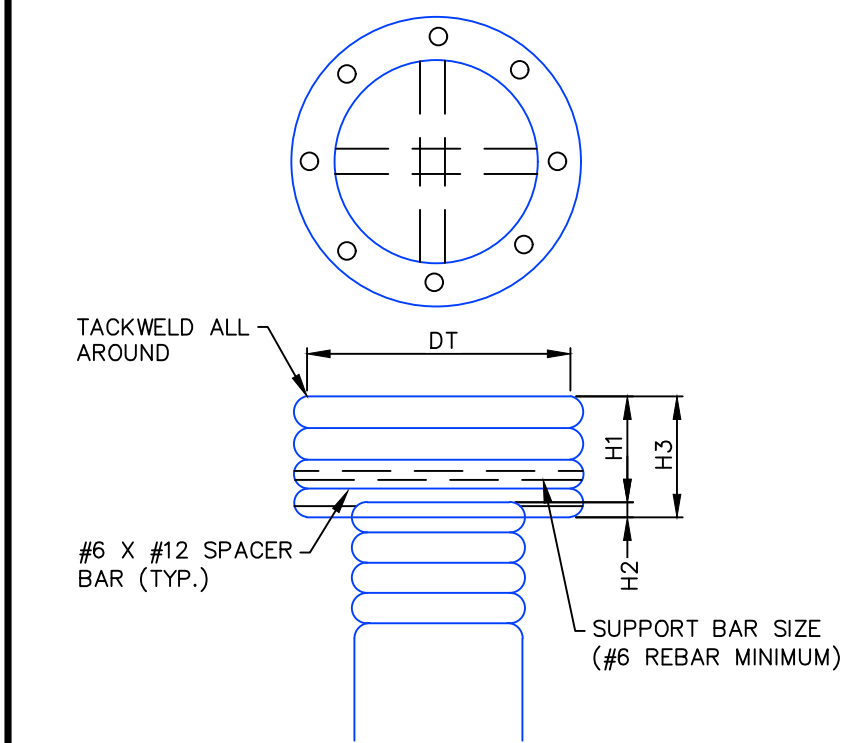


REVISIONS		
5/24/2018	RIPARIAN BUFFER NOTE ADDED	CMB
<b>BAI GROUP INC.</b> Balanced Environmental Solutions		DATE: 8/9/17
<b>VOGEL LANDFILL, INC.</b> <b>SR89 PROJECT</b> <b>PA STATE GAME LANDS NO. 95</b> WASHINGTON TOWNSHIP BUTLER COUNTY PENNSYLVANIA		DRAWN BY: RHM
<b>PROPOSED FINAL CONDITIONS SITE PLAN</b>		CHECKED: PW
State College Office (814) 238-2060 Delaware Valley Office (610) 495-5585		BAI DRAWING NO: VOGEL-108D001B R1
		SHEET NO. 2 OF 7

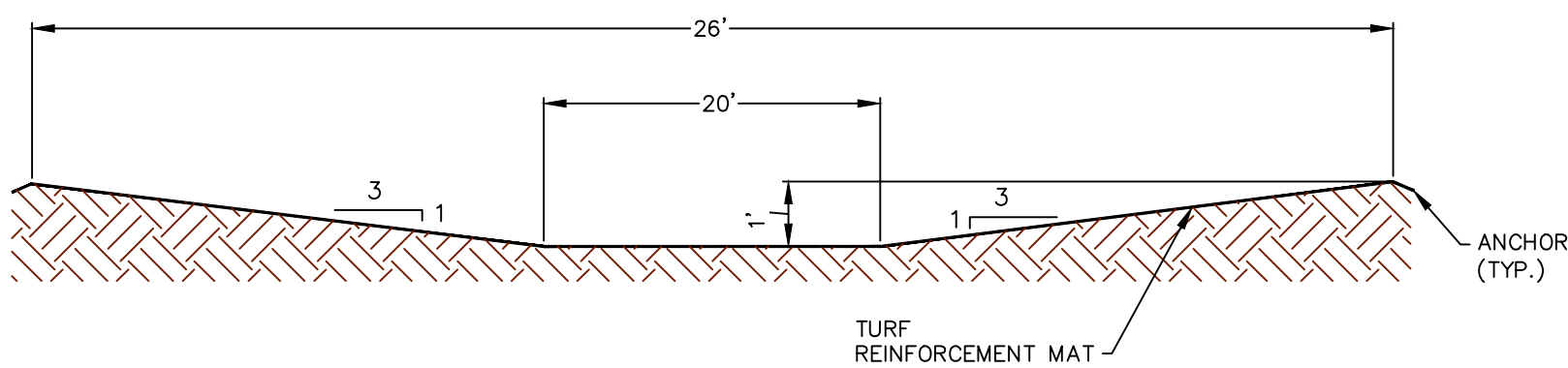




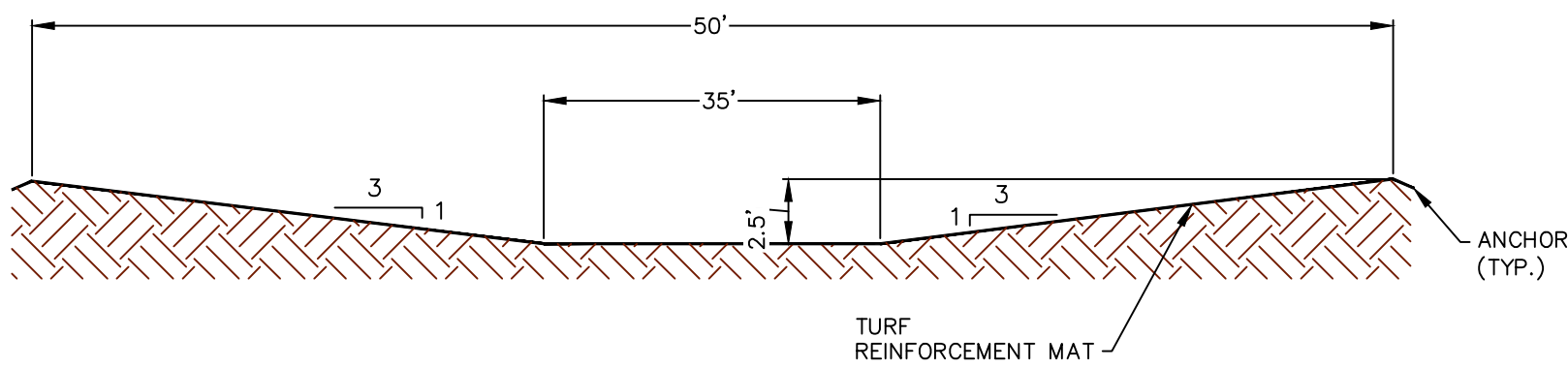
1 TYPICAL SEDIMENT POND DISCHARGE PROFILE DETAIL  
5 NOT TO SCALE



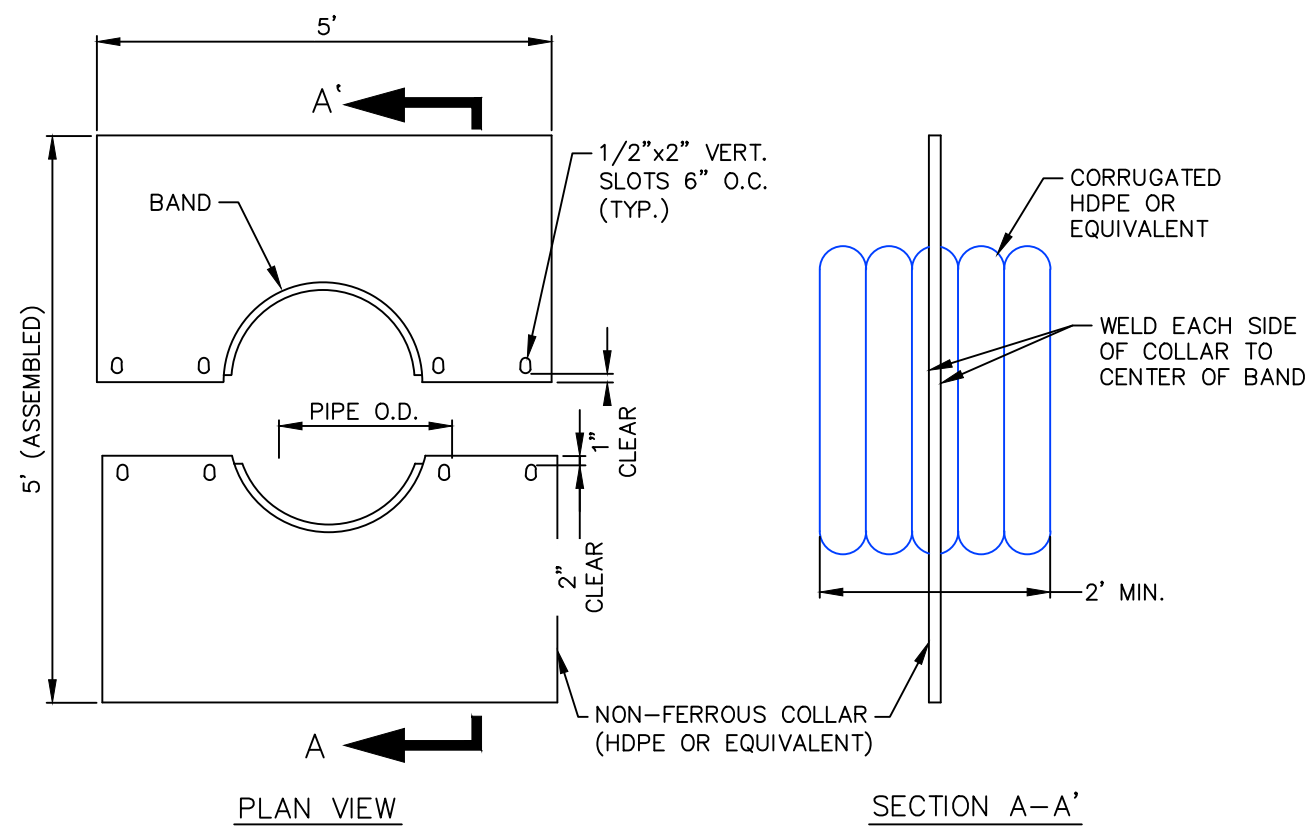
3 CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE  
5 NOT TO SCALE



4 VFP EMERGENCY SPILLWAY SECTION  
5 NOT TO SCALE

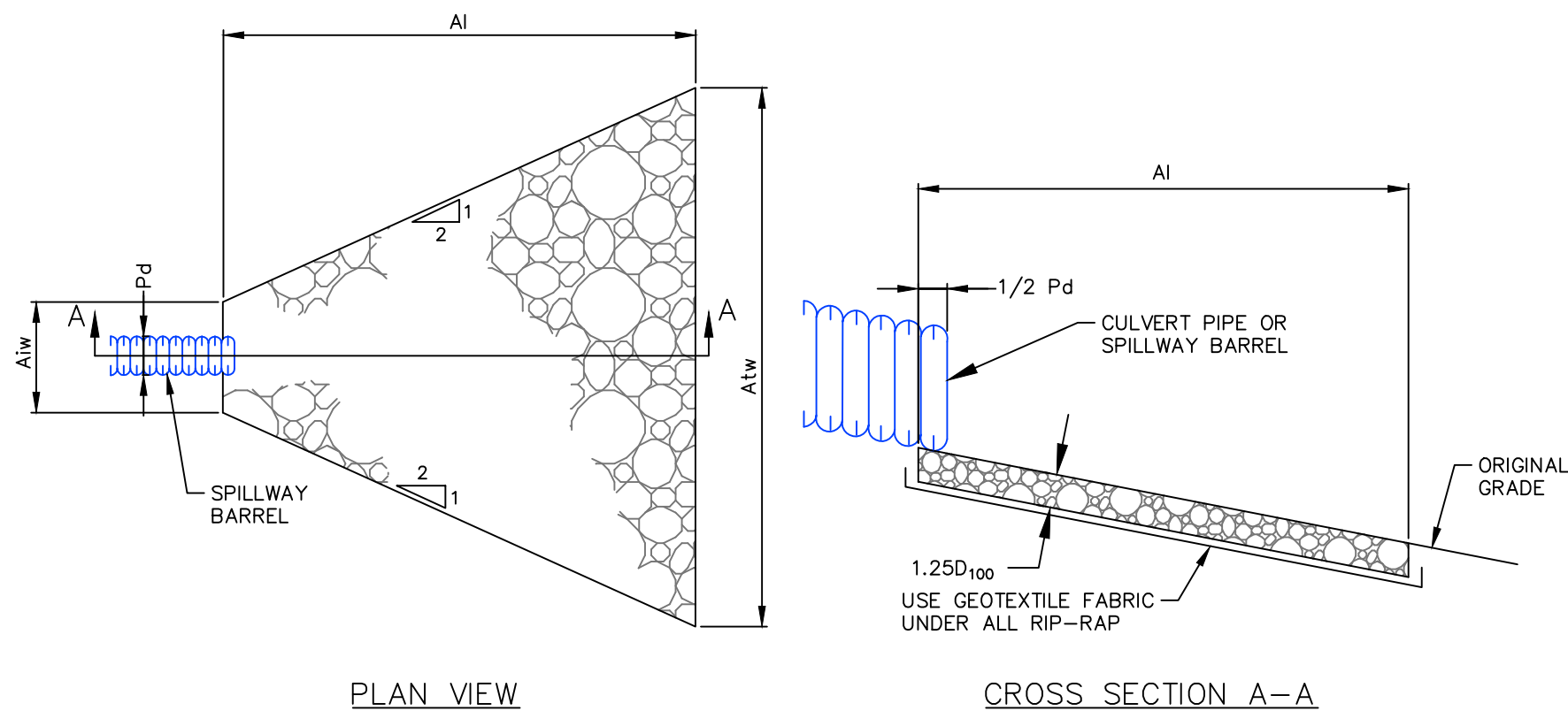


5 SEDIMENTATION BASIN EMERGENCY SPILLWAY SECTION  
5 NOT TO SCALE



NOTE:  
AN ALTERNATIVE ARRANGEMENT FOR CONSTRUCTING ANTI-SEEP COLLARS ARE PERMISSIBLE PROVIDED APPROPRIATE DESIGN CONSIDERATIONS ARE SATISFIED AS APPROVED BY THE ENGINEER OR QUALITY ASSURANCE ENGINEER.

