

**Binder 5 of 6 – Erosion and Sedimentation Control Plan Narrative**

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## **I. EXECUTIVE SUMMARY**

The purpose of this erosion and sedimentation control plan is to provide the contractor with general guidelines and specific details for minimizing erosion and sedimentation during and after the construction of the project. The plan consists of this narrative and accompanying drawings and is part of an individual NPDES Permit for Discharges of Stormwater Associated with Construction Activities. PPL Bell Bend, LLC is proposing to construct a Nuclear Power generating plant in Salem Township, Luzerne County Pennsylvania. See Appendix A for the location map.

The sedimentation controls proposed consist of Silt Barrier Fence, Super Silt Fence, Sediment Basins, Slope Protection, Rock Filter Berms, and Rock Construction Entrances, Pump Water Filter Bags and Cofferdams. The Silt Barrier Fence will be used along the toe of the soil stockpiles and the toe of the fill slopes at locations shown on the E&S plans to prohibit sediment from leaving the construction area. The Super Silt Fabric Fence will be placed around the designated wetlands on site. The installation of the Super Silt Fabric Fence will protect these wetland areas during construction activities. The anticipated starting date for the project is April 2013 and the anticipated completion date for construction will be in December of 2019

The person responsible for the preparation of this report and the Erosion and Sedimentation Control Plan is Chad M. Lello, Registered Professional Engineer, who is experienced in the development of Erosion and Sedimentation Control Plans.

## **II. EXISTING LAND USE AND SITE FEATURES**

The PPL Bell Bend project NPDES Boundary is 1218 acres which is in a rural/residential community that contains various types of ground cover such as: wooded areas, paved roadways, agricultural land, grass fields, an existing power plant and numerous wetland areas. The nearest named waterway is Walker Run which runs through the site. Walker Run is classified as Cold Water Fishery-Migratory Fishery (CWF-MF) by the classifications set forth by the Chapter 93 Water Quality Standards, Title 25. A portion of the site drains towards the Susquehanna River which is classified as a Warm Water Fishery (WWF-MF) by the classifications set forth by the Chapter 93 Water Quality Standards, Title 25.

## **III. PROPOSED LAND USE AND SITE FEATURES**

PPL Bell Bend, LLC is proposing to construct a new Nuclear Power plant. The proposed construction will disturb a total of approximately 687 Ac. The earth moving activities will consist of constructing a main access road off of US11, other access and security roads, a railroad spur, parking lots, utilities, buildings and two cooling towers that will support the proposed power plant.

#### IV. ANALYSIS OF PROJECT IMPACT ON DOWNSTREAM WATERCOURSES

Stormwater runoff is proposed to be conveyed in a drainage system consisting of inlets, culverts, swales, and pipes that ultimately outlet to numerous aboveground infiltration/detention basins and subsurface infiltration/detention basins. The stormwater basins are designed to remove the stormwater volume difference between the two-year pre-developed and post-developed storm events. The basins are also designed to control stormwater discharge rates up to the 100-year storm. Many of the basins are designed to outlet to level spreaders and rip-rap aprons. Therefore, the project will have a minimum impact on the downstream water courses resistance to erosion.

#### V. SOILS

See Appendix B for a soils map. The soils on the site are listed by the United States Department of Agriculture and the Natural Resource Conservation Service as:

**ASF – Arnot-Rock outcrop complex, Steep** – This steep and very steep soil is on convex mountain sides and hillsides. Runoff is rapid, and the hazard of erosion is slight. These soils are low in natural fertility, and content of organic matter is low. Most limitations for non-farm use are related to slope, the stones, the rock outcrop, and the depth to bedrock. The Capability Subclass for this soil is VIIc.

**At – Atherton silt loam, gray subsoil variant, 0 to 3 percent slopes** – This is a nearly level soil in low lying, uniformly concave positions. Runoff is very slow, ponding is common and the hazard of erosion is slight. These soils are medium in natural fertility, and content of organic matter is moderate. Most limitations for non-farm use are related to the high water table, the slow permeability, and ponding. The Capability Subclass for this soil is IVw.

**BrA – Braceville gravelly loam, 0 to 3 percent slopes** – This nearly level soil is in smooth, slightly concave positions on glacial outwash terraces. Runoff is slow and the hazard of erosion is slight. This Braceville soil is medium to low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the seasonal high water table and the moderately slow permeability. The Capability Subclass for this soil is IIw.

**BrB – Braceville gravelly loam, 3 to 8 percent slopes** – This gently sloping soil is in smooth, slightly concave positions on glacial outwash terraces. Runoff is slow to medium, and the hazard of erosion is moderate. This Braceville soil is medium to low in natural fertility and low in content of organic

matter. Most limitations for nonfarm use are related to the seasonal high water table and the moderately slow permeability. The Capability Subclass for this soil is IIw.

**BrC – Braceville gravelly loam, 8 to 15 percent slopes** – This gently sloping soil is in smooth, slightly concave positions on glacial outwash terraces. Runoff is medium, and the hazard of erosion is moderate. This Braceville soil is medium to low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the seasonal high water table, the moderately slow permeability and slope. The Capability Subclass for this soil is IIIe.

**ChA – Chenango gravelly loam, 0 to 3 percent slopes** – This nearly level soil is in broad, smooth, slightly convex positions on glacial outwash terraces. Runoff is slow to very slow, and the hazard of erosion is slight. This soil is low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to moderately rapid to rapid permeability and the possibility of ground water contamination. The Capability Subclass for this soil is IIs.

**ChB – Chenango gravelly loam, 3 to 8 percent slopes** – This gently sloping soil is in broad, smooth to slightly undulating, convex positions on glacial outwash terraces. Runoff is slow and the hazard of erosion is moderate. This soil is low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to moderately rapid to rapid permeability and the possibility of ground water contamination and the content of coarse fragments. The Capability Subclass for this soil is IIs.

**ChC – Chenango gravelly loam, 8 to 15 percent slopes** – This sloping soil is in smooth or rolling, convex positions on glacial outwash terraces. Runoff is medium to very slow and the hazard of erosion is moderate. This soil is low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to moderately rapid to rapid permeability and the possibility of ground water contamination and the content of coarse fragments. The Capability Subclass for this soil is IIIe

**Ho – Holly silt loam, 0 to 3 percent slopes** – This is a nearly level soil on smooth or slightly concave flood plains. Runoff is slow and the hazard of erosion is slight. This soil is subject to frequent flooding. This soil is medium in natural fertility and moderate in content of organic matter. Most limitations for nonfarm use are related to the season high water table and frequent flooding. The Capability Subclass for this soil is IIIw.

**OIB – Oquaga and Lordstown channery silt loams, 3 to 8 percent slopes** – This gently sloping soil is on convex tops of the hills, knolls and mountain ridges of broad rolling mountaintops and intermountain basins. Runoff is medium, and the hazard of erosion is moderate. This soil is medium in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the depth to bedrock. The Capability Subclass for this soil is IIe.

**OIC – Oquaga and Lordstown channery silt loams, 8 to 15 percent slopes** – This sloping soil is on the convex rounded tops, crests, and sides of hills, knolls and on the mountain ridges of broad rolling mountaintops and intermountain basins. Runoff is medium to rapid and the hazard of erosion is moderate. This soil is medium in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the depth to bedrock and slope. The Capability Subclass for this soil is IIIe.

**OID – Oquaga and Lordstown channery silt loams, 15 to 25 percent slopes** – This moderately steep soil is on the sides of hills, knolls, and mountain ridges of broad, rolling mountaintops and intermountain basins. Runoff is rapid, and the hazard of erosion is moderate. This soil is medium in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the depth to bedrock and slope. The Capability Subclass for this soil is IVe.

**OpB – Oquaga and Lordstown extremely stony silt loams, 3 to 8 percent slopes** – This gently sloping soil is on the convex tops of hills, knolls, and mountain ridges of broad mountaintops and intermountain basins. Runoff is medium, and the hazard of erosion is slight. This soil is medium in natural fertility and moderate in content of organic matter. Most limitations for nonfarm use are related to the depth to bedrock surface stoniness. The Capability Subclass for this soil is VIIs.

**OpD – Oquaga and Lordstown extremely stony silt loams, 8 to 25 percent slopes** – This sloping and moderately steep soil is on convex, rounded tops, crests and sides of hills; on knolls; and on the mountain ridges of broad rolling mountaintops and intermountain basins. Runoff is medium to rapid, and the hazard of erosion is slight. This soil is medium in natural fertility and moderate in content of organic matter. Most limitations for nonfarm use are related to the depth to bedrock surface stoniness, and slope. The Capability Subclass for this soil is VIIs.

**OXF – Oquaga and Lordstown extremely stony silt loams, steep** – This steep and very steep soil is on the sides of hills, mountain ridges, and valleys of broad, rolling mountaintops and intermountain basins. Runoff is rapid to very rapid, and the hazard of erosion is slight. This soil is medium in

natural fertility and moderate in content of organic matter. Most limitations for nonfarm use are related to slope, the depth to bedrock and surface stoniness. The Capability Subclass for this soil is VIIc.