8 CORRUGATED METAL ANTI-SEEP COLLAR  
5 NOT TO SCALE



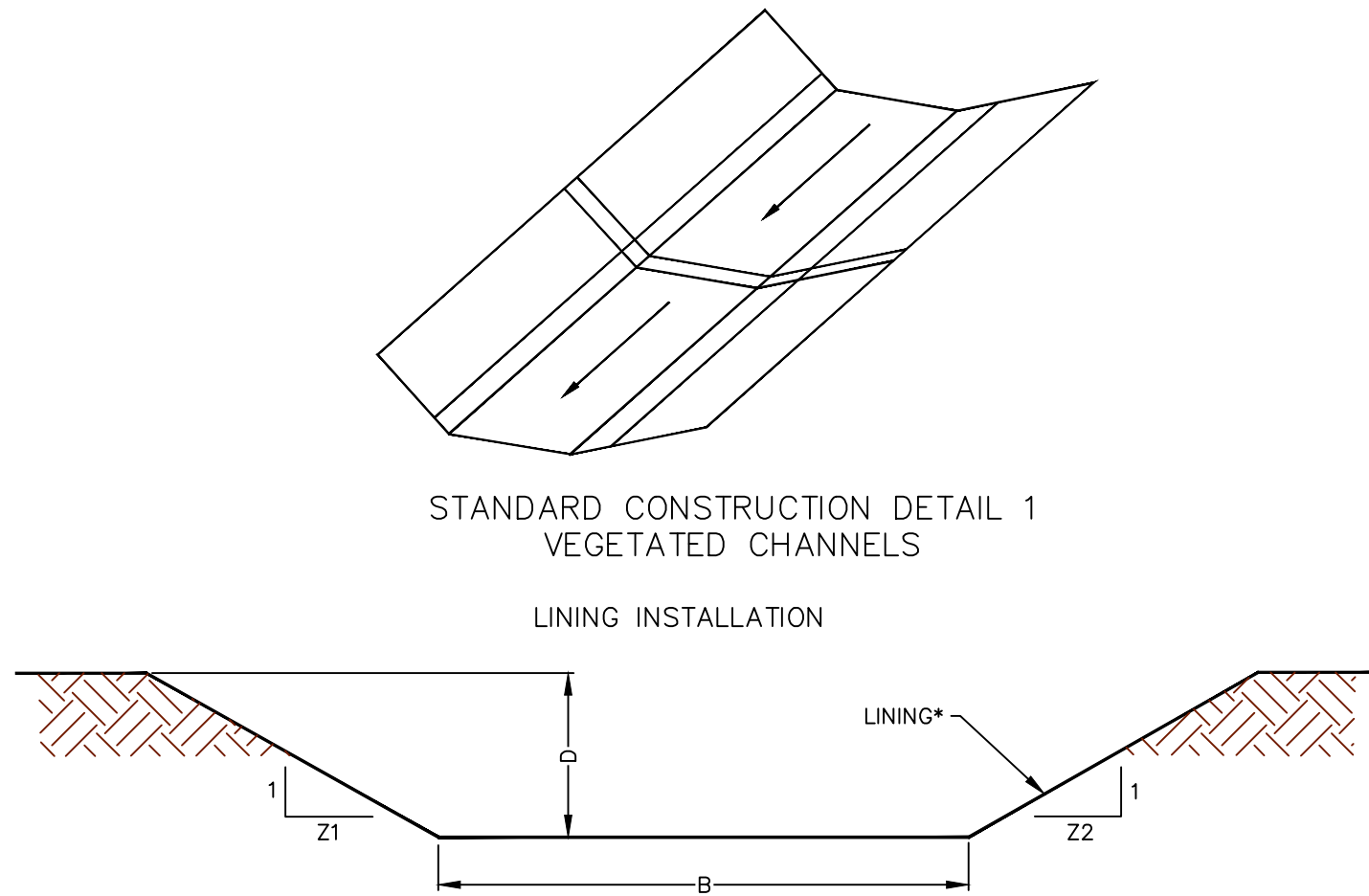
OUTLET NO.	PIPE DIA (IN)	Pd (IN)	RIP-RAP		APRON	
			SIZE (R-)	THICK. (IN)	INITIAL WIDTH (FT)	TERMINAL WIDTH (FT)
SB-1	12	4	18	11	3	14
CULVERT-1	18	5	27	12	6	18
CULVERT-2	12	3	9	8	3	11
VFP	6	3	9	26	6	32

NOTE:  
UNIT WEIGHT OF ROCK SHALL BE APPROXIMATELY 165 pcf.  
ROCK RIP-RAP SHALL BE WELL-GRADED CRUSHED STONE COMPLYING WITH PennDOT 408, SECTION 850.

9 PIPE OUTLET PROTECTION  
5 NOT TO SCALE

POND			
VARIABLE	DESCRIPTION	VALUE	UNIT
L2	TOP WIDTH OF EMBANKMENT (MIN.)	8.0	FEET
E2	SEDIMENT CLEAN OUT ELEVATION	1215.25	FEET
E1	POND BOTTOM ELEVATION	1214.00	FEET
S2	INSIDE EMBANKMENT SLOPE	2.0	—
S1	OUTSIDE EMBANKMENT SLOPE	3.0	—
E6	EMBANKMENT CREST ELEVATION	1219.50	FEET
E5	EMERGENCY SPILLWAY INVERT	1217.00	FEET
B1	POND VOLUME (BELOW EMERGENCY SPILLWAY)	79,486	CF
S4	EMERGENCY SPILLWAY BOTTOM WIDTH	35.0	FEET
S4	EMERGENCY SPILLWAY SIDESLOPES	3H:1V	—
D4	EMERGENCY SPILLWAY DEPTH	2.5	FEET
R2	EMERGENCY SPILLWAY LINING	TRM	—
R3	PRINCIPAL SPILLWAY OUTLET LINING	R-4 RIPRAP	—

CONCENTRIC ANTI-VORTEX TRASH RACK			
VARIABLE	DESCRIPTION	VALUE	UNIT
D3	ANTI VORTEX TRASH RACK DIAMETER	21	IN.
E8	TOP OF TRASH RACK ELEVATION	1216.83	FEET
L9	ANTI-VORTEX TRASH RACK HEIGHT	7	IN.
	ANTI-VORTEX TRASH RACK STIFFENER	N/A	—
	ANTI-VORTEX TRASH RACK TOP CAGE	16	GA.
	ANTI-VORTEX TRASH RACK CYLINDER GAGE	16	GA.

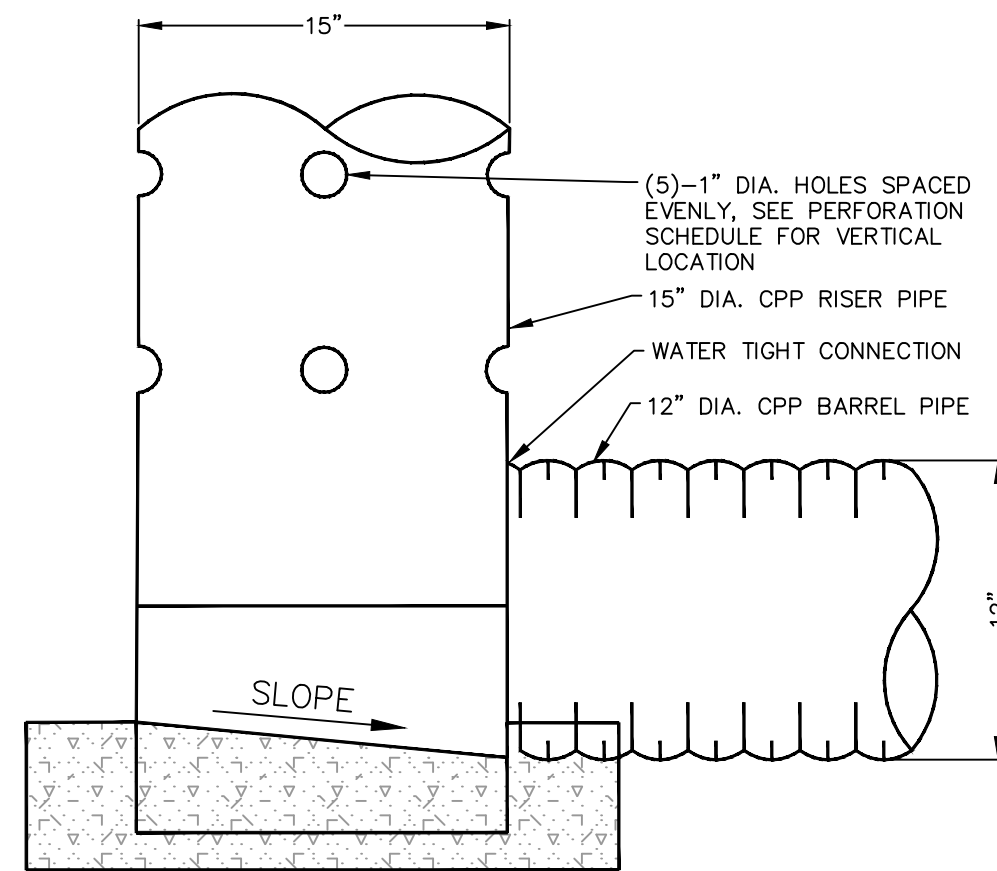


6 CHANNEL CROSS-SECTION DETAIL  
5 NOT TO SCALE

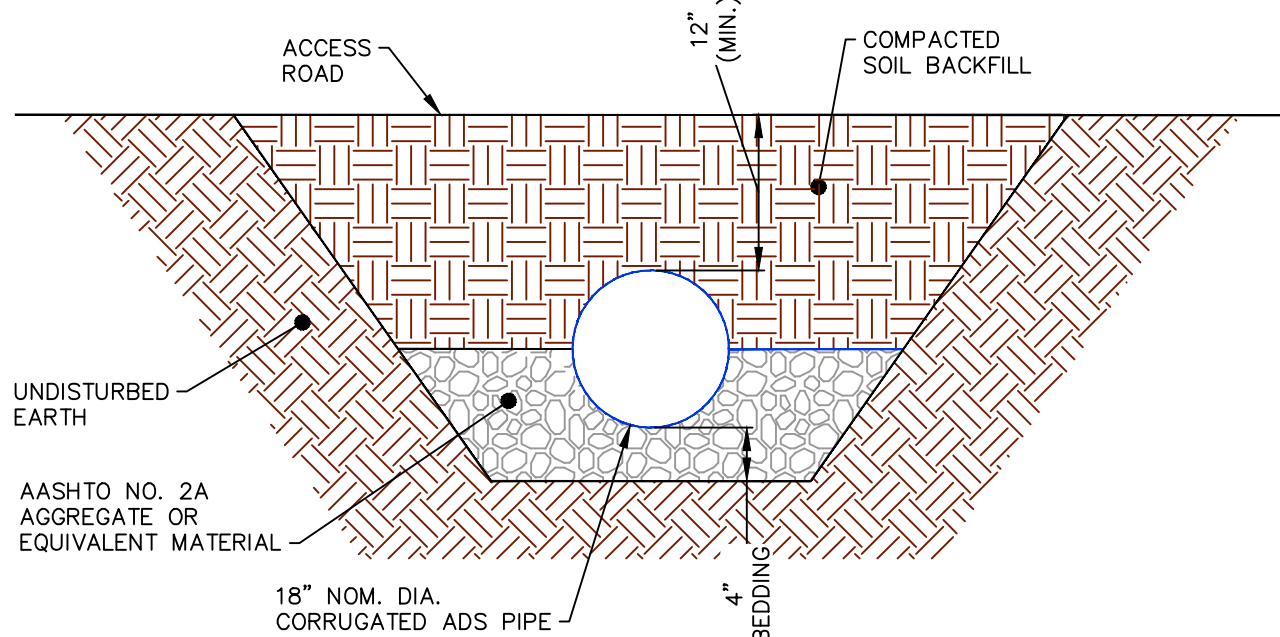
CHANNEL SCHEDULE						
CHANNEL I.D.	DEPTH (FT)	BOTTOM WIDTH (B) (FT)	TOP WIDTH (T) (FT)	SIDE SLOPES (Z1/Z2)	FREEBOARD (FB) (FT)	LINING
TCC-1	2.0	8.0	1.5	2/2	0.5	TRM/VEG
TCC-2	2.0	6.0	1.0	2/2	0.5	TRM/VEG
CC-1	2.0	6.0	1.0	2/2	0.5	TRM/VEG
DC-1	2.0	8.0	1.5	2/2	0.5	TRM/VEG

PRINCIPAL SPILLWAY			
VARIABLE	DESCRIPTION	VALUE	UNIT
E7	BARREL OUT INVERT ELEVATION	1215.00	FEET
E4	PRINCIPAL SPILLWAY TOP ELEVATION	1216.50	FEET
E3	BARREL IN INVERT ELEVATION	1215.25	FEET
L10	BARREL LENGTH	35.0	FEET
S3	BARREL SLOPE	0.01	FT/FT
D1	BARREL DIAMETER (NOMINAL)	12.0	INCH
D2	RISER DIAMETER	15.0	INCH
	RISER TYPE	CPP	—
	BARREL TYPE	CPP	—
	RISER QUANTITY	1	EACH
	BARREL QUANTITY	1	EACH