**Ps – Pope Soils, 0 to 5 percent slopes** – These nearly level to gently sloping soils are on smooth, slightly convex high bottom flood plains. Runoff is slow, and the hazard of erosion is none to slight. These soils are high in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the flood hazard. The Capability Subclass for this soil is I.

**RdA – Rexford loam, 0 to 3 percent slopes** – This nearly level soil is in smooth, concave positions on glacial outwash terraces. Runoff is slow and the hazard of erosion is none to slight. This soil is medium to low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the seasonal high water table and slow permeability. The Capability Subclass for this soil is IIIw.

**RdB – Rexford Loam, 3 to 8 percent slopes** – This gently sloping soil is in smooth, slightly concave positions on glacial outwash terraces. Runoff is slow and the hazard of erosion is slight. This soil is medium to low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the seasonal high water table and slow permeability. The Capability Subclass for this soil is IIIw.

**WeB – Weikert and Klinsville channery slit loams, 3 to 8 percent slopes** – This gently sloping soil is on the convex tops of hills, knolls and ridges. Runoff is medium, and the hazard of erosion is moderate. This soil low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the depth to bedrock and the content of coarse fragments. The Capability Subclass for this soil is IIIe.

**WeC – Weikert and Klinsville channery slit loams, 8 to 15 percent slopes** – This sloping soil is on the convex, rounded tops, crests, and sides of hills, knolls and ridges. Runoff is medium to rapid, and the hazard of erosion is moderate. This soil is low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the depth to bedrock and slope. The Capability Subclass for this soil is IVe.

**WeD – Weikert and Klinsville channery slit loams, 15 to 25 percent slopes** – This moderately steep soil is on the sides of hills, knolls, and ridges. Runoff is rapid to very rapid, and the hazard of erosion is moderate. This soil is low in natural fertility and low in content of organic matter. Most

limitations for nonfarm use are related to the depth to bedrock and slope. The Capability Subclass for this soil is VIe.

**WmB – Wellsboro very stony silt loam, 3 to 8 percent slopes** – This gently sloping soil is on smooth, slightly concave uplands of broad, rolling mountaintops and intermountain basins. Runoff is slow, and the hazard of erosion is slight. This soil is medium in natural fertility and moderate in content of organic matter. Most limitations for nonfarm use are related to the seasonal high water table, the slow permeability and the surface stoniness. The Capability Subclass for this soil is VIi.

**WyD – Wyoming gravelly loam, 15 to 25 percent slopes** – This moderately steep soil is in broad, smooth or hilly, convex positions on the sides of glacial outwash moraines, kames, and eskers. Runoff is medium to rapid, and the hazard of erosion is moderate. This soil is low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to slope, the rapid permeability, the content of coarse fragments, and the possibility of groundwater contamination. The Capability Subclass for this soil is IVe.

**WyF – Wyoming gravelly loam, 25 to 60 percent slopes** – This steep to very steep soil is in broad, smooth or complex, convex positions on the sides of glacial outwash moraines, kames, and eskers. Runoff is rapid, and the hazard of erosion is moderate. This soil is low in natural fertility and low in content of organic matter. Most limitations for nonfarm use are related to the slope, the rapid permeability, and the content of coarse fragments. The Capability Subclass for this soil is VIIe.

**The soil limitations shall be addressed as follows:**

**Stoniness:** When filter fence cannot be properly anchored in stony soils, alternate sediment barriers such as straw bales or rock berms shall be utilized. Alternate measures shall be installed in accordance with PADEP's Erosion and Sedimentation Pollution Control Program Manual.

**Surface Stoniness:** When filter fence cannot be properly anchored in stony soils, alternate sediment barriers such as straw bales or rock berms shall be utilized. Alternate measures shall be installed in accordance with PADEP's Erosion and Sedimentation Pollution Control Program Manual.

**Coarse Fragments:** When filter fence cannot be properly anchored in stony soils, alternate sediment barriers such as straw bales or rock berms shall be utilized. Alternate measures shall be installed in accordance with PADEP's Erosion and Sedimentation Pollution Control Program Manual.

**Slope:** Stabilize all disturbed area per BMP's.

**Depth to Bedrock:** Extensive rock removal and additional suitable fill may be required.

**Rock Outcrop:** Extensive rock removal and additional suitable fill may be required.

**Seasonal High Water Table:** Where necessary, temporary dewatering facilities will be required. Limit construction in areas of seasonal high water tables to the dry season as needed and/or feasible. When soils become unsuitable or saturated from the water table, excavate and replace the soil with low permeability soils.

**High Water Table:** Where necessary, temporary dewatering facilities will be required. Limit construction in areas of seasonal high water tables to the dry season as needed and/or feasible. When soils become unsuitable or saturated from the water table, excavate and replace the soil with low permeability soils.

**Slow Permeability:** Dewater area using the pump filter bag.

**Moderately Slow Permeability:** Dewater area using the pump filter bag.

**Rapid Permeability:** In the event of a contaminant spill, isolate and contain the spill and clean up immediately. Excavation of the contaminated soil and replacement with suitable soil may be required.

**Ponding:** Dewater area using the pump filter bag.

**Frequent Flooding:** Dewater area using the pump filter bag.

**Groundwater Contamination:** Due Diligence and testing may be required in those areas of concern. Selecting vegetative species tolerant to wet conditions; tiling vegetated areas; and implementing combinations of these and/or other methods.

## VI. SEQUENCE OF EARTHMOVING OPERATIONS

All earth disturbance activities shall proceed in accordance with the following sequence. Each stage will be completed in compliance with Chapter 102 regulations before any following stage is initiated. Clearing and grubbing shall be limited to only those areas described in each stage.

At least 7 days before starting any earth disturbance activities, the operator shall invite all contractors involved in those activities, the land owner, all appropriate municipal officials, the erosion and sediment control plan preparer, and a representative from the Luzerne Conservation District to a pre-construction meeting. Also, at least 3 working days before starting any earth

disturbance activities, all contractors involved shall notify the Pennsylvania One Call System, Inc. at 1-800-242-1776 for buried utility locations.

Before implementing any revisions to the approved erosion and sediment control plan or revisions to other plans which may affect the effectiveness of the approved E&S control plan, the operator must receive approval of the revisions from the Luzerne Conservation District.

At least 7 days before starting any tree clearing activities between April 1 and November 15 notify the U. S. Fish and Wildlife Service (USFWS). Tree clearing during this period will be limited to trees with a diameter at breast height less than 5 inches due to potential impact to foraging Indiana Bats, or in accordance with Final Bat Management Plan as approved by USFWS.

The operator shall remove from the site, recycle, or dispose of all building materials and wastes in accordance with the department's solid waste management regulations at 25 Pa Code 260.1 et seq. and 287.1 et seq.

Before disposing of soil or receiving borrow for the site, the operator must assure that each spoil or borrow area has an erosion and sediment control plan approved by the Luzerne Conservation District, and which is being implemented and maintained according to Chapter 102 regulations. The operator shall also notify the Luzerne Conservation District in writing of all receiving spoil and borrow areas when they have been identified.

Erosion Control Mulch Blanket must be installed on all disturbed areas within 50 feet of Waters of the Common Wealth.

Upon stabilization of contributory areas, permanent vegetated swales used as erosion and sedimentation swales to convey sediment laden run-off shall be regraded and immediately stabilized with the proposed lining/seeding as shown on the plans.

Seeding and mulching of fill slopes shall occur in regular vertical increments every 15 feet to promote early stabilization of the fill slope.

All BMP construction and site disturbance shall have immediate temporary stabilization, or permanent stabilization installed upon completion as shown on the plans and as directed.

All interior slopes of sediment basins shall be stabilized above the sediment storage zone with slope matting as shown on the plans.

Immediately upon discovering unforeseen circumstances posing the potential for accelerated erosion and/or sediment pollution, the operator shall implement appropriate best management practices to eliminate the potential for accelerated erosion and/or sediment pollution.

The general sequence of earthmoving activities for the construction of the PPL Bell Bend Nuclear Power Plant Project is as follows, Please reference the Construction Sequence Also Set for Area Map (CS9000) and Phasing Maps (CS9001-CS9010):

**PHASE I (CS9001)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas for Phase I (AREA 10 & AREA 3).
2. Initial site access and parking will be at existing rock construction entrance 1A.
3. Install rock construction entrance 1B (along Beech Grove Rd.) and 1C (along Confers Lane).
4. Install all perimeter control: silt fence and orange construction fence as shown on plans for Phase I.
5. Clear and grub areas of construction within the limits of disturbance for Phase I.
6. Rough grade transmission line right-of-way and install retaining walls within right-of-way.
7. Construct Transmission line Access Roads and laydown space, installing conveyance features from lowest to highest invert as shown on the plans.
8. Swale matting and rock filters shall be installed immediately as grading is completed.
9. Perform local excavations for transmission tower foundations (AREA 10).
10. Install transmission tower foundations for the relocation of the 230KV transmission lines (AREA 10).
11. Install new transmission lines (AREA 10) and remove existing transmission lines crossing through the Power Block Area (AREA 3) as shown on the plans.

12. Permanently seed all areas disturbed by the construction, including the access road and laydown space. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
13. Upon achieving final stabilization remove rock filters and perimeter controls including silt fence (AREA 10).
14. Stabilize the areas where temporary BMPs were located. Dispose of any sediment as outlined in the maintenance notes (AREA 10).

**PHASE II (CS9002)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas for Phase II (AREA 1 & 2).
2. Install rock construction entrances 2A, 2B, (AREA 1) 2C, 2D (AREA 2) and associated construction laydown areas as shown on plans. Construction Laydown areas shall include construction parking.
3. Install all perimeter controls: super silt fence, silt fence and orange construction fence as shown on plans (AREA 1 & 2).
4. Clear and grub areas of construction within the limits of disturbance for Phase II.
5. Install Sediment Basins 3, 8, 9 and 21 with all related appurtenances, including but not limited to E&S Swales, slope matting and silt fence on all cut/fill slopes. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction. Swale construction shall progress from the discharge point upslope and shall be immediately stabilized as constructed.
6. Strip organic material from the areas of construction within the limits of phase II (AREA 1 & 2) and haul to the top soil stockpile in AREA 1.
7. Begin construction of Bridge 4 (STA 905+50) (AREA 1). The general sequence of earthmoving activities for the construction of Bridge #4 is as follows:
  - A. Field-mark the limits of disturbance.
  - B. Install rock construction entrance as shown on plans.

- C. Install all perimeter control: silt fence and orange construction fence.
- D. Clear and grub areas of construction within the limits of disturbance.
- E. Install temporary wetland crossing matting.
- F. Construct crane pad.
  - i. Areas where temporary crane pads disturb existing wetlands shall be restored after bridge installation as follows:
    - 1. Excavate rock base and remove geotextile separation fabric.
    - 2. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe. The crane pad shall be removed in sections to allow equipment to work from the pad surface and reach into the disturbed wetland area to avoid additional traffic in the disturbed or adjacent wetlands.
    - 3. Verify that at least 8-inches of suitable topsoil is present in in the disturbed wetland area. If sufficient topsoil is not present, unsuitable soil shall be removed and replaced with topsoil amended with leaf compost or other suitable organic material at a ratio of 2 parts topsoil to 1-part compost. Final grade shall be consistent with the final grade of the surrounding wetland.
    - 4. Seed the disturbed area with the floodplain seed mixture, as for the river mitigation area (LSI plans dated 10-29-10) at a rate of 20 lbs/acre.
- G. Perform local excavations for abutment 2. Dewater excavation site with pumped water filter bags. Multiple bags may be needed for each excavation site due to high water table and wetland flow.
- H. Immediately grade disturbed area surrounding abutment 2 and install erosion control matting on all slopes greater than 3:1.
- I. Permanently seed all areas disturbed by the construction. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movement.
- J. Continue installing piers and dewatering excavation site with pier 4, working west to abutment 1. Replace wetland crossing matting as needed.
- K. After abutment #1 is stable and seeded, remove wetland crossing matting and restore wetlands with the following process:
  - i. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe.

- ii. Verify that at least 8-inches of suitable topsoil is present in the disturbed wetland area.
    - iii. Seed the disturbed area with the floodplain seed mixture, as specified for the river mitigation area at a rate of 20 lbs/acre.
  - L. Remove perimeter controls including silt fence and wetland barrier.
  - M. Stabilize the areas where temporary BMPs were located. Dispose of any sediment as outlined in the maintenance notes.
- 8. Close Confers Lane at locations shown on the plans.
- 9. Begin rough grading in area west of North Market Street (AREA 1) moving cut material to SUPP Road area north of US11 (AREA 2). Begin rough grading of SUPP Road progressing inward (STA 0+00 to STA 41+12.85).
- 10. As rough grading of SUPP Road is achieved, install geotextile fabric followed by installation of aggregate sub base as shown on the plans.
- 11. Install plant utility service lines from south abutment for Bridge 6, along Main Access Road to the intersection of Main Access Road and SUPP Road (AREA 2). Install temporary pipe closures at termination points. Trench excavation shall be placed uphill of the trench and immediately stabilized once backfilled.
- 12. Ensure perimeter controls and interior controls are installed and functioning properly prior to continuing rough grading of Main Access Road (STA 151+00 to STA 175+00). As rough grading of access road is achieved, install geotextile fabric followed by installation of aggregate sub base as shown on the plans.
- 13. Install rail bed (STA 536+00 to STA 555+00).
- 14. Begin construction of Bridge 2, 5 & 6 The general sequence of earthmoving activities for the construction of bridges #2, 5 and 6 are as follows:
  - A. Field-mark the limits of disturbance.
  - B. Install rock construction entrance as shown on plans.
  - C. Install all perimeter control: silt fence and orange construction fence.
  - D. Clear and grub areas of construction within the limits of disturbance.
  - E. Install temporary wetland crossing matting.

- F. Construct crane pad.
  - i. Areas where temporary crane pads disturb existing wetlands shall be restored after bridge installation as follows:
    - 1. Excavate rock base and remove geotextile separation fabric.
    - 2. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe. The crane pad shall be removed in sections to allow equipment to work from the pad surface and reach into the disturbed wetland area to avoid additional traffic in the disturbed or adjacent wetlands.
    - 3. Verify that at least 8-inches of suitable topsoil is present in the disturbed wetland area. If sufficient topsoil is not present, unsuitable soil shall be removed and replaced with topsoil amended with leaf compost or other suitable organic material at a ratio of 2 parts topsoil to 1-part compost. Final grade shall be consistent with the final grade of the surrounding wetland.
    - 4. Seed the disturbed area with the floodplain seed mixture, as for the river mitigation area (LSI plans dated 10-29-10) at a rate of 20 lbs/acre.
- G. Perform local excavations for abutment 2. Dewater excavation site with pumped water filter bags. Multiple bags may be needed for each excavation site due to high water table and wetland flow.
- H. Immediately grade disturbed area surrounding abutment 2 and install erosion control matting on all slopes greater than 3:1.
- I. Permanently seed all areas disturbed by the construction. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movement.
- J. Continue installing piers and dewatering excavation site with the next pier, working north to abutment 1. Replace wetland crossing matting as needed.
- K. After abutment #1 is stable and seeded, remove wetland crossing matting and restore wetlands with the following process:
  - i. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe.
  - ii. Verify that at least 8-inches of suitable topsoil is present in the disturbed wetland area.

- iii. Seed the disturbed area with the floodplain seed mixture, as specified for the river mitigation area at a rate of 20 lbs/acre.
  - L. Remove perimeter controls including silt fence and wetland barrier.
  - M. Stabilize the areas where temporary BMPs were located. Dispose of any sediment as outlined in the maintenance notes.
15. Ensure perimeter controls and interior controls are installed and functioning properly prior to continuing rough grading of Access Road A (STA 339+00 to STA 335+19.70). As rough grading is achieved, install geotextile fabric followed by installation of aggregate sub base as shown on the plans.
16. Begin construction of Bridge 1 (STA 339+00). The general sequence of earthmoving activities for the construction of Bridge 1 is as follows:
- A. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas.
  - B. Install rock construction entrance as shown on plans.
  - C. Install all perimeter control: silt fence and orange construction fence.
  - D. Clear and grub areas of construction within the limits of disturbance.
  - E. Install temporary wetland crossing matting. If flowing water is encountered, temporary sandbag cofferdams should be installed so that construction can commence in dry conditions.
  - F. Construct crane pad.
    - i. Areas where temporary crane pads disturb existing wetlands shall be restored after bridge installation as follows:
      - 1. Excavate rock base and remove geotextile separation fabric.
      - 2. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe. The crane pad shall be removed in sections to allow equipment to work from the pad surface and reach into the disturbed wetland area to avoid additional traffic in the disturbed or adjacent wetlands.



19. Install foundations for structures located within the limits of disturbance for the Access Road area as shown on the plans.
20. As rough grading progresses, install perimeter controls on cut/fill slopes as shown on the plans and install storm drain system piping and connect to infiltration Basin 3.1. Install filter bags at all catch basin inlets.
21. Install water, sanitary sewer and electrical services to structures located in Area 2. Terminate sewer line at the Sanitary Sewer Lift Station (AREA 2). Install temporary pipe closures.
22. Ensure perimeter controls and interior controls are installed and functioning properly in Area 2 along SUPP Rd.
23. Ensure Sediment Basin 3 is remains correctly installed will all related appurtenances.
24. Ensure perimeter controls and interior controls are installed and functioning properly prior to continuing rough grading along west side of SUPP Road (STA 13+27 to STA 41+00) establishing area for future top-soil stockpile area.
25. As sufficient stabilization occurs remove Sediment Basins 8 & 9.
26. Finalize proposed development where Sediment Basins 8 & 9 were removed under perimeter controls as shown on the plans.
27. Once rough grading is complete in Area 1, begin installation of infiltration Basin 8, followed by installation of infiltration Basin 9 making sure to install Silt Fence on the upslope side of the excavation pit to eliminate sediment laden water from entering the excavation pit.
28. Install foundation for Sanitary Sewer Lift Station in the area east of North Market Street as shown on the plans (AREA 1).
29. Install foundations for structures located in the area west of North Market Street as shown on the plans (AREA 1).
30. Install storm drain system piping and connect to infiltration basins 8 & 9 (AREA 1). Install filter bags at all catch basin inlets.
31. Install water, sanitary sewer, and electrical services to structures located in the area west of North Market Street.
32. Continue installation of water and sanitary sewer lines under North Market Street and terminate at the Sanitary Sewer Lift Station (AREA 1). Install temporary pipe closures.