RISER PERFORATION SCHEDULE			
ELEV.	NO.	QUANTITY	DIAMETER (IN.)
1215.25	5	1.0	1.0
1216.00	5	1.0	1.0



2 PRINCIPAL SPILLWAY BARREL PIPE  
5 NOT TO SCALE



CULVERT SCHEDULE

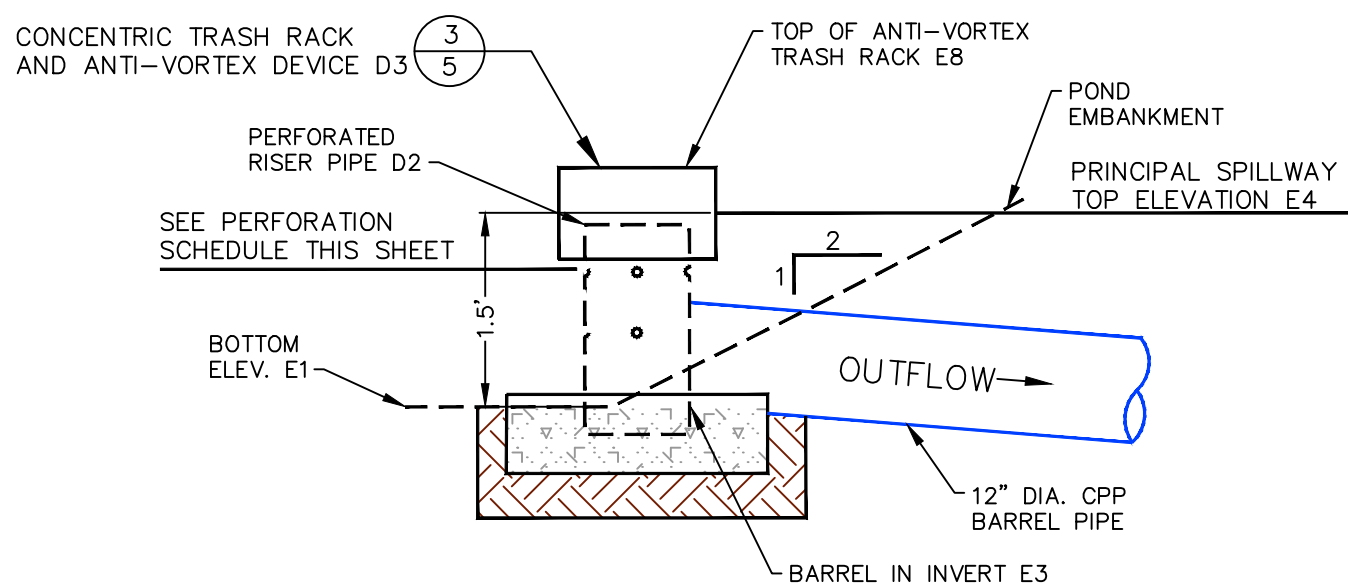
CULVERT	ACRES DRAINED (acre)	Q REQ'D (cfs)	Q' AVAIL (cfs)	MIN COVER (in)	MIN SLOPE S <sub>0</sub> (%)	LENGTH L (ft)	NO. OF PIPES	CULVERT DIAMETER D (in)	RECEIVING STRUCTURE
TEMP CULVERT 1	0.98	2.06	5.38	12	2	35	2	12	TCC-1
CULVERT 1	11.36	14.09	20.23	12	3	15	2	18	UNT TO SLIPPERY ROCK CREEK
CULVERT 2	0.73	2.46	4.66	12	3	25	1	12	TIF CHANNEL

7 CULVERT DETAIL  
5 NOT TO SCALE

NSCA RIP-RAP GRADATIONS

NSCA NO.	MAX. D <sub>50</sub> (in)	AVG. D <sub>50</sub> (in)	MIN. D <sub>50</sub> (in)	PERMISSIBLE VELOCITY (fps)
R-3	6	3	2	6.5
R-4	12	6	3	9.0
R-5	18	9	5	11.5
R-6	24	12	7	13.0

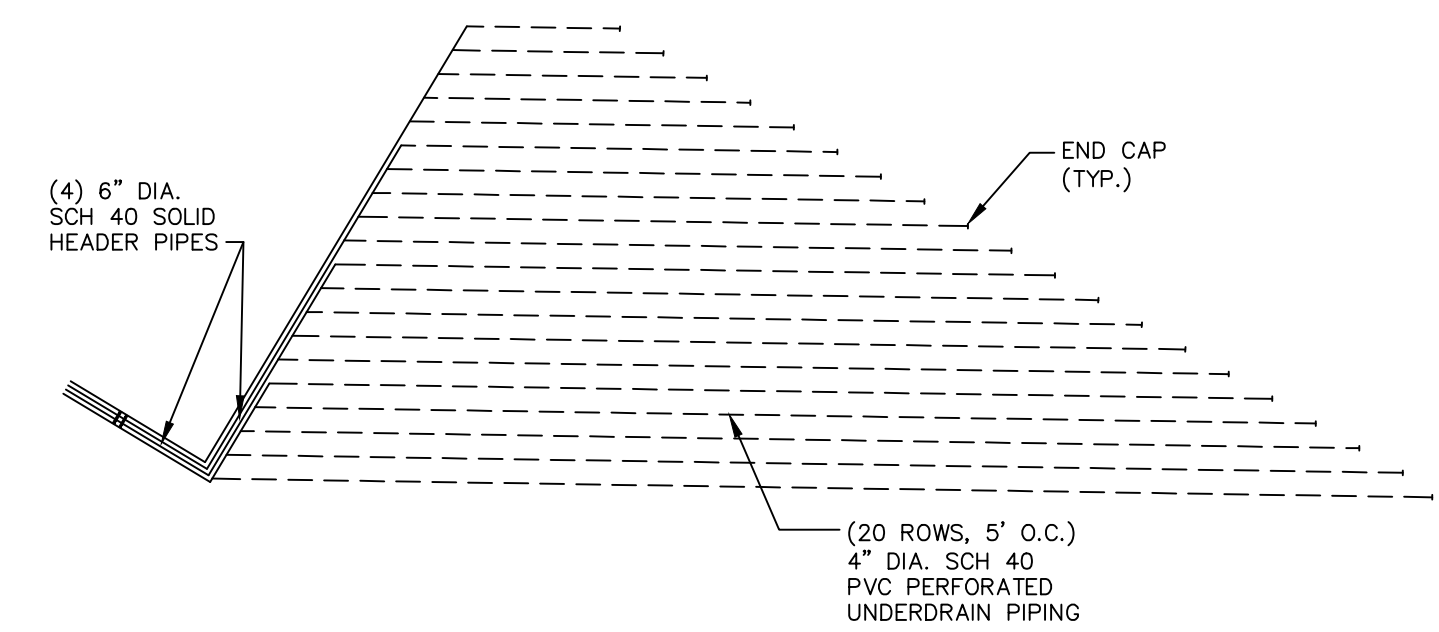
NOTE: UNIT WEIGHT OF ROCK SHALL BE APPROXIMATELY 165 pcf.  
ROCK RIP-RAP SHALL BE WELL-GRADED CRUSHED STONE COMPLYING WITH PennDOT 408, SECTION 850.



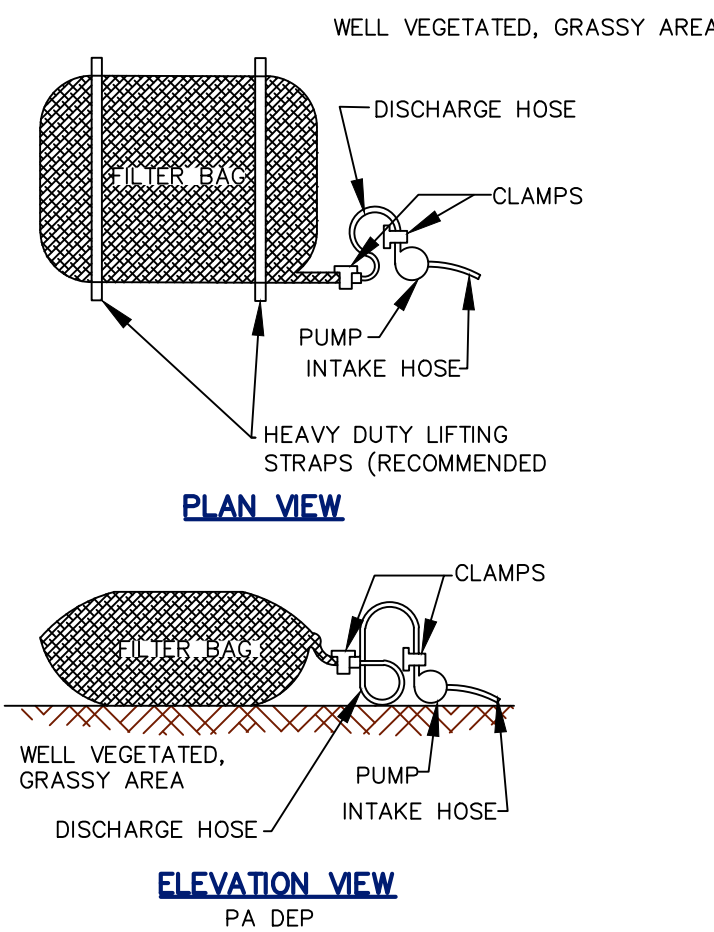
10 PRINCIPAL SPILLWAY RISER PIPE  
5 NOT TO SCALE

BAI GROUP INC. Balanced Environmental Solutions		REVISIONS	
VOGEL LANDFILL, INC. SR89 PROJECT PA STATE GAME LANDS NO. 95 WASHINGTON TOWNSHIP BUTLER COUNTY PENNSYLVANIA		DATE: 6/01/15 DRAWN BY: SWH CHECKED: PW BAI DRAWING NO: VOGEL-108D001E SHEET NO. 5 OF 7	
State College Office (814) 238-2060		Delaware Valley Office (610) 495-5585	





2 JVFP PIPE PLAN  
6 NOT TO SCALE



### PLAN VIEW

ELEVATION VIEW

PROPERTY	TEST METHOD	MINIMUM STANDARD
AVG. WIDE WIDTH STRENGTH	ASTM D-4684	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

MATERIAL TYPE	3 MIL HDPE	5 MIL HDPE	5 MIL HDPE	MULTI-FILAMENT POLYPROPYLENE (MFPF)	HEAVY-DUTY MULTI-FILAMENT POLYPROPYLENE (HDMFPF)
MATERIAL CHARACTERISTICS	PHOTO- DEGRADABLE	PHOTO- DEGRADABLE	BIO- DEGRADABLE	PHOTO- DEGRADABLE	PHOTO- DEGRADABLE
SOCK DIAMETERS	12"	12"	12"	12"	12"
	18"	18"	18"	18"	18"
MESH OPENING	3/8"	3/8"	3/8"	3/8"	3/8"
TENSILE STRENGTH		26 PSI	26 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				
OUTER FILTRATION MESH	3/4" X 3/4" MAX. APERTURE SIZE				
	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.					

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

SOCK FABRIC SHALL MEET STANDARDS OF TABLE 4.1. COMPOST SHALL MEET THE STANDARDS OF TABLE 4.2

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 SHALL BE 10% AND SHALL NOT EXCEED THAT SHOWN ON FIGURE 4.2. STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.

TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.

ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES 1/2 THE ABOVE GROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.


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.

BIODEGRADABLE FILTER SOCK SHALL BE REPLACED AFTER SIX MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED TO MATCH THE SURROUNDING AREA. THE MESH SHALL BE CUT OUT AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

4 COMPOST FILTER SOCK  
6 NOT TO SCALE

5 PUMPED WATER FILTER BAG  
6 NOT TO SCALE

 <p><b>BAI GROUP INC.</b> Balanced Environmental Solutions</p>	<b>REVISIONS</b>	
	5/24/2016	REVISD JNPP PIPE PLAN DETAIL <span style="float: right;">CMB</span>

<b>VOGEL LANDFILL, INC.</b> <b>SR89 PROJECT</b> <b>PA STATE GAME LANDS NO. 95</b> WASHINGTON TOWNSHIP      BUTLER COUNTY      PENNSYLVANIA		DATE: <b>6/01/15</b> DRAWN BY: <b>SWH</b> CHECKED: <b>PW</b> BAI DRAWING NO: <b>VOGEL-108D001F R1</b>
<b>EROSION AND SEDIMENTATION CONTROL PLAN DETAILS</b>		SHEET NO. <b>6 OF 7</b>



RESOLUTION TO SOIL LIMITATIONS (SEE TABLE 1 THIS SHEET FOR SOIL LIMITATIONS)

- CUTBANKS / CAVING:  
CONDUCT TRENCHING OPERATIONS IN ACCORDANCE WITH OSHA TECHNICAL MANUAL FOR TRENCHING.
- CORROSIVE TO CONCRETE / STEEL:  
PRECAUTIONS SHOULD BE TAKEN TO PROTECT ALL CONCRETE AND STEEL FROM CORROSION BY USING PREVENTATIVE COATINGS.
- BEDROCK:  
WHEN BEDROCK IS ENCOUNTERED; IT SHALL BE REMOVED BY MECHANICAL METHODS OR BLASTING. BLASTING SHALL CONFORM WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS.
- LOW STRENGTH:  
TAKE PRECAUTIONS TO PREVENT SLOPE FAILURE BY FLATTENING CUT / FILL SLOPES, NOT OVERLOADING, MAINTAINING LATERAL SUPPORT, AND PREVENTING SATURATION OF SOILS. AVOID USING FOR ROADWAY CONSTRUCTION.
- FLOODING/HYDRIC/SLOW PERCOLATION/PONDING/WETNESS/SEASONAL HIGH WATER TABLE:  
EXCAVATIONS IN SOILS THAT HAVE THESE CHARACTERISTICS WILL LIKELY ENCOUNTER WATER. DEWATER WITH APPROPRIATE MEANS SUCH AS PUMP WATER FILTER BAGS, SEDIMENT TRAPS, ETC.
- SHRINK / SWELL / FROST ACTION:  
SOILS THAT HAVE POTENTIAL TO SWELL, SHRINK, OR HEAVE MAY CAUSE DAMAGE TO ROADWAYS OR PADS WHERE FOUNDATIONS ARE CRITICAL. REMOVAL AND REPLACEMENT OF SOILS WITH SUITABLE MATERIAL MAY BE REQUIRED.
- POOR TOPSOIL / DROUGHTY / WETNESS:  
SOIL TEST IS ENCOURAGED TO DETERMINE THE APPROPRIATE APPLICATIONS OF SOIL AMENDMENTS TO PROMOTE GROWTH. IDENTIFY SOILS ON-SITE THAT ARE FAIR SOURCES OF TOPSOIL, STRIP AND STOCKPILE FOR USE DURING RESTORATION.
- EASILY ERODIBLE:  
PROVIDE PROTECTIVE LINING, SEEDING AND MULCHING, EROSION CONTROL BLANKETS (ROLLS OR HYDRAULICALLY APPLIED), TRACKING SLOPES, UPSTREAM DIVERSIONS, WATERBARS, ETC., TO MINIMIZE EROSION OF THE SOILS.