33. Final grade entrance road and parking areas west of North Market Street and install sub-base pavement as shown on the plans.
34. Stabilize construction parking and lay-down areas, install geotextile fabric and aggregate sub base (AREA 1 & 2).
35. Permanently seed perimeter graded slopes, swales and drainage trenches and clean all water conveyance facilities in area west of North Market Street and northwest quadrant of Access Road area (AREA 1 & 2). An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
36. Remove perimeter controls from the area west of North Market Street (AREA 1) as shown on plans that include: super silt fence and silt fence and inlet filter bags as shown on plans.
37. Stabilize the areas where temporary BMPs were located west of North Market Street (AREA 1). Dispose of any sediment as outlined in the maintenance notes.

**PHASE III (CS9003)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Perimeter BMPs for phase II, including but not limited to silt fences and orange construction fence, remain in-place in the area along SUPP Road.
2. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas for Phase III (AREA 3 & 4).
3. Install perimeter controls for Phase III: super silt fence and silt fence as shown on plans (AREA 3 & 5).
4. Install Sediment Basin 10 and 10A with all related appurtenances, including but not limited to slope matting and silt fence on all cut/fill slopes. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction.
5. Clear and grub the Power Block area within the limits of disturbance (AREA 3). Relocate existing utilities in the areas of construction (AREA 3). Remove abandoned transmission towers and associated foundations.
6. Begin rough grading of Access Road V east of Bridge 4.

7. Install perimeter controls around the top-soil stock pile area west of North Market Street (AREA 1) as show on plans.
8. Strip organic material from the Power Block area within the limits of disturbance (AREA 3) and haul to the designated top-soil stock pile area west of North Market Street (AREA 1).
9. Begin construction of Bridge 3 (AREA 3&4). The general sequence of earthmoving activities for the construction of Bridge 3 is as follows.
  - A. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas.
  - B. Install rock construction entrance as shown on plans.
  - C. Install all perimeter control: silt fence and orange construction fence.
  - D. Install sandbag cofferdam to extend past the 100 year storm floodplain elevation. Install 2 36" CMP as shown on plans. Pipes should be depressed 6" from stream bed bottom.
  - E. Clear and grub areas of construction within the limits of disturbance.
  - F. Install temporary wetland crossing matting.
  - G. Construct crane pad.
    - ii. Areas where temporary crane pads disturb existing wetlands shall be restored after bridge installation as follows:
      1. Excavate rock base and remove geotextile separation fabric.
      2. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe. The crane pad shall be removed in sections to allow equipment to work from the pad surface and reach into the disturbed wetland area to avoid additional traffic in the disturbed or adjacent wetlands.
      3. Verify that at least 8-inches of suitable topsoil is present in in the disturbed wetland area. If sufficient topsoil is not present, unsuitable soil shall be removed and replaced with topsoil amended with leaf compost or other suitable organic material at a ratio of 2 parts topsoil to 1-part compost. Final grade shall be consistent with the final grade of the surrounding wetland.
      4. Seed the disturbed area with the floodplain seed mixture, as for the river mitigation area (LSI plans dated 10-29-10) at a rate of 20 lbs/acre.

- H. Perform local excavations for abutment 2. Dewater excavation site with pumped water filter bags. Multiple bags may be needed for each excavation site due to high water table and wetland flow.
  - I. Immediately grade disturbed area surrounding abutment 2 and install erosion control all slopes greater than 3:1.
  - J. Permanently seed all areas disturbed by the construction. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movement.
  - K. Continue installing piers and dewatering excavation site starting with pier 2, working north to abutment 1. Replace wetland crossing matting as needed.
  - L. After abutment #1 is stable and seeded, remove wetland crossing matting and restore wetlands with the following process:
    - i. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe.
    - ii. Verify that at least 8-inches of suitable topsoil is present in the disturbed wetland area.
    - iii. Seed the disturbed area with the floodplain seed mixture, as specified for the river mitigation area at a rate of 20 Lbs/acre.
  - M. Remove perimeter controls including silt fence and wetland barrier.
  - N. Stabilize the areas where temporary BMPs were located. Dispose of any sediment as outlined in the maintenance notes.
10. Begin construction of Bridge 7 (AREA 3&4). The general sequence of earthmoving activities for Bridge 7 is as follows:
- A. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration area.
  - B. Install rock construction entrance as shown on plans.
  - C. Install all perimeter controls: silt fence and orange construction fence.
  - D. Clear and grub areas of construction within the limits of disturbance.
  - E. Install temporary wetland crossing matting.
  - F. Construct crane pad.

- i. Areas where temporary crane pads disturb existing wetlands shall be restored after bridge installation as follows:
  - 1. Excavate rock base and remove geotextile separation fabric.
  - 2. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe. The crane pad shall be removed in sections to allow equipment to work from the pad surface and reach into the disturbed wetland area to avoid additional traffic in the disturbed or adjacent wetlands.
  - 3. Verify that at least 8-inches of suitable topsoil is present in the disturbed wetland area. If sufficient topsoil is not present, unsuitable soil shall be removed and replaced with topsoil amended with leaf compost or other suitable organic material at a ratio of 2 parts topsoil to 1-part compost. Final grade shall be consistent with the final grade of the surrounding wetland.
  - 4. Seed the disturbed area with the floodplain seed mixture, as for the river mitigation area (LSI plans dated 10-29-10) at a rate of 20 lbs/acre.
- G. Perform local excavations for abutment 2. Dewater excavation site with pumped water filter bags. Multiple bags may be needed for each excavation site due to high water table and wetland flow.
- H. Immediately grade disturbed area surrounding abutment 2 and install erosion control matting on all slopes greater than 3:1.
- I. Permanently seed all areas disturbed by the construction. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movement.
- J. Continue installing piers and dewatering excavation site starting with pier 2, working north to abutment 1. Replace wetland crossing matting as needed.
- K. After abutment #1 is stable and seeded, remove wetland crossing matting and restore wetlands with the following process:
  - i. De-compact wetland soil using a four-foot ripping hook mounted on a track hoe.
  - ii. Verify that at least 8-inches of suitable topsoil is present in the disturbed wetland area.
  - iii. Seed the disturbed area with the floodplain seed mixture, as specified for the river mitigation area at a rate of 20 lbs/acre.
- L. Remove perimeter controls including silt fence and wetland barrier.

M. Stabilize the areas where temporary BMPs were located. Dispose of any sediment as outlined in the maintenance notes.

11. Install perimeter controls for Area 4: super silt fence and silt fence as shown on plans.
12. Install Sediment Basins 1 and 1A with all related appurtenances, including but not limited to slope matting and silt fence, on all cut/fill slopes. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction.
13. Clear and grub the Parking Lot area within the limits of disturbance (AREA 4).
14. Begin rough grading of Access Road B south of Bridge 3 to gain access to AREA 4.
15. Begin rough grading in Power Block area (AREA 3) moving cut material to SUPP Road, filling remaining low spots from Phase II. Excess cut material from the Power Block area may be hauled to Area 4 to begin filling the Parking Lot area, or Area 2 south of US11.
16. As rough grading progresses, complete construction of Wall No. 1A and No. 1B as shown on the plans.
17. Once rough grading is achieved in remaining Area 2 areas north of US11, final grade access roads and install sub-base pavement as shown on plans.
18. Stabilize construction lay-down areas along SUPP Road and Main Access Road, install geotextile fabric and aggregate sub base (AREA 2) and perimeter controls on all cut/fill slopes as shown on the plans.
19. Permanently seed perimeter graded slopes, swales and drainage trenches and clean all water conveyance facilities in the Access Road area (AREA 2). An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
20. Ensure all perimeter and interior controls for Area 3 in the area of Infiltration Basin 12 are installed and functioning property.
21. Install Sediment Basin 12 with all related appurtenances, including but not limited to slope matting and silt fence on all cut/fill slopes. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction.

22. Begin rough grading of Main Access Road North of Bridges 2, 5 & 6 to Sta. 118+00. Installing E&S swales from the discharge point working upslope and as shown on the plans. E&S Swales shall be immediately stabilized with linings as shown on the plans.
23. Once rough grading is complete in Area 3 east of the Tear Drop wetland, begin installation of Infiltration Basin 12 making sure to install Silt Fence on the upslope side of the excavation pit to eliminate sediment laden water from entering the excavation pit.
24. Establish rough grade in the area of Infiltration Basin 12 and install storm drain system piping connecting to Infiltration Basin 12 in the Power Block area (AREA 3). Stabilize construction lay-down area, install geotextile fabric and aggregate sub base. Install filter bags at all catch basin inlets. Stabilize side slopes along Beach Grove Road and adjacent wetland areas by seeding.
25. As sufficient stabilization occurs in Area 3 east of the Tear drop wetland remove Sediment Basin 12.
26. Finalize proposed development where Sediment Basin 12 was removed under perimeter controls as shown on the plans.
27. Install Tear Drop Culvert adjacent to existing PVC pipe.
28. Remove existing PVC pipe and begin rough grade of Access Road W along with construction of Wall No. 3A and Wall No. 3B.
29. Continue rough grading in Power Block area filling low areas behind retaining walls 1A and 3B (AREA 3).
30. As sufficient stabilization occurs in Area 3 west of the Tear drop wetland remove Sediment Basins 10 & 10A.
31. Finalize proposed development where Sediment Basin 10 and 10A were removed under perimeter controls as shown on the plans.
32. Once rough grading is complete in Area 3 west of the Tear Drop wetland, begin installation of infiltration Basins 10.1 and 10.4 making sure to install Silt Fence on the upslope side of the excavation pit to eliminate sediment laden water from entering the excavation pit.
33. Continue rough grading in Power Block area filling low areas behind retaining walls 1B and 3A (AREA 3). Excess cut material may be used to fill low spots in the Batch Plant area (AREA 5) or hauled to the permanent spoils area.

34. As rough grading of Access Road V progresses in the Power Block area (STA 910+00 to 921+24.44), install storm drain system piping and connect to infiltration basin 10.4. Install filter bags at all catch basin inlets.
35. Install water and sewer service lines between east abutment for Bridge 4 and north abutment for Bridge 7 (AREA 3). Install temporary pipe closures.
36. Install remaining water and sewer service lines between east and west abutments for Bridge 4 and connect to previously installed piping.
37. Final grade Access Roads W and V in southern Power Block area between Bridge 3 and Bridge 5 (STA 910+00 to 921+00 & 800+00 to 817+00) and install sub-base pavement as shown on plans (AREA 3).
38. Permanently seed perimeter graded slopes, swales and drainage trenches and clean all water conveyance facilities in the area in the area east of North Market Street (AREA 1) and the area between Bridge 3 and Bridge 4 (AREA 3). An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
39. When superstructure for Bridge 6 is complete, install plant utility service lines across Bridge 6 from temporary termination point at south abutment to Power Block area (AREA 3). Install temporary pipe closures.
40. While rough grading occurs in the Power Block area, Area 5 Construction may begin.
41. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas for Area 5.
42. Install rock construction entrance 3A for rail construction (AREA 5) as shown on the plans.
43. Install all perimeter and interior controls as shown on the plans. As installation occurs modify the existing perimeter controls between Areas 2 and 5 to encompass both areas.
44. Install Sediment Basins 6 and 18 with all related appurtenances, including but not limited to slope matting and silt fence on all cut/fill slopes. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction.
45. Begin to clear and grub Batch Plant area within the limits of disturbance. Relocate existing utilities in the areas of construction (AREA 5).

46. Install perimeter controls around top-soil stock pile area west of access road (AREA 2) as show on plans.
47. Strip organic material from the Batch Plant area within the limits of disturbance (AREA 5) and haul to the top-soil stock pile area west of SUPP Road.
48. Install plant utility service lines from temporary termination points along north access road to the northeast limit of disturbance for the Batch Plant area (AREA 5). Install temporary pipe closures.
49. Begin rough grading of Main Access Road (Sta. 175+00 to 2900+00) installing E&S swales from discharge point working upslope. Swales shall be immediately stabilized with lining as shown on the plans.
50. Grade and stabilized construction laydown areas adjacent to Main Access Road in Area 5. Stabilization of this area shall include but will not be limited to installing geotextile fabric and aggregate subbase material and perimeter controls at the base of all cut/fill slopes.
51. As rough grading of Main Access Road is achieved in Batch Plant area (STA 175+00 to STA 2900+00) (AREA 5), install geotextile fabric followed by installation of aggregate sub base as shown on the plans.
52. Ensure all perimeter and interior controls are install and functioning properly in Area 5 in the area of the rail road culvert.
53. Install sandbag coffer dam, pump and hose in Tributary 3 to Lake Took-A While as shown on the plans and details.
54. Construct 48" Rail Road Culvert as shown on the plans.
55. Remove sand bag coffer dam, pump and hose; stabilize the areas where BMPs were located. Dispose of any sediment as outlined in the maintenance notes.
56. Install rail bed (STA 500+00 to STA 536+00) and stabilize slopes as shown on the plans with slope matting/vegetation. Perimeter controls shall be placed on all cut/fill slopes as well.
57. Install foundations for structures located in the Batch Plant area as shown on the plans (AREA 5).
58. Install remaining conveyance system for Basin 18. Install filter bags at all catch basin inlets.
59. Install water, sanitary sewer, and electrical services to structures located in the Batch Plant area.

60. Final grade access roads in Batch Plant area (STA 175+00 to STA 2900+00) and install sub-base pavement as shown on plans (AREA 5).
61. Stabilize construction lay-down areas in the Batch Plant area; install geotextile fabric and aggregate sub base (AREA 5).
62. As stabilization occurs in the Batch Plant area (AREA 5), convert Sediment Basin 18 to Infiltration Basin 18 as shown on the plans. Conversion process shall include but will not be limited to adjusting final grade of basin bed to no less than two feet below sediment basin bed. Proper care shall be taken to reduce any unnecessary compaction of the infiltration bed. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction.
63. As sufficient stabilization occurs in Area 5 south of the batch plant, remove Sediment Basin 6 and begin installation of Infiltration Basin 6 making sure to install Silt Fence on the upslope side of the excavation pit to eliminate sediment laden water from entering the excavation pit.
64. Finalize proposed development where Sediment Basin 6 was removed under perimeter controls as shown on the plans.
65. Permanently seed graded slopes, swales and drainage trenches and clean all water conveyance facilities in the Batch Plant area (AREA 5). An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
66. Remove all perimeter controls from the area east of North Market Street (AREA 1), the Access Road area (AREA 2) and the Batch Plant area (AREA 5) that include: super silt fence, silt fence, and inlet filter bags as shown on plans.
67. Stabilize the areas where temporary BMPs were located in the area east of North Market Street (AREA 1), the Access Road area (AREA 2) and the Batch Plant area (AREA 5). Dispose of any sediment as outlined in the maintenance notes.
68. As grading is finalized in Area 2, south of US 11 all slopes shall be stabilized with slope matting, vegetation and perimeter controls on all cut/fill slopes. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.

69. Convert Sediment Basin 21 to Infiltration Basin 21 as shown on the plans. Conversion process shall include but will not be limited to adjusting final grade of basin bed to no less than two feet below sediment basin bed. Proper care shall be taken to reduce any unnecessary compaction of the infiltration bed. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction.

**PHASE IV (CS9004)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Ensure all field-markings of limits of disturbance, Waters of the Commonwealth and sensitive resources to be saved are adequate for Phase IV.
2. BMPs for Phase III, including but not limited to silt fences, orange construction fence, sediment basins 1, 1A, and 3, remain in-place in the Power Block area, Parking lot, and stock pile (AREAs 2, 3 and 4). The perimeter controls as shown on the plans will remain in place until construction of primary power plant structures has progressed sufficiently to permit backfill operations and final grading in the area. Ensure all are installed and functioning properly. BMPs to remain in place include silt fence, Sediment Basins 1 and 1A.
3. Begin mass excavation of the power block and ESWEMS Pond. As excavation progresses install temporary excavation dewatering features, including but not limited to pumped water filter bags, temporary dewatering pond, stilling basin, dewatering pump, and spray irrigation plan. See DE-WATER plan Appendix F.
4. As rough grading of the Power Block area progresses, clear the Parking area within the limits of disturbance (AREA 4). Relocate existing utilities in the in the areas of construction (AREA 4).
5. Strip organic material from the Parking area within the limits of disturbance (AREA 4). Haul organic material to the permanent spoils area as shown on the plans.
6. Begin rough grading in the Parking area (AREA 4) moving cut material from the Power Block area (AREA 3) to fill low spots.
7. Install foundations for structures located in the Parking area as shown on the plans (AREA 4).
8. As rough grading continues in the Parking area (AREA 4), Install storm drain system piping and connect to infiltration basin 9. Install filter bags at all catch basin inlets.