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

THE PROJECT IS LOCATED ON PENNSYLVANIA GAME LANDS NO. 95. THE LAND IS OPERATED BY THE PENNSYLVANIA GAME COMMISSION FOR WILDLIFE HABITAT AND PUBLIC HUNTING GROUNDS. THE IMMEDIATE PROJECT AREA HAS BEEN AFFECTED BY PAST MINING OPERATIONS THROUGH VARIOUS DISCHARGES OF AMD. THE AMD HAS SEVERELY AFFECTED THE DOWNSTREAM NON-FUNCTIONAL WETLAND AREA WHICH WILL BE REMOVED AND REPLACED AS PART OF THIS REMEDIATION PROJECT. SURROUNDING AREAS ON THE SITE CONSIST OF WOODED AREAS, ACCESS ROADS, AND SPOIL PILES FROM PAST MINING OPERATIONS. REFER TO APPENDIX A FOR THE LOCATION MAP OF THE PROJECT SITE.

DEVELOPMENT OF THE PROJECT WILL CONSIST OF REMOVAL OF EXISTING TREES AND SOIL PILES WITHIN THE LIMIT OF DISTURBANCE FOR CONSTRUCTION OF A PASSIVE TREATMENT SYSTEM. THE PROJECT AREA AND LIMIT OF DISTURBANCE CONSIST OF APPROXIMATELY 9.38 ACRES. EROSION AND SEDIMENTATION CONTROL STRUCTURES WILL BE CONSTRUCTED FOR THE PROJECT TO PREVENT IMPACTS TO ADJACENT WATERS DURING CONSTRUCTION OPERATIONS. THE CONSTRUCTED PASSIVE TREATMENT SYSTEM WILL CONSIST OF THE FOLLOWING COMPONENTS: A TERRACED IRON FORMATION CHANNEL, A JENNINGS-TYPE VERTICAL FLOW POND, AND A WETLAND AREA. CONCEPTUAL DESIGN OF THE PASSIVE TREATMENT SYSTEM WAS CONDUCTED BY STREAM RESTORATION, INC.

PROJECT SITE RUNOFF

SURFACE WATER FROM THE PROJECT AREA WILL ACCESS THE COMMONWEALTH SURFACE WATER SYSTEM THROUGH AN UNNAMED TRIBUTARY TO SLIPPERY ROCK CREEK (CWF). THE SURFACE WATER IS CONSIDERED IMPAIRED DUE TO METALS AND SILTATION FROM ACID MINE DRAINAGE.

BMP DESCRIPTION NARRATIVE

STORMWATER DURING CONSTRUCTION SHALL BE CONTROLLED BY SEQUENCING THE OPERATIONS AND USING A SELECTION OF BEST MANAGEMENT PRACTICES (BMPs) TO PREVENT EROSION AND OFFSITE SEDIMENTATION. SITE WORK WILL BE CONSTRUCTED IN A SHORT TIMEFRAME AND WILL BE STABILIZED AS WORK PROGRESSES. THE FOLLOWING TEMPORARY BMP'S WILL BE UTILIZED:

- A ROCK CONSTRUCTION ENTRANCE WILL BE UTILIZED AT THE ENTRANCE FROM THE ACCESS ROAD. THE ROCK CONSTRUCTION ENTRANCE WILL BE INSTALLED IN ACCORDANCE WITH DETAIL 3 ON SHEET 6 OF THE DRAWING SET.
- FILTER FABRIC FENCE OR COMPOST FILTER SOCK WILL BE INSTALLED DOWNGRADIENT OF DISTURBED AREAS NOT OTHERWISE DRAINING TO SEDIMENT BASIN 1, AS SHOWN ON E&S PLAN DRAWINGS. FABRIC FILTER FENCE OR COMPOST FILTER SOCK WILL BE INSTALLED IN ACCORDANCE WITH THE DETAILS ON SHEET 6 OF THE DRAWING SET.
- SEDIMENTATION BASIN NO. 1 WILL ALSO BE USED TO CONTROL SEDIMENT LEAVING THE SITE. THIS BASIN IS GENERALLY EXISTING, ALTHOUGH SOME IMPROVEMENTS ARE PROPOSED. THE BASIN WILL BE CONSTRUCTED IN ACCORDANCE WITH THE DETAILS ON SHEET 5 OF THE DRAWING SET.
- SEDIMENT FILTER BAGS MAY BE USED IF WATER ACCUMULATES WITHIN THE SITE DURING CONSTRUCTION TO FILTER WATER PUMPED FROM DISTURBED AREAS IF THE NEED ARISES. FILTER BAGS WILL BE UTILIZED ON THE DOWNGRADIENT SIDE OF THE EARTHWORK, AS NEEDED. ALTERNATIVELY, WATER MAY BE PUMPED THROUGH THE SEDIMENTATION BASIN 1.
- CHANNELS AND CULVERTS WILL BE USED TO CONVEY OR DIVERT STORMWATER THROUGHOUT THE SITE. REFER TO THE DETAILS ON SHEET 5 OF THE DRAWING SET. ROCK APRONS WILL BE USED AT PIPE DISCHARGES. SEE DETAIL ON SHEET 5 OF THE DRAWING SET.
- UPON TEMPORARY CESSATION OF AN EARTH DISTURBANCE ACTIVITY OR ANY STAGE OR PHASE OF AN ACTIVITY WHERE A CESSATION OF EARTH DISTURBANCE ACTIVITIES WILL EXCEED FOUR DAYS, THE SITE SHALL BE IMMEDIATELY SEEDED, MULCHED, OR OTHERWISE PROTECTED FROM ACCELERATED E&S PENDING FUTURE EARTH DISTURBANCE ACTIVITIES.

ALL INSTALLED BMPs WILL BE MONITORED UNTIL FINAL SITE STABILIZATION IS ACHIEVED.

PERMANENT BMP'S WILL CONSIST OF:

- DISTURBED AREAS NOT UTILIZED FOR THE PASSIVE TREATMENT SYSTEM WILL RECEIVE TOPSOIL (IF NEEDED) AND SOIL AMENDMENTS, PERMANENT SEEDING, AND MULCH AS SPECIFIED IN THE PLANS.
- SEDIMENTATION BASIN 1 WILL BE CONVERTED TO A WETLAND ON THE NORTHERN PORTION OF THE PROJECT AREA. THE WETLAND WILL BE CONSTRUCTED IN ACCORDANCE WITH THE PLAN DRAWINGS.

ALL INSTALLED BMPs WILL BE MONITORED UNTIL FINAL SITE STABILIZATION IS ACHIEVED.

PERMANENT BMP'S WILL CONSIST OF:

- DISTURBED AREAS NOT UTILIZED AS LAYDOWN/STORAGE AREAS WILL RECEIVE TOPSOIL (IF NEEDED) AND SOIL AMENDMENTS, PERMANENT SEEDING, AND MULCH AS SPECIFIED IN THE PLANS.
- A WETLAND WILL BE CONSTRUCTED ON THE NORTHERN PORTION OF THE PROJECT AREA. THE WETLAND WILL BE CONSTRUCTED IN ACCORDANCE WITH THE PLAN DRAWINGS.

STAGING OF EARTHWORK ACTIVITIES

AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THESE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INCORPORATED AT 811 TO LOCATE BURIED UTILITIES.

THE INTENT OF THE PLAN IS TO PREVENT SEDIMENT FROM LEAVING THE LIMIT OF DISTURBANCE BY LIMITING THE WORK AREA ALLOWED AND BY STABILIZING THE WORK AREA AS THE CONSTRUCTION PROGRESSES. THIS PLAN ALSO SEEKS TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISTURBANCE AS WELL AS KEEP COMPACTION OF SOILS TO A MINIMUM. GIVEN THE NATURE OF THE PROJECT, A REDUCTION IN STORMWATER RUNOFF IS ANTICIPATED DUE TO PROMOTION OF VEGETATION AND RESTORATION OF WETLANDS CURRENTLY DESIGNATED AS NON-FUNCTIONING.

CARE SHOULD BE TAKEN TO PLACE THE EXCAVATED MATERIAL AWAY FROM STREAM BANKS, DRAINAGE CHANNELS AND VEHICULAR TRAVEL WAYS AS APPLICABLE. PROTECT EXISTING DRAINAGE FEATURES AND VEGETATION NOT PROPOSED TO BE DISTURBED. STOCKPILES THAT ARE GOING TO REMAIN FOR LONGER THAN FOUR DAYS SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND MULCH FOR STABILIZATION. RESTORATION WORK SHALL BE DONE AS THE PROJECT PROGRESSES, AND NOT BE LEFT UNTIL THE END OF THE JOB. AT A MINIMUM, NO AREA SHALL BE LEFT EXPOSED WITHOUT SOME FORM OF STABILIZATION, UNLESS SUBJECT TO CONSTRUCTION TRAFFIC. THE PROJECT WILL NOT GENERATE ANY WASTE. IF UNKNOWN WASTES ARE ENCOUNTERED DURING THE PROJECT, THEY WILL BE DISPOSED OF BY DEP REGULATIONS AS NOTED BELOW.

A SEQUENCE OF OPERATIONS TO ACHIEVE THE ABOVE IS AS FOLLOWS:

CONSTRUCTION SEQUENCE:

- 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 PLAN PREPARER, THE LAND MANAGEMENT GROUP SUPERVISOR FOR THE PGC, AND A REPRESENTATIVE FROM BUTLER COUNTY CONSERVATION DISTRICT FOR A PRECONSTRUCTION MEETING.
- MOBILIZE CONSTRUCTION EQUIPMENT AND MATERIALS TO THE PROJECT SITE.
- CONSTRUCT AND INSTALL ROCK CONSTRUCTION ENTRANCE AS INDICATED ON THE PLANS. MAINTAIN CONSTRUCTION ENTRANCE APPROPRIATELY THROUGHOUT CONSTRUCTION. REMOVE AND STABILIZE TEMPORARY CONTROL MEASURES UPON ESTABLISHMENT OF PERMANENT VEGETATION.
- INSTALL PROTECTIVE BARRIER AROUND AREAS TO BE PROTECTED, SUCH AS WETLANDS AND STREAMS. PROTECTIVE BARRIERS MAY BE EARTHEN BERM, ORANGE SAFETY FENCE, JERSEY BARRIERS, OR SIMILAR.
- INSTALL EROSION AND SEDIMENT CONTROL BMP'S AS DIRECTED ON THE PLANS AND AS NECESSARY DURING CONSTRUCTION. EARTH DISTURBANCE CANNOT OCCUR UNTIL E&S BMP'S HAVE BEEN INSTALLED TO TREAT THE WATERSHED AREA IN WHICH DISTURBANCE WILL OCCUR.
- INSTALL COMPOST FILTER SOCK AS SHOWN ON THE PLANS (CLEARING AND GRUBBING SHOULD BE LIMITED TO WHAT IS NECESSARY FOR INSTALLATION). ALL INSTALLED BMP'S SHALL BE INSPECTED WEEKLY AND AFTER RUNOFF EVENTS. UPON INSPECTION, NECESSARY REPAIRS SHALL BE PERFORMED BY THE CONTRACTOR. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH ½ THE HEIGHT OF CONTROLS.
- CONSTRUCT SEDIMENT BASIN 1 BY CONSTRUCTING A SOIL BERM AT THE NORTH END OF THE PROJECT AREA. REMOVE IRON MAT PRIOR TO CONSTRUCTION OF BERM. INSTALL THE PIPE BARREL AND RISER FOR THE PRINCIPAL SPILLWAY IN ACCORDANCE WITH THE DESIGN REQUIREMENTS. INSTALL RIPRAP APRON AT OUTLET OF BARREL PIPE. INSTALL TURF RACK ON PRINCIPAL SPILLWAY RISER PIPE. GRADE EMERGENCY SPILLWAY CHANNEL OVER THE SOIL BERM, STABILIZE THE BERM AND EMERGENCY SPILLWAY AND INSTALL TURF REINFORCEMENT MAT IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS AND DESIGN REQUIREMENTS.
- REMOVE THE EXISTING 8-INCH DIAMETER PVC PIPE CULVERT. REMOVE OR PLUG THE EXISTING 12-INCH DIAMETER CONCRETE PIPE CULVERT WHICH CROSSES THE LOWER ACCESS ROAD.
- CONSTRUCT TEMPORARY COLLECTION CHANNEL TCC-1, TEMPORARY COLLECTION CHANNEL TCC-2, TEMPORARY CULVERT 1, AND PROPOSED ACCESS ROAD IN ACCORDANCE WITH THE DESIGN REQUIREMENTS. STABILIZE ALL AREAS WHICH ACHIEVE FINAL GRADE ELEVATION INCLUDING DISTURBED AREA LOCATED UPSLOPE OF THE PROPOSED ACCESS ROAD.
- PERFORM CLEARING OF EXISTING TREES, STUMPS, AND BRUSH LOCATED WITHIN THE LIMIT OF DISTURBANCE. TREES, STUMPS, AND BRUSH REMOVED FOR THE PROJECT WILL BE PLACED IN PILES ON THE PROPERTY IN AREAS AS APPROVED BY PA GAME COMMISSION OFFICIALS.
- CONSTRUCT VERTICAL FLOW POND IN ACCORDANCE WITH DESIGN PLANS. STABILIZE ALL AREAS WHICH ACHIEVE FINAL GRADE ELEVATION.
- PERFORM EXCAVATION OF CONSTRUCTION AREA MINE SPOIL PILE. EXCAVATED SPOIL MATERIALS WILL BE STOCKPILED IN THE EXISTING STRIP CUT FROM PREVIOUS MINING OPERATIONS. EXCESS SOIL MATERIAL WILL REMAIN AS PERMANENT FILL IN THE AREA. FILL AREAS WHICH ACHIEVE GRADE ELEVATION SHALL BE STABILIZED IMMEDIATELY.
- CONSTRUCT TERRACED IRON FORMATION CHANNEL IN ACCORDANCE WITH DESIGN PLANS. STABILIZE ALL AREAS WHICH ACHIEVE FINAL GRADE ELEVATION.
- PERFORM FINAL GRADING OF PROJECT AREA AND PERMANENTLY STABILIZE ALL DISTURBED AREAS.
- UPON STABILIZATION OF UPGRADEMENT AREA, CONVERT TCC-2 INTO DIVERSION CHANNEL DC-1 AND CONSTRUCT THE REMAINDER OF DC-1. STABILIZE THE ENTIRE CHANNEL AREA, SIDESLOPES, AND OUTLET ACCORDING TO DESIGN REQUIREMENTS.
- INSTALL CULVERT 1 FOR CROSSING UNDER THE EXISTING LOWER ACCESS ROAD FOR DISCHARGE OF DC-1. STABILIZE THE DISTURBED AREAS ONCE INSTALLATION OF DC-1 AND CULVERT 1 IS COMPLETED.
- UPON STABILIZATION OF UPGRADEMENT AREAS, REMOVE TEMPORARY CHANNEL TCC-1 AND TEMPORARY CULVERT 1. STABILIZE ALL AREAS WHICH ACHIEVE FINAL GRADE ELEVATION.
- CONVERT SEDIMENT BASIN 1 TO THE WETLAND IN ACCORDANCE WITH DESIGN PLANS. STABILIZE ALL AREA WHICH ACHIEVE FINAL GRADE ELEVATION.
- IF WATER ACCUMULATES WITHIN THE SITE DURING CONSTRUCTION, EXCESS WATER WILL BE PUMPED OFFSITE. PUMPED WATER FILTER BAGS WILL BE USED TO FILTER WATER PUMPED FROM DISTURBED AREAS IF THE NEED ARISES. FILTER BAGS WILL BE UTILIZED ON THE DOWNGRADIENT SIDE OF THE EARTHWORK, AS NEEDED. ALTERNATIVELY, WATER MAY BE PUMPED THROUGH THE SEDIMENTATION BASIN 1.
- BAGS SHOULD BE LOCATED IN WELL VEGETATED (GRASSY) AREAS AND DISCHARGE ONTO STABLE EROSION RESISTANT AREAS. FILTER BAGS WILL BE REMOVED WHEN THEY BECOME ½ FULL. THE USE OF FILTER BAGS WILL CONTINUE UNTIL THE CONSTRUCTION AREA HAS BEEN STABILIZED AND SUCCESSFULLY REVEGETATED.
- REMOVE ANY DEBRIS AND ENSURE ADEQUATE FLOW IN PERMANENT STORMWATER DIVERSION STRUCTURES. REPAIR PERMANENT E&S CONTROL STRUCTURES AS NECESSARY. REMOVE THE TEMPORARY E&S CONTROL MEASURES ONCE VEGETATION HAS BECOME ESTABLISHED (>70% COVER).
- DEMOLIBIZATION OF EQUIPMENT AND MATERIALS FROM THE SITE.