9. Install water and sanitary sewer services in the Parking area from Sanitary Sewer Lift Station and Water Meter House to the south abutment for Bridge 7. Install temporary pipe closures at termination points.
10. Install water, sanitary sewer, and electrical services to structures located in the Parking area (AREA 4).
11. As rough grading of access roads and parking lots are achieved in the Parking area (AREA 4), install geotextile fabric followed by installation of aggregate sub base as shown on the plans.
12. As rough grading in the Parking lot progresses, install Infiltration Basins 1.1, 1.2, 1.3 and detention basin 1.5 making sure to install Silt Fence on the upslope side of the excavation pit to eliminate sediment laden water from entering the excavation pit.
13. When superstructure for Bridge 7 is complete, install water and sewer services between the north and south abutments for Bridge 7 and connect to previously installed piping.
14. Final grade Parking area and install sub-base pavement as shown on plans (AREA 4).
15. As sufficient site stabilization occurs, remove Sediment Basins 1 and 1A. Finalize proposed development where Sediment Basins 1 and 1A were removed under perimeter controls as shown on the plans.
16. Permanently seed graded slopes in the Parking area (AREA 4) including swales and drainage trenches and clean all water conveyance facilities. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
17. Remove all perimeter controls from the Parking area (AREA 4) that include: super silt fence, silt fence and inlet filter bags as shown on plans.
18. Stabilize the areas where temporary BMPs were located in the Parking area (AREA 4). Dispose of any sediment as outlined in the maintenance notes.
19. Install plant utility service lines in the Power Block area (AREA 3). Install temporary pipe closures at all termination points.
20. Complete rough grading in the eastern half of the Power Block, final grading access roads (STA 117+00 to STA 145+00). Install geotextile fabric followed by installation of aggregate sub base (AREA 3)

21. Install rail bed (STA 562+00 to 591+00) and stabilize slopes as shown on the plans with slope matting/vegetation. Perimeter controls shall be placed on all cut/fill slopes as well.
22. Install access road sub-base pavement (STA 117+00 to STA 145+00) as shown on plans.
23. Permanently seed graded slopes and large open areas in eastern half of Power Block area (AREA 3) including swales and drainage trenches. Clean all installed water conveyance facilities in the eastern half of the Power Block area. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
24. Continue rough grading in the western half of the Power Block area (AREA 3)
25. Stabilize construction lay-down areas in the northwest quadrant of the Power Block; install geotextile fabric and aggregate sub base (AREA 3).
26. Permanently seed graded slopes, swales and drainage trenches and clean all installed water conveyance facilities in the northwest quadrant of the Power Block area (AREA 3). An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
27. Remove perimeter controls from the Power Block area and parking lot area as shown on the plans (AREA 3 & 4) that include: super silt fence, silt fence, silt dike and inlet filter bags as shown on plans.
28. Stabilize the areas where temporary BMPs were located in the Power Block area. Dispose of any sediment as outlined in the maintenance notes.

**PHASE V (CS9005)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas for Phase V (AREA 9).
2. Install rock construction entrance 5A (Along Thomas Rd.) as shown on the plans.
3. Install all perimeter controls for Phase V: super silt fence and silt fence as shown on plans (AREA 9).

4. Clear the access road area from Thomas Road to the Susquehanna No 1 500kV Switchyard area within the limits of disturbance (AREA 9). Relocate existing utilities in the in the areas of construction (AREA 9).
5. Strip organic material from the access road area from Thomas Road to the Susquehanna No 1 500kV Switchyard within the limits of disturbance (AREA 9). Haul organic material to stock pile location as shown on the plans.
6. Rough grade the access road from Thomas Road to the Susquehanna No 1 500KV Switchyard (AREA 9). As rough grading of access road is achieved, install geotextile fabric followed by installation of aggregate sub base as shown on the plans. Perimeter BMPs shall be installed on all disturbed cut/fill slopes.
7. As construction progresses from Thomas Road toward the 500KV Switchyard area install vegetated swales beginning at the discharge point and working up slope, stabilized along the way with lining as shown on the plan.
8. Permanently seed graded slopes, swales and drainage trenches along the access road from Thomas Road to the Susquehanna No 1 500kV Switchyard (AREA 9). An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
9. Install Sediment Basins 15 and 15 A with all related appurtenances, including but not limited to slope matting and silt fence on all cut/fill slopes. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction.
10. Clear the Susquehanna No 1 500kV Switchyard area within the limits of disturbance (AREA 9).
11. Strip organic material from the Susquehanna No 1 500kV Switchyard within the limits of disturbance (AREA 9).
12. Begin rough grading in the Susquehanna No 1 500kV Switchyard (AREA 9).
13. While rough grading in the Susquehanna No 1 500kV Switchyard area progresses, install Infiltration Basin 15.3 making sure to install Silt Fence on the upslope side of the excavation pit to eliminate sediment laden water from entering the excavation pit.
14. Install foundations for structures located in the Susquehanna No 1 500kV Switchyard area as shown on the plans (AREA 9).

15. Install storm drain system piping and connect to Infiltration Basin 15.3. Install filter bags at all catch basin inlets.
16. Stabilize the Susquehanna No 1 500kV Switchyard area with crushed stone as shown on the plans (AREA 9).
17. Final grade the access road from Thomas Road to the Susquehanna No 1 500kV Switchyard area and install crushed stone surfacing material.
18. Permanently seed perimeter graded slopes, swales and drainage trenches and clean all water conveyance facilities in the Susquehanna No 1 500kV Switchyard area (AREA 9). An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
19. As sufficient stabilization occurs remove Sediment Basins 15 and 15A.
20. Finalize proposed development where Sediment Basins 15 & 15A were removed under perimeter controls as shown on the plans.
21. Remove all perimeter controls from the Susquehanna No 1 500kV Switchyard area and from along the access road to the switchyard (AREA 9) that include: super silt fence, silt fence and inlet filter bags as shown on plans.
22. Stabilize the areas where temporary BMPs were located in the Susquehanna No 1 500kV Switchyard area and along the access road (AREA 9). Dispose of any sediment as outlined in the maintenance notes.

**PHASE VI (CS9006)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas for Phase VI (AREA 8).
2. Install rock construction entrance 6A as shown on the plans.
3. Install all perimeter controls: super silt fence and silt fence as shown on plans (AREA 8).
4. Clear areas of construction within the limits of disturbance for Phase VI (AREA 8).
5. Strip organic material from the areas of construction within the limits of phase VI (AREA 8).

6. Stabilize the construction laydown by place Geotextile fabric and aggregate sub base per PHMC required mitigation.
7. Seed perimeter graded slopes, swales and drainage trenches within the area of construction for Phase VI (AREA 8) as shown on the plans. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
8. Remove perimeter controls from the Construction Lay-down area (AREA 8) as shown on plans that include: super silt fence and silt fence as shown on plans.
9. Stabilize the areas where BMPs were located for the development of the Construction Lay-down area (AREA 8). Dispose of any sediment as outlined in the maintenance notes.

**PHASE VII (CS9007)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas for phase VII (AREA 6).
2. Install rock construction entrance 7A as shown on the plans.
3. Install all perimeter controls: super silt fence and silt fence as shown on plans (AREA 6).
4. Clear areas of construction within the limits of disturbance for Phase VII (AREA 6).
5. Strip organic material from the areas of construction within the limits of Phase VII (AREA 6) and haul to top soil disposal area shown on the plans.
6. Install temporary dredge material pond and related cut/fill perimeter controls
7. Install cofferdam for the Intake Structure in Susquehanna River and dewater to temporary dredge pond.
8. Excavate area for Intake Structure placing all dredge material from river bottom in temporary dredge pond.
9. Install foundations for Intake Structure and rough grade site area. Please cut/fill perimeter controls as shown on the plans and as required.

10. As construction of Intake Structure progresses, excavate trench and install plant utility service lines from the Intake Structure to west side of canal (AREA 6). Install temporary pipe closures at termination points.
11. Rough grade areas of trench excavation once plant utility lines are installed.
12. Install cofferdam for Blow-down Line Diffuser in Susquehanna River and dewater to temporary dredge pond.
13. Excavate trench and install Blow-down Line Diffuser in the Susquehanna River (AREA 6).
14. Once Blow-down Line is installed, rough grade areas of trench excavation and stabilize disturbed areas as shown on the plans and place perimeter controls on cut/fill slopes as shown on the plans and as required.
15. As rough grade for the access road to the Intake Structure (STA 5000+00 to STA 5003+45) is achieved, install geotextile fabric followed by installation of aggregate sub base as shown on the plans.
16. As rough grade for the Intake Structure yard area is achieved, install aggregate sub base as shown on the plans.
17. Install sub-base pavement for the Intake Structure access road (STA 5000+00 to STA 5003+45) and associated Intake Structure yard area as shown on plans.
18. Install rip-rap shore protection along river banks as shown on the plans (AREA 6).
19. Remove cofferdams and install rip-rap shore protections in any remaining areas where cofferdam is removed.
20. Excavate dewatered dredge material from the temporary dredge material pond and haul to the permanent spoils area as shown on the plans.
21. Remove the temporary dredge material pond hauling any excess materials to the permanent spoils area, as shown on the plans, and grade the area.
22. Perform canal restoration activities; the canal restoration construction sequence is as follows:

**Construction notes:**

- A. At least 7 days before starting any earth disturbance activities the operator shall invite all contractors involved in those activities including but not limited to: the landowner, all appropriate municipal officials, the erosion and sediment control plan preparer, and a

representative from the Luzerne Conservation District for an on-site pre-construction 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 utilities locations.

- B. It is the responsibility of the contractor to contact the Luzerne Conservation District 72 hours prior to construction and 72 hours prior to leaving the site.
- C. Excess clean excavated material shall be hauled from the site immediately and disposed of within the BBNPP project area.
- D. If water needs to be pumped from the excavated area, it shall be pumped through a pumped water filter bag discharging over non-disturbed areas.
- E. 8" of topsoil shall be spread throughout the disturbed area to achieve final grade and provide a suitable planting media.
- F. 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 movement.
- G. All earth disturbance activities shall proceed in accordance with the following sequence. Each stage shall be completed before any following stage is initiated. Clearing and grubbing shall be limited only to those areas described in each stage.
- H. The installation of the pipe, manhole, inlet and outfall structures may take place at any time during the construction of the Riverlands mitigation project, however the installation of the pipe and drainage network must be complete and functioning prior to the filling of the tributary from station 7+25 to 11+50 for the construction of the proposed intake structure. The construction of the drainage network must begin with the outfall structure at the river, working uphill to the manhole and the inlet structure at pipe station 7+25.
- I. The repair and maintenance of the Riverlands wetland control structure may be conducted at any time as the procedure is unaffected by the following sequence. See sheet 5 for the original construction details.
- J. Limit of disturbance shall be staked out in the field.
- K. Install orange construction fence where LOD is adjacent to existing wetlands to prevent additional disturbance to these wetlands.
- L. Install stabilized construction entrance
- M. Install fabric filter sock as shown on the plan
- N. Perform necessary clearing and grubbing within proposed limit of disturbance.

- O. Install sandbags in upstream and downstream culverts, as shown on the plan, and set up pump around. Install pumps to de-water canal reconnection area. Care must be exercised to prevent the disturbance and pumping of sediment. Filter bags must be used unless pumping clear water (see detail e-4 on sheet 9 for filter bag installation).
- P. Begin grading at canal station 7+50 and work upstream to station 4+50.
- Q. Remove existing weir (station 5+00) and backfill existing channel with structural fill. Material placed to fill the existing diverted canal and form the restored canal embankment shall be placed in 6" lifts and compacted to at least 95% standard proctor density. Blend grading surrounding existing weir and tie into existing contours. A minimum of 8" of topsoil must be spread on all fill locations, with the exception of the proposed paths, to obtain final grade.
- R. Fill tow path (stations 0+00 to 2+50) and construct walking path.
- S. Fill entrenched stream channel to an elevation of 499.00 working from the upstream forked reach downstream to the proposed inlet structure at pipe station 7+25. Use small tracked equipment to avoid compacting the soils (both native and filled material). Add amended topsoil from the proposed inlet structure pad fill (pipe station 7+25) upstream to the location of the proposed weir removal (station 5+00).
- T. Excavate crossing to solid base material and fill with structural fill material. Install base for stop log structure. Install stop log structure and pipe.
- U. Remove existing canal diversion embankment (canal station 4+50 to 3+50) and reconstruct canal berm as shown on the grading plan and profiles. Material placed to fill the existing diverted canal and form the restored canal embankment shall be placed in 6" lifts and compacted to at least 95% standard proctor density.
- V. Set grade control structure stop logs to an elevation of 507.20' and remove coffer dams and pumps.
- W. Seed and stabilize all disturbed areas with appropriate seed mix per the seeding restoration table and the landscape plan. Erosion control matting (biod-mat 70 or equivalent) must be installed in areas indicated on the E&S plan sheet
- X. Remove invasive species prior to planting.
- Y. Install proposed riparian vegetation as indicated on landscaping plan.
- Z. Remove stabilized construction entrance.
- AA. Remove fabric filter sock after all upslope disturbed areas have achieved a minimum of 70% vegetative cover. Stabilize any areas disturbed while removing these BMPs with the proposed stabilization seed mix and mulch.

23. Seed perimeter graded slopes, swales and drainage trenches within the area of construction for Phase VII (AREA 6) as shown on the plans. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
24. Remove perimeter controls from the Intake Structure area (AREA 6) that include: super silt fence, silt fence and silt dike as shown on plans.
25. Stabilize the areas where temporary BMPs were located for the development of the Construction Lay-down area (AREA 6). Dispose of any sediment as outlined in the maintenance notes.

**PHASE VIII (CS9008)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Field-mark the limits of disturbance, all Waters of the Commonwealth, sensitive resources to be saved, and proposed infiltration areas for Phase VIII (AREA 7).
2. Install all perimeter and interior controls: super silt fence and silt fence as shown on plans (AREA 7).
3. Clear areas of construction within the limits of disturbance for Phase VIII (AREA 7).
4. Strip organic material from the areas of construction within the limits of Phase VIII (AREA 7) and haul to the permanent spoils area shown on the plans.
5. Excavate trench east of US11 and install plant utility service lines from the termination points at canal restoration area (AREA 6) to US11. Install temporary pipe closures at termination points.
6. Install plant utility services as shown on the plans.
7. Excavate trench west of US11 and install plant utility service lines from the Batch Plant area to US11 completing the plant utility service line installation.
8. Rough grade areas of trench excavation.
9. Restore any disturbed areas along the east and west sides of US11 as shown on the plans.
10. Seed graded areas, swales and drainage trenches within the area of construction for Phase VIII (AREA 7) as shown on the plans. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with

a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.

11. Remove perimeter controls from areas of construction for Phase VIII (AREA 7) that include: super silt fence and silt fence as shown on plans.
12. Stabilize the areas where temporary BMPs were located (AREA 7). Dispose of any sediment as outlined in the maintenance notes.

**PHASE IX (CS9009)**

Each stage of the sequence must be completed prior to initiation of the next stage of the sequence of earth moving operations within this phase.

1. Begin construction of the Power Block structures.
2. As construction of the Power Block structures progresses, construct retaining wall 4 as shown on the plans.
3. As backfill operations within the Power Block mass excavation progress, remove dewatering features as necessary and stabilize the areas where these BMPs were located. Dispose of any sediment as outlined in the maintenance notes.
4. Once the area behind retaining wall 4 is backfilled, install rail bed (STA 591+00 to 606+55.30) (AREA 3) and stabilize slopes as shown on the plans with slope matting/vegetation. Perimeter controls shall be placed on all cut/fill slopes as well.
5. Install remaining section of the access road in northwest quadrant of Power Block area (STA 100+00 to STA 117+00) (AREA 3).
6. As installation of the access road progresses (STA 100+00 to STA 117+00), install geotextile fabric followed by installation of aggregate sub base.
7. Install permanent storm water drainage piping and catch basins within the Power Block area.
8. Install plant roads within the Power Block area.
9. As installation of plant roads progresses, install geotextile fabric followed by installation of aggregate sub base.
10. Final grade all roads within the Power Block area and install sub-base pavement as shown on the plans.

11. Stabilize areas within the Power Block area; install geotextile fabric and aggregate sub base.
12. Seed graded areas, swales and drainage trenches within the area of construction for Phase IX (AREA 3) as shown on the plans. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
13. Remove perimeter controls from areas of construction for Phase IX (Area 3) that include: super silt fence and silt fence as shown on plans.
14. Stabilize the areas where temporary BMPs were located (AREA 3). Dispose of any sediment as outlined in the maintenance notes.
15. Seed graded areas, swales and drainage trenches associated with the stock piles in Areas 1 and 2 as shown on the plans. An area shall be considered to have achieved final stabilization when it has a minimum uniform 70% perennial vegetative cover or other non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding and other movements.
16. After stabilization occurs for the stock pile in Area 2, convert Sediment Basin 3 to Infiltration Basin 3.2 as shown on the plans. Conversion process shall include but will not be limited to adjusting final grade of basin bed to no less than two feet below sediment basin bed. Proper care shall be taken to reduce any unnecessary compaction of the infiltration bed. Stabilize interior and exterior slopes of basin embankments immediately upon completion of basin construction.
17. Remove perimeter controls from both stock piles; including super silt fence and silt fence as shown on plans.
18. Stabilize the areas where temporary BMPs were located (AREA 3). Dispose of any sediment as outlined in the maintenance notes.

**PHASE X (CS9010)**

**Construction sequence Confers Lane:**

**Construction notes:**

At least 7 days before starting any earth disturbance activities the operator shall invite all contractors involved in those activities including but not limited to: the landowner, all appropriate municipal officials, the erosion and sediment control plan preparer, and a representative from the Luzerne Conservation District for an on-site pre-construction 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 utilities locations.

It is the responsibility of the contractor to contact the Luzerne Conservation District 72 hours prior to construction and 72 hours prior to leaving the site.

Clean excavated material shall be hauled from the site and disposed of within the project area.

If water needs to be pumped from the excavated area, it shall be pumped through a pumped water filter bag discharging over non-disturbed areas.

The operator shall remove from the site, recycle, or dispose of all building materials and wastes in accordance with the department's solid waste management regulations at 25 Pa. Code 260.1 et seq., 271.1 et seq., and 287.1 et seq. The contractor shall not illegally bury, dump, or discharge any building material or wastes at the site.

Graded areas within the proposed wetland shall be stabilized with the proposed conservation seed mix prior to plantings.

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 movement.

All earth disturbance activities shall proceed in accordance with the following sequence. Each stage shall be completed before any following stage is initiated. Clearing and grubbing shall be limited only to those areas described in each stage.