DEVIATION FROM THE SCHEDULE OF CONSTRUCTION ACTIVITIES MAY BE NECESSARY BASED ON SPECIFIC SITE CONDITIONS AND OCCURRENCES AT THE TIME OF CONSTRUCTION. CONSTRUCTION OPERATIONS MAY BE CONDUCTED AT THE SITE AT ANY TIME NECESSARY TO COMPLETE THE PROJECT IN A TIMELY MANNER.

SEEDING AND MULCHING

UPON FINAL COMPLETION OF AN EARTH DISTURBANCE ACTIVITY, THE SITE SHALL IMMEDIATELY HAVE TOPSOIL RESTORED, SEEDED AND MULCHED. TEMPORARY EROSION AND SEDIMENTATION CONTROL BMPs CAN BE REMOVED WHEN THE SITE MEETS FINAL STABILIZATION. FINAL STABILIZATION MEANS THAT ALL SOIL-DISTURBING ACTIVITIES ARE COMPLETED, AND THAT EITHER A PERMANENT VEGETATIVE COVER WITH A DENSITY OF 70% OR GREATER HAS BEEN ESTABLISHED OR THAT AN ACCEPTABLE BMP WHICH PERMANENTLY MINIMIZES ACCELERATED EROSION AND SEDIMENTATION HAS BEEN INSTALLED. IT SHOULD BE NOTED THAT THE 70% REQUIREMENT REFERS TO THE TOTAL AREA VEGETATED AND NOT JUST A PERCENT OF THE SITE.

TOPSOIL WILL BE REPLACED PRIOR TO STABILIZATION. DISTURBED AREAS SHALL BE SEEDED WITH ONE OF THE CORRESPONDING MIXTURES FROM THE LIST BELOW. THE PGC WILL BE CONSULTED PRIOR TO VEGETATION. DEPENDING ON WHAT THE FINAL GRADE AROUND THE TREATMENT SYSTEM LOOKS LIKE, THE PGC MAY CHOOSE OTHER MIXES FOR LOWER MAINTENANCE. AN APPROPRIATE WETLAND SEED MIX (ERODENT PASSIVE ACID MINE OBL WETLAND MIX OR SIMILAR) WILL BE USED TO VEGETATE THE WETLAND. APPLY LIME AND FERTILIZER IN ACCORDANCE WITH SOIL TEST RECOMMENDATIONS. IF SOIL TEST RESULTS ARE UNAVAILABLE, APPLY AGRICULTURAL GRADE LIME AT A RATE OF 6 TONS PER ACRE AND APPLY 10-20-20 FERTILIZER AT A RATE OF 1000 LBS/ACRE. STRAW MULCH SHALL BE APPLIED AT A RATE OF AT LEAST 3 TONS PER ACRE.

PREFERRED SEED MIX:

ALL STEEP SLOPES, PIPELINES, & DURING OPERATIONS

- 2 LBS/ACRE – LITTLE BLUESTEM
- 10 LBS/ACRES – CANADA WILD RYE
- 10 LBS/ACRE – TIMOTHY
- 3 LBS/ACRE – ALSIKE CLOVER
- 3 LBS/ACRE – LADINO CLOVER
- 1 BUSHEL/ACRE – ANNUAL CEREAL GRAIN (OATS IN SPRING, WINTER GRAIN RYE IN FALL)
- APPLY STRAW (NOT HAY) TO PROVIDE COMPLETE COVERAGE OF SOIL

ALTERNATE SEED MIXES:

- ORIGINALLY FORESTED – LESS STEEP AREAS & DURING ALL FINAL RESTORATION
- 5 LBS/ACRE – TIMOTHY
- 5 LBS/ACRE BIRDSFOOT TREFOIL
- 5 LBS/ACRE – CANADA WILD RYE
- 1 LB/ACRE – INDIAN GRASS
- 2 LBS/ACRE – LITTLE BLUESTEM
- 1 LB/ACRE – SIDE-OATS GRAMA
- 1 LB/ACRE – SWITCHGRASS
- ¼ LB/ACRE – LANCE-LEAFED COREOPSIS
- ¼ LB/ACRE – MAXIMILIAN SUNFLOWER
- 1 BUSHEL/ACRE – ANNUAL CEREAL GRAIN (OATS IN SPRING, GRAIN RYE OR WHEAT IN FALL)
- APPLY STRAW (NOT HAY) TO PROVIDE COMPLETE COVERAGE OF SOIL

ORIGINALLY AGRICULTURAL/STRIP MINE/OLD FIELD – LESS STEEP AREAS & DURING ALL FINAL RESTORATION

- 2 LBS/ACRE – TIMOTHY
- 5 LBS/ACRE – CANADA WILD RYE
- 2 LBS/ACRE – LITTLE BLUESTEM
- 5 LBS/ACRE – SIDE-OATS GRAMA
- 5 LBS/ACRE – BIRDSFOOT TREFOIL
- ¼ LB/ACRE – LANCE-LEAFED COREOPSIS
- ½ BUSHEL/ACRE – ANNUAL CEREAL GRAIN (GRAIN RYE IN FALL, OATS IN SPRING)

E&S MAINTENANCE PROGRAM

THE CONTRACTOR SHALL ASSESS THE WORKING CONDITION OF THE E&S CONTROLS AT LEAST WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED STRUCTURES, BLOCKED STRUCTURES, OR OTHER PROBLEMS IDENTIFIED DURING THE INSPECTIONS SHALL BE REPAIRED PROMPTLY.

ROCK CONSTRUCTION ENTRANCE THICKNESS SHALL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. AT THE END OF EACH DAY, SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.

RESPONSIBILITY FOR MAINTAINING PERMANENT DRAINAGE CONTROL FACILITIES UPON COMPLETION OF CONSTRUCTION SHALL BE ASSUMED BY THE DEVELOPER.

COMPOST FILTER SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES ½ THE ABOVE GROUND HEIGHT OF THE SILT FENCE OR FILTER SOCK AND RETURNED TO THE CONSTRUCTION AREA. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.

IF PUMPED WATER FILTER BAGS ARE USED ON SITE, THEY SHALL BE INSPECTED FOR BREAKS OR LEAKS. FILTER BAGS AND THEIR UNDERLYING EROSION PROTECTION MATERIALS (E.G. STRAW BALES AND GEOTEXTILE) WILL BE CLOSELY MONITORED. BAGS SHALL BE REPLACED WHEN THEY BECOME 1/2 FULL. SPARE BAGS AND UNDERLYING MATERIALS SHALL BE KEPT AVAILABLE FOR REPLACEMENT. EROSION AND UNDERCUTTING OF FILTER BAGS SHALL BE PROMPTLY REPAIRED.

INSPECT THE SEDIMENT BASIN ON AT LEAST A WEEKLY BASIS AND AFTER EACH RUNOFF EVENT. PROVIDE ACCESS FOR SEDIMENT REMOVAL AND OTHER REQUIRED MAINTENANCE ACTIVITIES. A CLEAN OUT STAKE SHALL BE PLACED NEAR THE CENTER OF THE BASIN. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT HAS REACHED THE CLEAN OUT ELEVATION ON THE STAKE AND THE BASIN RESTORED TO ITS ORIGINAL DIMENSIONS. DISPOSE OF MATERIALS REMOVED FROM THE BASIN IN THE MANNER DESCRIBED IN THE E&S PLAN.

BASIN EMBANKMENTS, SPILLWAYS, AND OUTLETS SHALL BE INSPECTED FOR EROSION, PIPING AND SETTLEMENT. NECESSARY REPAIRS SHALL BE IMMEDIATELY DISPLACED RIPRAP WITHIN THE OUTLET ENERGY DISSIPATER SHALL BE REPLACED IMMEDIATELY. ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS SHALL BE STABILIZED INSIDE THE BASIN BEFORE CONVERSION TO A STORMWATER MANAGEMENT FACILITY.

STORMWATER DIVERSION CHANNELS AND CULVERTS SHOULD BE INSPECTED WEEKLY. THE STRUCTURES WILL BE MAINTAINED TO PREVENT ACCUMULATION OF SEDIMENT AND DEBRIS. WASHOUT AREAS WILL BE FILLED WITH SOIL AND STABILIZED. OUTFALLS WILL BE INSPECTED FOR EXCESSIVE EROSION AND REMEDIED AS NECESSARY.

REVEGETATED AREAS SHALL BE INSPECTED FOR ADEQUATE VEGETATIVE COVER. AREAS EXHIBITING STRESSED VEGETATION OR SIGNS OF EROSION SHALL HAVE THE SEEDBED PREPARED AND SHALL BE RESEEDD AND MULCHED.

UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPs MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPs AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. EACH INSPECTION SHOULD BE LOGGED ON THE MOST RECENT VERSION OF THE PAPER FORM 150-FM-BNEW0083 (VISUAL SITE INSPECTION REPORT). THESE LOGS WILL BE KEPT ONSITE AT ALL TIMES. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING THE CLEANOUT, REPAIR, REPLACEMENT, RE-GRADING, RE-SEEDING, RE-MULCHING AND RE-NETTING OF BMP'S AND DISTURBED AREAS MUST BE PERFORMED IMMEDIATELY. IF EROSION AND SEDIMENT CONTROL BMPs FAIL TO PERFORM AS EXPECTED, REPLACEMENT BMPs, OR MODIFICATIONS OF THOSE INSTALLED WILL BE REQUIRED.

SEDIMENT REMOVED FROM BMPs SHALL BE DISPOSED OF IN LANDSCAPED AREAS OUTSIDE OF STEEP SLOPES, WETLANDS, FLOODPLAINS OR DRAINAGE SWALES AND IMMEDIATELY STABILIZED OR PLACED IN TOPSOIL STOCKPILES OR FOR DAILY COVER AT SENECA LANDFILL.

MATERIAL RECYCLING AND DISPOSAL

ANY EXCESS MATERIAL AND WASTES REMOVED FROM THE PROJECT SITE WILL BE RECYCLED OR DISPOSED 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. IN ACCORDANCE WITH 25 PA. CODE, CHAPTER 78. SEDIMENTS FROM BMP'S SHALL BE REMOVED AS SPECIFIED IN THE MAINTENANCE FOR THAT BMP, SPREAD ON-SITE, AND STABILIZED ACCORDING TO THE PERMANENT STABILIZATION SPECIFICATIONS. ALTERNATIVELY, SEDIMENT MAY BE USED AS A DAILY COVER MATERIAL AT SENECA LANDFILL. WASTES MAY INCLUDE, BUT MAY NOT BE LIMITED TO, PIPE SCRAPS, GEOTEXTILE, SILT SOCK, FILTER BAGS, LUMBER, AND PERSONNEL TRASH. PLASTIC OR METAL MATERIALS WILL BE RECYCLED TO THE EXTENT PRACTICAL. OTHER WASTES WILL BE DISPOSED IN THE SENECA LANDFILL.