**Construction stages:**

1. Stake out limit of disturbance in the field.
2. Install orange construction fence where Limit of Disturbance is adjacent to existing wetlands to prevent additional disturbance to these wetlands.
3. Install filter sock as shown on the plan
4. Perform necessary clearing and grubbing within proposed limit of disturbance.
5. Remove existing pavement and stone base.
6. Excavate proposed wetland area to proposed sub-grade elevations. Scarify subsoil to a depth of at least eight (8) inches.
7. Add compost and topsoil mixture with a ratio of 75% clean, native soil and 25% compost. Soil/compost shall be thoroughly mixed.
8. Place soil/compost mixture on wetland to proposed final grade elevations (1' min.).
9. Seed disturbed area with floodplain seed mix, per the landscape plan. Mulch seeded area with straw at 3 tons per acre.
10. Install proposed vegetation within graded wetland per the landscape plan and details.
11. Remove filter sock after disturbed areas have achieved a minimum of 70% vegetative cover. Stabilize any areas disturbed while removing this bmp with the proposed stabilization seed mix and mulch.

**Construction sequence Walker Run:**

**Construction notes:**

At least 7 days before starting any earth disturbance activities the operator shall invite all contractors involved in those activities including but not limited to: the landowner, all appropriate municipal officials, the erosion and sediment control plan preparer, and a representative from the Luzerne Conservation district for an on-site pre-construction 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 utilities locations.

It is the responsibility of the contractor to contact the Luzerne Conservation District 72 hours prior to construction and 72 hours prior to leaving the site.

Excavated material shall be temporarily stockpiled at location shown on plan. Filter fabric fence shall be installed around the base of stockpile as shown on plan. Stockpiled material shall be hauled from the site and transported to an approved off-site spoil area located within existing PP&L maintenance facility dump site.

Excavated topsoil shall be stockpiled separate from other excavated material within the temporary stockpile area. A 6" thick layer of topsoil shall be spread throughout proposed floodplain area to achieve final grade.

Graded areas along an 8- to 10-foot wide (approximate) swath along the stream channel shall be stabilized with 6" thick (approximate) 4'x5' sod mats by the end of each workday. Sod shall be harvested from areas within the proposed limit of disturbance prior to excavation. Erosion control fabric shall be used to stabilize stream banks in place of sod mats if necessary. The proposed conservation seed mix shall be applied prior to installing erosion control fabric.

Graded areas within the proposed floodplain shall be stabilized with erosion control fabric. Erosion control fabric shall be installed in overlapping strips perpendicular to the direction of flood flows. The proposed conservation seed mix shall be applied to graded areas prior to installing erosion control fabric.

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 movement.

All earth disturbance activities shall proceed in accordance with the following sequence. Each stage shall be completed before any following stage is initiated. Clearing and grubbing shall be limited only to those areas described in each stage.

**Construction stages:**

1. Limit of disturbance shall be staked out in the field.

2. Install rock construction entrance (R.C.E).
3. Install rock filter at designated location.
4. Perform necessary clearing and grubbing within proposed limit of disturbance.
5. Grade right stream bank and excavate floodplain along 8-foot wide (approximate) swath parallel to existing stream channel.
6. Stabilize 8-foot swath (approximate) with sod mats.
7. Excavate remaining floodplain to proposed sub-grade elevations.
8. Spread topsoil on floodplain to proposed final grade elevations.
9. Seed (conservation seed mix - ernmx-114) and stabilize graded floodplain with erosion control fabric.
10. Remove rock construction entrances (R.C.E.).
11. Seed (stabilization seed mix) and mulch all remaining disturbed areas outside of graded floodplain limits.
12. Install proposed riparian vegetation within graded floodplain.
13. Remove filter fabric fence and rock filter after uphill disturbed areas have achieved a minimum of 70% vegetative cover. Stabilize any areas disturbed while removing these temporary BMPs with the proposed stabilization seed mix and mulch.

Note: Install all Erosion and Sedimentation control devices as required by the narrative, plan, and field conditions. These measures shall be maintained during construction and until the permanent ground cover is established in the disturbed areas. To maximize the effectiveness of this plan, the contractor shall arrange an on-site review with personnel from the Luzerne Conservation District to determine how to best implement the plan.

## **VII. EROSION CONTROL MEASURES**

In addition to the construction requirements outlined above, the following materials and devices shall be installed as shown on the plans. Temporary measures shall be taken during rough grading or any earth disturbance. Construction and installation details for these devices are contained on the attached plans.

All BMPs shall be installed in accordance with the approved Erosion and Sedimentation Control Plan. Each BMP shall be installed as necessary prior to grading or excavation, and remain until adequate vegetative cover is established.

Straw mulch shall be installed in all disturbed areas immediately following seeding operations.

All construction activities shall be performed using appropriate equipment and methods that are considered standard for this type of activity or as specifically required by the specifications.

The contractor is required to conduct his work in complete compliance with the requirements of this plan and the rules and regulations of the following governmental agencies:

- The Pennsylvania Department of Environmental Protection.
- The Luzerne Conservation District.
- The U.S. Department of Agriculture Natural Resources Conservation Service (USDANRCS)

During construction all areas involved with the contractor's operation will be kept clean, and dust shall be controlled by mechanical and/or hand sweeping, calcium spreading or other approved methods on a daily basis or as required. PPC Plans must be adhered to by the contractor as required.

#### **VIII. SEEDING**

The only control measure remaining for site restoration and longterm protection is the seeding and mulching of the proposed site.

##### FOR TEMPORARY MEASURES

SEED FORMULA: PennDOT Formula E

100% Annual Ryegrass

1. Apply ground limestone at 1 ton per acre.
2. Apply Formula E seed at 48 lbs per acre.
3. Apply hay or straw mulch at 3 tons per acre.
4. Perform seeding between March 15 and October 15.

##### FOR FINAL MEASURES

##### **For Slopes 3:1 or flatter-**

SEED FORMULA: PennDOT Formula B

20% Perennial Ryegrass Mixture

30% Creeping Red Fescue or Chewings Fescue

40% Kentucky Bluegrass Mixture

1. Apply ground limestone at 10 tons per acre.
2. Apply fertilizer (100 lbs of N, 200 lbs P<sub>2</sub>O<sub>5</sub> and 200 lbs of K<sub>2</sub>O) at 500 lbs per acre
3. Apply Formula B seed at 101.6 lbs per acre.
4. Apply hay or straw mulch at 3 tons per acre.

5. Perform seeding between March 15 and June 1, and August 1 and October 15.

**For slopes greater than 3:1-**

SEED FORMULA: PennDOT Formula D

70% Tall Fescue

30% Creeping Red Fescue or Chewings Fescue

1. Apply ground limestone at 10 tons per acre.
2. Apply fertilizer (100 lbs of N, 200 lbs P<sub>2</sub>O<sub>5</sub> and 200 lbs of K<sub>2</sub>O) at 500 lbs per acre
3. Apply Formula B seed at 101.6 lbs per acre.
4. Apply hay or straw mulch at 3 tons per acre.
5. Perform seeding between March 15 and June 1, and August 1 and October 15.

**IX. MAINTENANCE**

It will be the permittee/co-permittee's responsibility for maintenance of the erosion control measures during construction. Permanent erosion control for the site after construction will be the responsibility of the landowner. The following maintenance measures should be taken:

In general, check all erosion and sediment control measures weekly, and after each rainfall event.

Sediment will be excavated, spread on site, stabilized, and dried for use in site grading.

Sediment removed from the E&S control facilities shall be disposed of in landscaped areas outside of steep slopes, wetlands, floodplains or drainage swales and immediately stabilized, or placed in topsoil stockpiles.

Silt Fence Barriers will be cleaned when sediment accumulates to one-half their height.

All seeded areas will be checked regularly to ensure that a good stand is maintained. Areas should be fertilized and reseeded as necessary.

All mulched areas shall be frequently checked and closely monitored with respect to their effectiveness in controlling erosive storm runoff velocities and sediment transport. Areas will be re-mulched as often as necessary until adequate ground cover is established.

Silt fences and filter barriers shall be inspected immediately after each rainfall, and at least daily, during prolonged rainfall. Any required repairs shall be made immediately.

Should the fabric on the silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still be necessary, the fabric shall be replaced promptly. Sediment deposits should be removed after each storm event and/or when deposits reach approximately one-half the height of the barrier.

Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared and seeded.

Sediment Basins shall be inspected on a weekly basis and after each runoff event. A clean out stake shall be placed near the center of each basin. Accumulated sediment shall be removed when it has reached the clean out elevation on the stake and restore the basin to its original dimensions. Dispose of materials removed from the basin in the manner described in the E&S Plan.

Rock Construction Entrances shall be inspected daily or after periods of heavy muddy usage. If rock voids become full of sediment remove rock and replace with clean rock.

#### **X. SUMMARY**

In view of the numerous provisions proposed to control sedimentation and erosion, no serious sedimentation or erosion is anticipated to occur from this proposed construction operation. If unforeseen conditions require use of temporary or permanent controls other than those on the approved E&S Pollution Control Plan, the Luzerne Conservation District must be notified as soon as possible for on-site inspection/review.