NATURALLY OCCURRING GEOLOGIC FORMATIONS OR SOILS TYPES THAT MAY CAUSE POLLUTION

THE PROJECT IS TO REMEDIATE AMD. DRAINAGE FROM GEOLOGIC FORMATIONS WITH THE POTENTIAL TO GENERATE AMD WILL DRAIN TO THE TREATMENT SYSTEM.

POST-CONSTRUCTION STORMWATER MANAGEMENT

POST-DEVELOPMENT RUNOFF AND STORMWATER MANAGEMENT CALCULATIONS WERE PREPARED BY BAI GROUP INC., AND THE COMPLETE SET OF CALCULATIONS CAN BE FOUND IN 'THE POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) PLAN'. THIS IS A SEPARATE PLAN THAT HAS BEEN PREPARED AS A PART OF THIS PERMIT APPLICATION. SENECA LANDFILL WILL BE RESPONSIBLE FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF THE PASSIVE TREATMENT SYSTEM UNTIL THE NOTICE OF TERMINATION IS SUBMITTED AND APPROVED. AFTER THE NOTICE OF TERMINATION IS APPROVED, OPERATION AND MAINTENANCE OF THE SITE WILL BE PERFORMED BY THE STREAM RESTORATION, INC.

THERMAL IMPACTS

THERMAL IMPACTS TO THE RECEIVING WATERS ARE NOT ANTICIPATED. THERE IS NO INCREASE IN IMPERVIOUS AREA FOR THIS PROJECT. STORMWATER WILL ALSO PASS THROUGH THE PASSIVE TREATMENT SYSTEM BEFORE ENTERING ANY WATERWAY. THROUGH THESE MEASURES THERE SHOULD BE NO THERMAL IMPACT TO THE RECEIVING WATERS.

ANTIDEGRADATION REQUIREMENTS

THE PROPOSED EARTH DISTURBANCE ACTIVITIES ARE NOT WITHIN SPECIAL PROTECTION OR SILTATION-IMPAIRED WATERSHEDS.

SCHEDULE

CONSTRUCTION IS SCHEDULED TO BEGIN IN THE SPRING/SUMMER OF 2018.

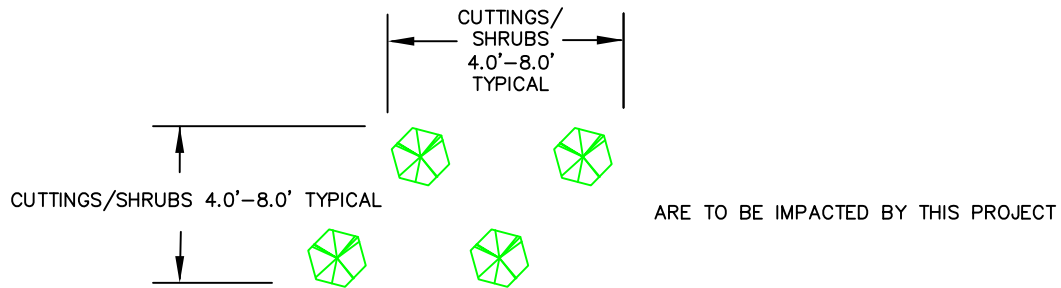
THE EROSION AND SEDIMENT CONTROL PLAN SHALL BE PREPARED BY A PERSON TRAINED AND EXPERIENCED IN EROSION CONTROL METHODS AND TECHNIQUES

THESE PLANS AND NARRATIVE WERE PREPARED BY BAI GROUP INC., STATE COLLEGE, PA IN ACCORDANCE WITH THE PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION EROSION AND SEDIMENT POLLUTION CONTROL PROGRAM MANUAL, MARCH 2012.

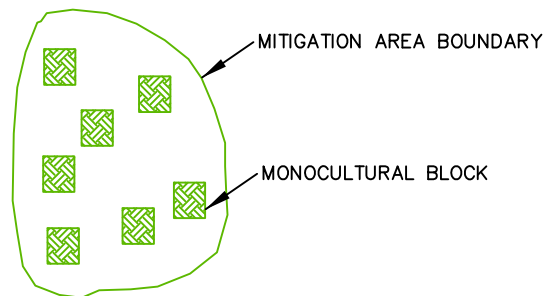
TABLE 1: LIMITATIONS OF PENNSYLVANIA SOILS PERTAINING TO EARTH DISTURBANCE PROJECTS																
SOIL NAME	CUTBANKS CAVE	CORROSIVE TO CONCRETE/STEEL	DRYABILITY	EASILY ERODIBLE	FLOODING	POSSIBLE FOR SATURATED ZONE/SEASONAL HIGH	HYDRIC/HYDRIC INCLUSIONS	LOW STRENGTH / LANDSLIDE PRONE	PERCOLATION	PIPING	POOR SOURCE OF TOPSOIL	FROST ACTION	SHRINK - SWELL	POTENTIAL SHIMHOLE	POUNDING	WETNESS
Bachanon	X	C/S	X					X	X	X	X	X	X			X
Fluvaquents	X	C/S	X					X		X		X	X			X
Hazelton/Giplin	X	C/S	X					X		X		X	X			
Udorthents	X	C/S	X	X				X	X	X	X	X	X			X

REVISIONS		
5/24/2018	REVISED NOTES	CMB
<b>VOGEL LANDFILL, INC.</b> <b>SR89 PROJECT</b> <b>PA STATE GAME LANDS NO. 95</b> WASHINGTON TOWNSHIP BUTLER COUNTY PENNSYLVANIA		DATE: <b>6/01/15</b> DRAWN BY: <b>SWH</b> CHECKED: <b>PW</b> BAI DRAWING NO: <b>VOGEL-108D001G R1</b>
State College Office (814) 238-2060		Delaware Valley Office (610) 495-5585
		SHEET NO. <b>7 OF 7</b>





PLAN VIEW – PLANT SPACING WITHIN MONOCULTURAL BLOCKS



PLAN VIEW – RANDOMLY SPACED MONOCULTURAL PLANTING BLOCKS

1. TYPICAL SPACING IS APPROXIMATE. PLANTS SHOULD BE LOCATED RANDOMLY TO AVOID THE APPEARANCE OF ORGANIZED ROWS WITHIN THE MONOCULTURAL PLANTING BLOCKS.
2. SHRUBS ARE TO BE PLANTED IN THE PLANTING ZONES IDENTIFIED IN THE PLANTING SCHEDULE. MONOCULTURAL BLOCKS SHOULD CONTAIN 10–20 PLANTS IN SHRUB ZONES. MONOCULTURAL BLOCKS SHOULD BE APPROXIMATELY IN 50' INTERVALS, OR AS DIRECTED OR MODIFIED BY THE CONSTRUCTION MANAGER.

**1 TYPICAL PLANT SPACING DETAIL**  
1.1 NOT TO SCALE



**SENECA LANDFILL, INC.**  
**SR 89 REMEDIATION PROJECT**  
**PERMIT APPLICATION**

JACKSON TOWNSHIP BUTLER COUNTY PENNSYLVANIA

**TYPICAL PLANT SPACING DETAIL**

State College Office  
(814) 238-2060

Delaware Valley Office  
(610) 495-5585

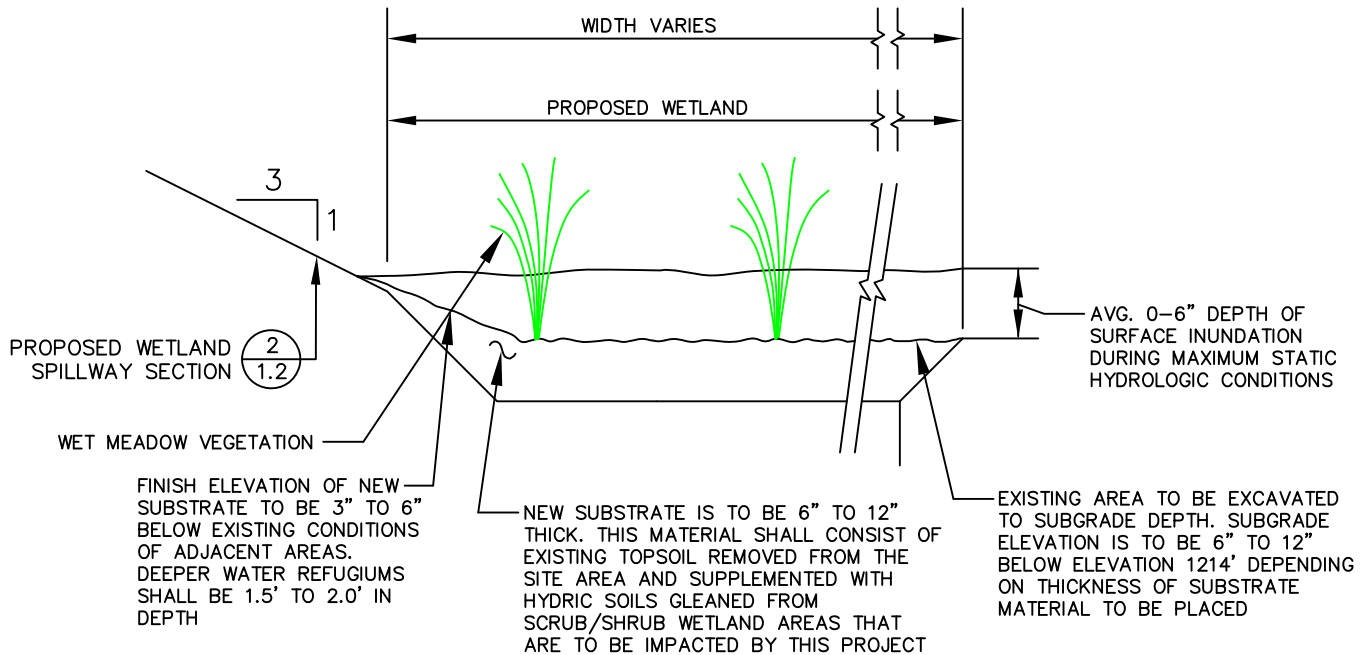
DATE: **11/13/18**

DRAWN BY:	CHECKED:
<b>CJE</b>	<b>PW</b>

BAI DRAWING NO:  
**VOG-108A003AB**

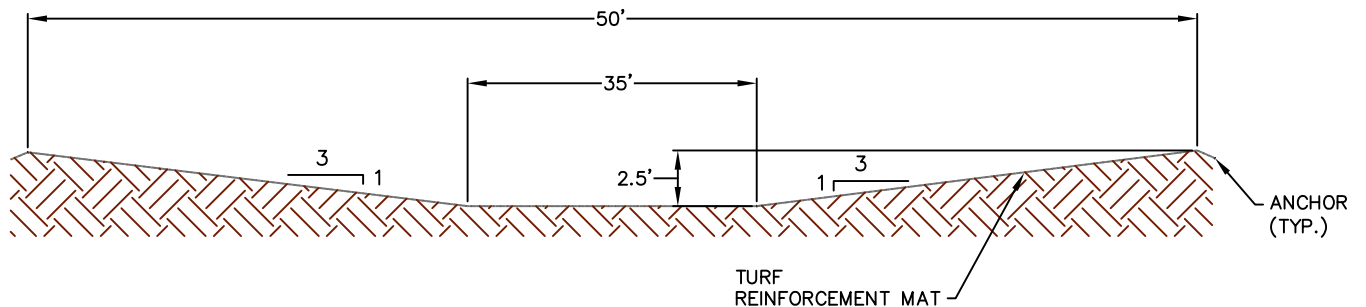
**EXHIBIT 1.1**





## 1 PROPOSED WETLAND AREA CROSS-SECTION

1.2 NOT TO SCALE



## 2 PROPOSED WETLAND SPILLWAY SECTION

1.2 NOT TO SCALE



### SENECA LANDFILL, INC. SR 89 REMEDIATION PROJECT PERMIT APPLICATION

JACKSON TOWNSHIP BUTLER COUNTY PENNSYLVANIA

### PROPOSED WETLAND AREA CROSS SECTION AND SPILLWAY

State College Office

(814) 238-2060

Delaware Valley Office

(610) 495-5585

DATE:

11/13/18

DRAWN BY:

CJE

CHECKED:

PW

BAI DRAWING NO:

VOG-108A003AB

EXHIBIT 1.2



VOGEL LANDFILL, INC.  
SR89 PROJECT  
PA STATE GAME LANDS NO. 95



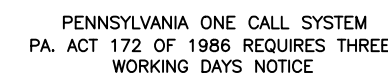
SITE LOCATION

PA STATE GAME LANDS NO. 95

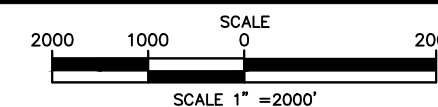
VOGEL DISPOSAL SERVICE, INC.  
121 BRICKYARD ROAD  
MARS, PA 16046  
(724) 625-9000

CALL BEFORE YOU DIG!

PENNSYLVANIA LAW REQUIRES  
3 WORKING DAYS NOTICE FOR  
CONSTRUCTION PHASE AND 10 WORKING  
DAYS IN DESIGN STAGE-STOP CALL  
PENNSYLVANIA ONE CALL SYSTEM, INC



AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL INVITE ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN PREPARER, AND THE CHESTER COUNTY CONSERVATION DISTRICT TO AN ON-SITE MEETING. ALSO, AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INCORPORATED AT 1-800-242-1776 FOR BURIED UTILITY LOCATIONS.

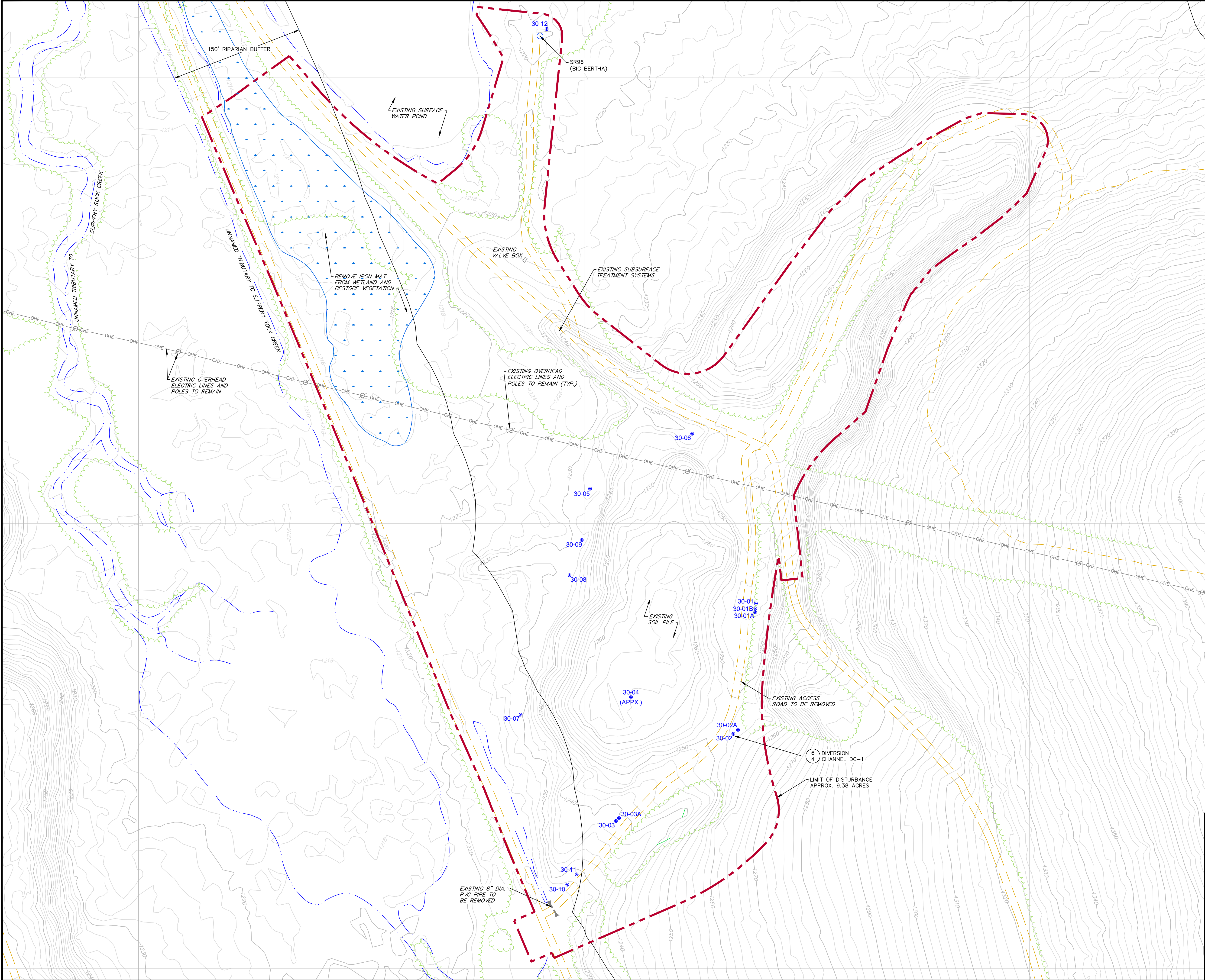


SITE LOCATION MAP  
1"=2000'

DRAWING INDEX		
SHEET NO.	DRAWING TITLE	BAI DRAWING NO.
PCSM-1	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - COVER SHEET	V0G-1080001I R1
PCSM-2	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - EXISTING CONDITIONS	V0G-1080001I R2
PCSM-3	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - PROPOSED CONDITIONS	V0G-1080001J R1
PCSM-4	POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - DETAILS & NOTES	V0G-1080001K R2

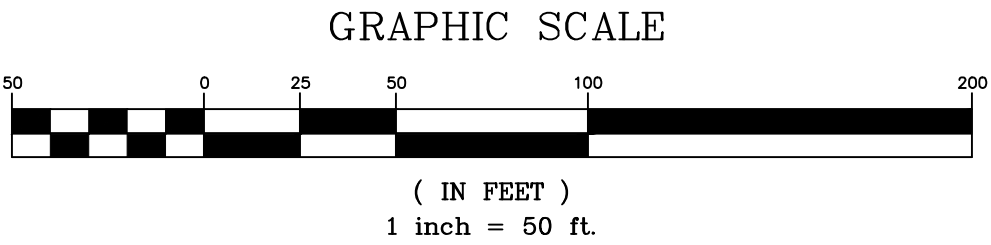







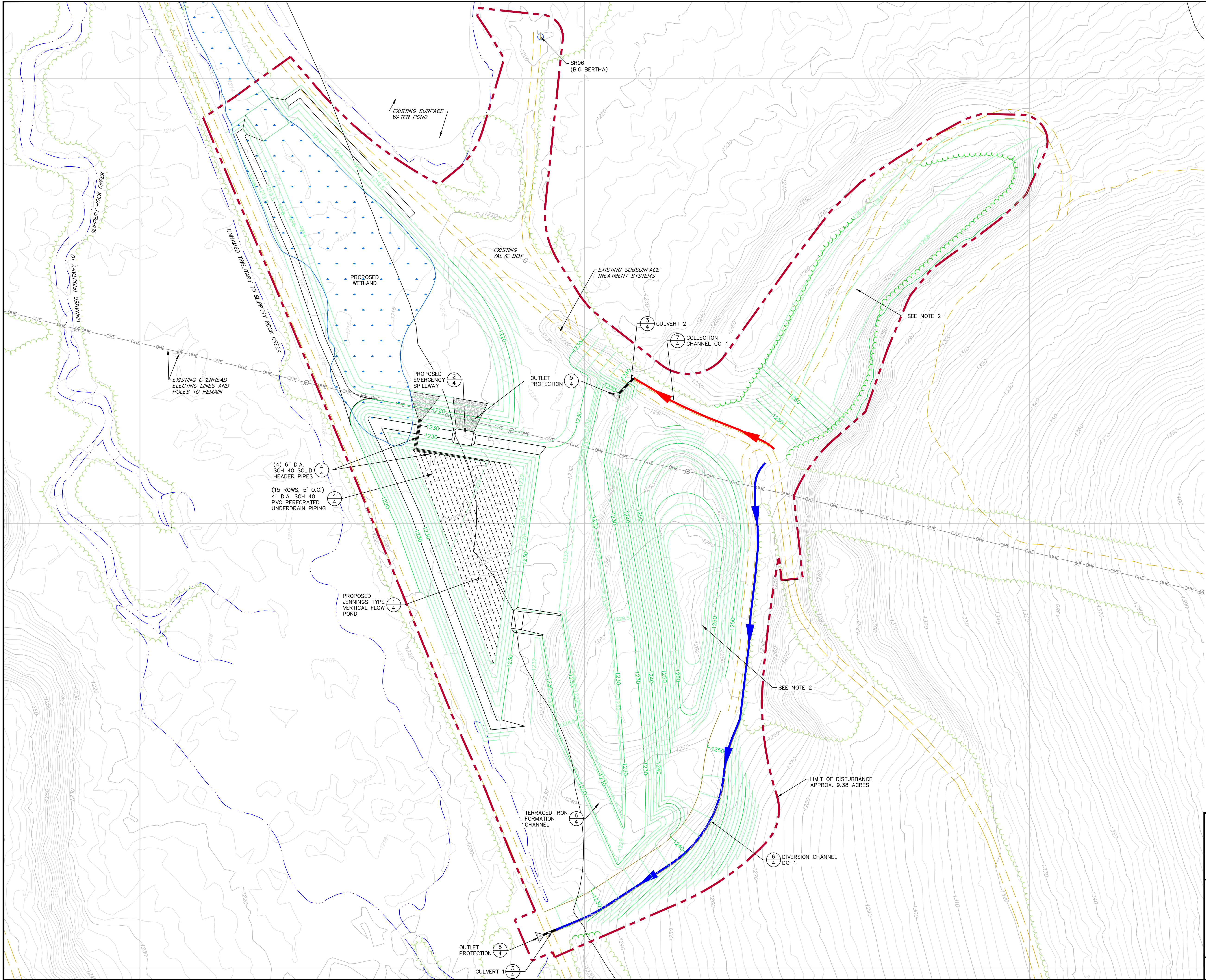
- NOTES**
1. BASEMAP TOPOGRAPHY DOWNLOADED FROM PENNSYLVANIA SPATIAL DATA ACCESS WEBSITE. LIDAR TILE NUMBERS 65001380PAS AND 65001390PAS DATED APRIL 2007.
  2. A 150' RIPARIAN BUFFER ZONE IS SHOWN HEREIN. HOWEVER, REVEGETATION OF THESE AREAS AFTER CONSTRUCTION IS NOT NECESSARY AS THIS IS NOT A HQ/EV WATERSHED.

- LEGEND**
- LIMIT OF DISTURBANCE/PERMIT AREA
  - EXISTING GRADE CONTOURS (C.I.=2'/10') (SEE NOTE 1)
  - EXISTING ACCESS ROAD
  - EXISTING TRAIL
  - EXISTING TREE LINE
  - EXISTING WATER SURFACE
  - EXISTING OVERHEAD ELECTRIC LINES
  - EXISTING POWER POLE
  - EXISTING STREAM
  - EXISTING CULVERT PIPE
  - EXISTING WETLAND
  - RIPARIAN BUFFER



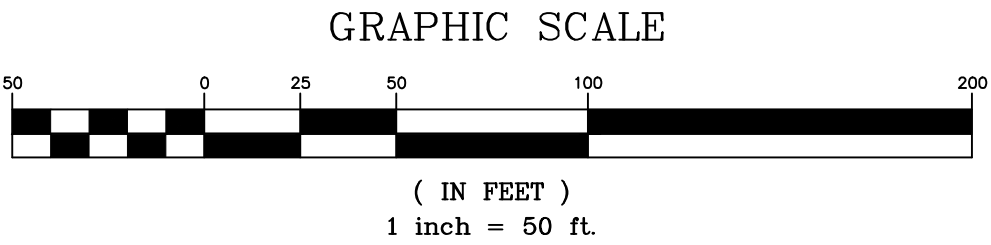
 Balanced Environmental Solutions	REVISIONS		
	5/24/2018	150' RIPARIAN BUFFER ADDED, NOTES UPDATED	CMB
<b>VOGEL LANDFILL, INC.</b> <b>SR89 PROJECT</b> <b>PA STATE GAME LANDS NO. 95</b> WASHINGTON TOWNSHIP BUTLER COUNTY PENNSYLVANIA		DATE: <b>10/27/17</b>	
<b>POST CONSTRUCTION STORMWATER MANAGEMENT PLAN - EXISTING CONDITIONS</b>		DRAWN BY: <b>RHM</b>	
State College Office (814) 238-2060		CHECKED: <b>PW</b>	
Delaware Valley Office (610) 495-5585		BAI DRAWING NO: <b>VOGEL-108D0011 R1</b>	
		SHEET NO. <b>PCSM-2</b>	





- NOTES**
1. BASEMAP TOPOGRAPHY DOWNLOADED FROM PENNSYLVANIA SPATIAL DATA ACCESS WEBSITE. LIDAR TILE NUMBERS 65001380PAS AND 65001390PAS DATED APRIL 2007.
  2. GRADES DEPICTED ARE APPROXIMATE AND MAY NOT REACH THIS ELEVATION.
  3. A 150' RIPARIAN BUFFER ZONE IS SHOWN HEREIN. HOWEVER, REVEGETATION OF THESE AREAS AFTER CONSTRUCTION IS NOT NECESSARY AS THIS IS NOT A HQ/EV WATERSHED.

- LEGEND**
- LIMIT OF DISTURBANCE/PERMIT AREA
  - 1220- EXISTING GRADE CONTOURS (C.I.=2'/10')
  - 1230- PROPOSED GRADE CONTOURS (C.I.=2'/10')
  - EXISTING ACCESS ROAD
  - EXISTING TRAIL
  - EXISTING TREE LINE
  - PROPOSED TREE LINE
  - EXISTING WATER SURFACE
  - EXISTING OVERHEAD ELECTRIC LINES
  - EXISTING POWER POLE
  - EXISTING STREAM
  - EXISTING CULVERT PIPE
  - EXISTING WETLAND
  - RIPARIAN BUFFER
  - PROPOSED PERMANENT STORMWATER DIVERSION CHANNEL
  - PROPOSED PERMANENT STORMWATER COLLECTION CHANNEL



BAI GROUP INC. Balanced Environmental Solutions	REVISIONS		
	5/24/2018	NOTES UPDATED	CMB
<b>VOGEL LANDFILL, INC.</b> <b>SR89 PROJECT</b> <b>PA STATE GAME LANDS NO. 95</b> WASHINGTON TOWNSHIP BUTLER COUNTY PENNSYLVANIA		DATE: <b>10/27/17</b> DRAWN BY: <b>RHM</b> CHECKED: <b>PW</b> BAI DRAWING NO: <b>VOGEL-108D001J R1</b> SHEET NO.	<b>PCSM-3</b>
State College Office (814) 238-2060		Delaware Valley Office (610) 495-5585	



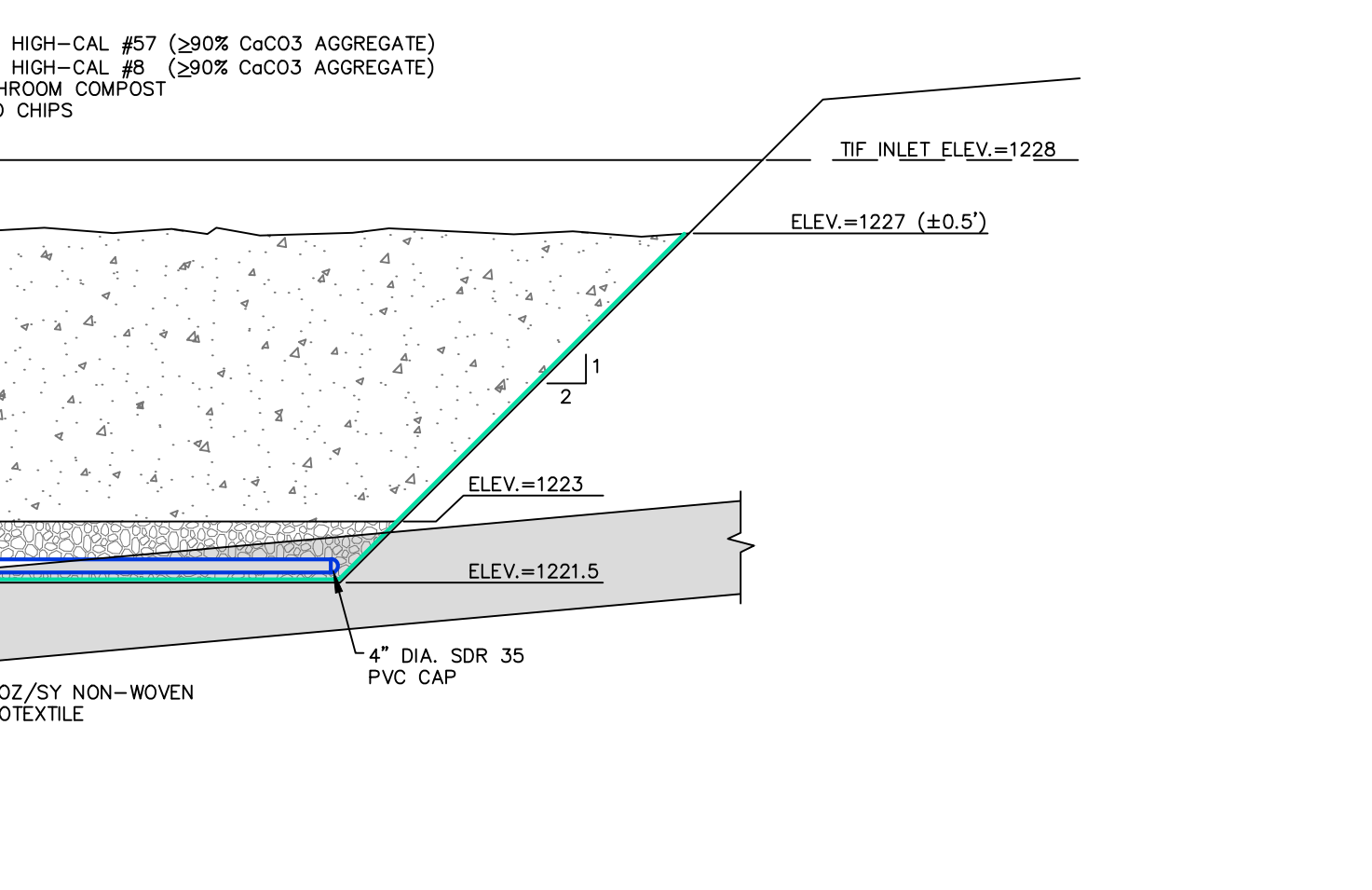
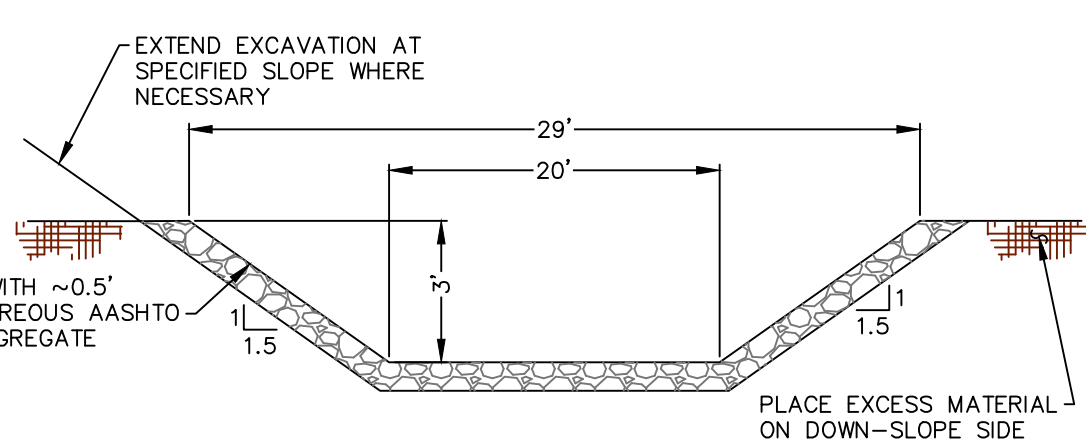


Diagram illustrating the construction details for a single culvert installation. The culvert is shown as a circular structure (18" NOM. DIA. CORRUGATED ADS PIPE) embedded in a bedding layer (4" thick). The bedding is surrounded by compacted soil backfill (12" MIN. thick). The culvert is installed in a trench, with the surrounding earth being undisturbed. An access road is shown on the left side of the trench. The diagram also indicates the use of AASHTO NO. 2A AGGREGATE OR EQUIVALENT MATERIAL for the bedding and backfill.

### 3 CULVERT DETAIL

STANDARD CONSTRUCTION DETAIL 1  
VEGETATED CHANNELS

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TERRACED IRON FORMATION (TIF)  
NOT TO SCALE

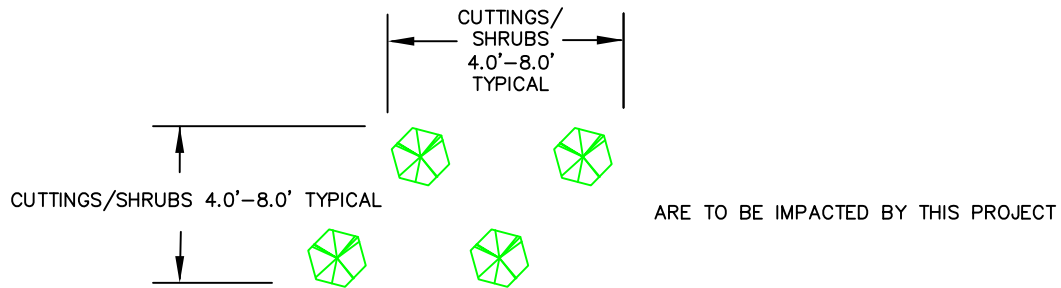
Technical drawing of a mechanical part. The drawing shows a side view of a component with a total width of 29. A dimension line indicates a distance of 29 from the left edge to the right edge. A small arrow points to the left edge of the part.

#1 AGGREGATE 1.5

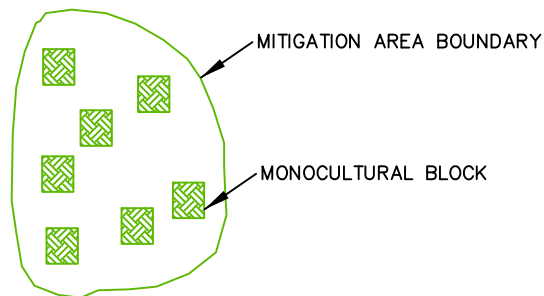
ON DOWN-SLOPE SIDE

4 NOT TO SCALE





PLAN VIEW – PLANT SPACING WITHIN MONOCULTURAL BLOCKS



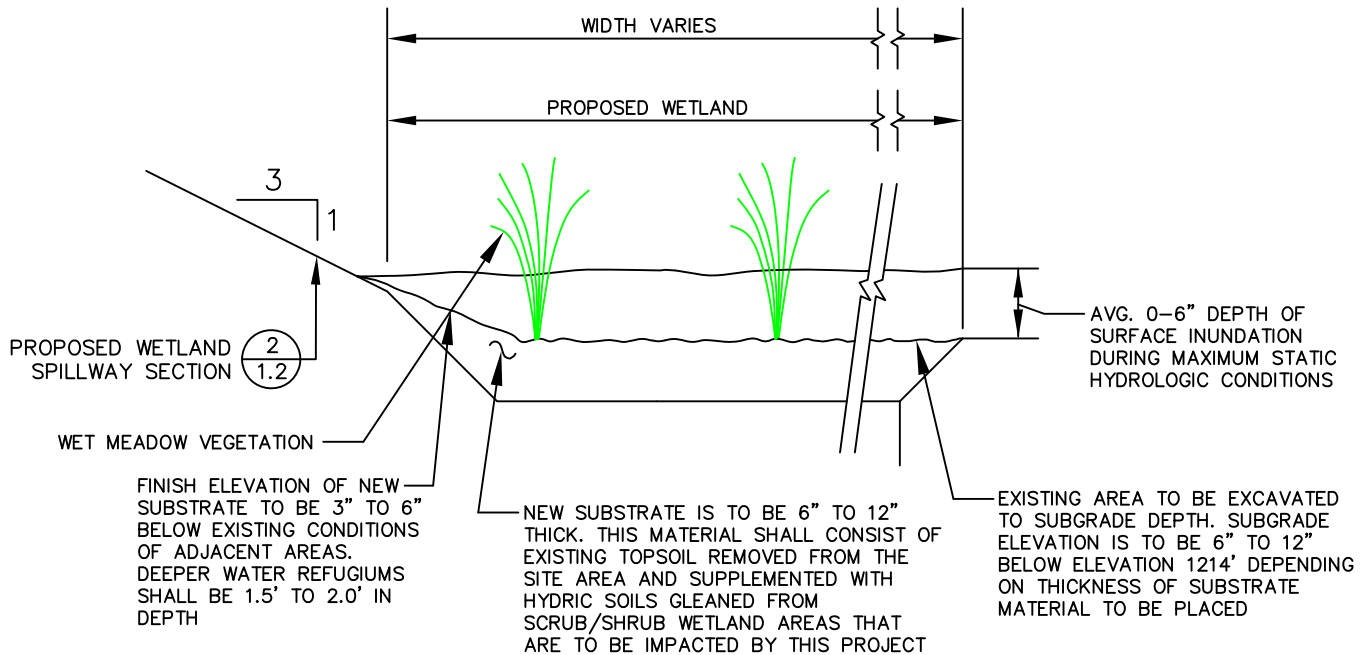
PLAN VIEW – RANDOMLY SPACED MONOCULTURAL PLANTING BLOCKS

1. TYPICAL SPACING IS APPROXIMATE. PLANTS SHOULD BE LOCATED RANDOMLY TO AVOID THE APPEARANCE OF ORGANIZED ROWS WITHIN THE MONOCULTURAL PLANTING BLOCKS.
2. SHRUBS ARE TO BE PLANTED IN THE PLANTING ZONES IDENTIFIED IN THE PLANTING SCHEDULE. MONOCULTURAL BLOCKS SHOULD CONTAIN 10–20 PLANTS IN SHRUB ZONES. MONOCULTURAL BLOCKS SHOULD BE APPROXIMATELY IN 50' INTERVALS, OR AS DIRECTED OR MODIFIED BY THE CONSTRUCTION MANAGER.

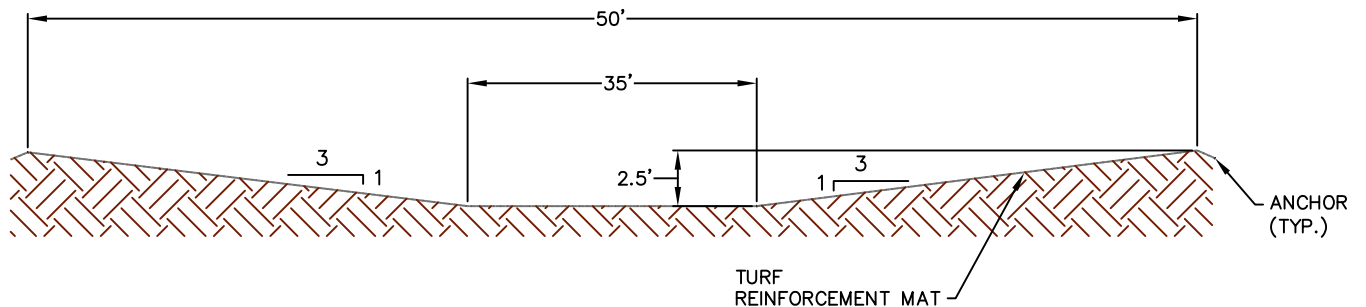
**1 TYPICAL PLANT SPACING DETAIL**  
1.1 NOT TO SCALE

	<b>SENECA LANDFILL, INC.</b> <b>SR 89 REMEDIATION PROJECT</b> <b>PERMIT APPLICATION</b>		DATE: <b>11/13/18</b>	
	JACKSON TOWNSHIP      BUTLER COUNTY      PENNSYLVANIA		DRAWN BY: <b>CJE</b>	CHECKED: <b>PW</b>
	<b>TYPICAL PLANT SPACING DETAIL</b>		BAI DRAWING NO: <b>VOG-108A003AB</b>	
	<u>State College Office</u> (814) 238-2060	<u>Delaware Valley Office</u> (610) 495-5585	<b>EXHIBIT 1.1</b>	





**1 PROPOSED WETLAND AREA CROSS-SECTION**  
 1.2 NOT TO SCALE



**2 PROPOSED WETLAND SPILLWAY SECTION**  
 1.2 NOT TO SCALE

	<b>SENECA LANDFILL, INC.</b> <b>SR 89 REMEDIATION PROJECT</b> <b>PERMIT APPLICATION</b>		DATE: <b>11/13/18</b>	
	JACKSON TOWNSHIP BUTLER COUNTY PENNSYLVANIA <b>PROPOSED WETLAND AREA CROSS SECTION AND SPILLWAY</b>		DRAWN BY: <b>CJE</b>	CHECKED: <b>PW</b>
	State College Office (814) 238-2060		BAI DRAWING NO: <b>VOG-108A003AB</b>	
	Delaware Valley Office (610) 495-5585		<b>EXHIBIT 1.2</b>	