

## **ATTACHMENT 18.2 DESCRIPTION OF FILL IN WETLANDS AND WATERS**

### **Curley Hollow Solid Waste Management Facility (SWMF)**

#### **Site Location and Description**

Dominion has proposed a Power Plant location in Wise County, Virginia, approximately 1.7 miles west of the Town of St. Paul, along U.S. Alternate Highway 58, for a new coal-fired electric generating facility. The Project will consist of the new Power Plant and the requisite material handling areas, road and utility infrastructure systems, and a SWMF. The SWMF qualifies as an "industrial waste landfill" by definition outlined in Virginia Administrative Code, Chapter 80, Solid Waste Management regulations (9VAC20-80-10).

The SWMF site is located in Curley Hollow, adjacent to the proposed Power Plant location. The SWMF site is approximately 378 acres, which is part of a larger collection of land, about 1,700 acres in size, currently owned or under option by Dominion.

There are three wetlands (approximately 0.42-acre) and two unnamed tributary streams (approximately 3,880 linear feet in total) that will be filled in the proposed Curley Hollow SWMF site. A summary of impacts to wetlands and waters for the Project has been provided under Attachment 8.1. For a drawing which shows the proposed SWMF design and impacts to and avoidance of wetlands and waters, refer to Attachment 18.3.

#### **General Site Layout and Design**

The proposed Curley Hollow SWMF will be a captive industrial solid waste site, which means that it will be designed for the exclusive disposal of coal combustion by-products (CCB) associated with power generation from the proposed Power Plant. The CCB materials to be disposed of in the SWMF will be in the form of ash from burning coal and wood waste. The disposal area will be approximately 161 acres within the 188-acre Waste Management Unit Boundary, which is within the total 378-acre SWMF site. The facility will meet regulatory requirements set forth by Virginia Administrative Code, Chapter 80, Solid Waste Management Regulations.

The facility is designed to utilize the entire area of Curley Hollow, ridge-to-ridge, once final development is complete. The final grade of the peak of the disposal area will be approximate elevation 2,350 feet, a maximum of 500 feet above the lowest existing elevation of Curley Hollow, at this location. The peak of the disposal area's final grade will extend approximately 200 feet above the existing ridge line.

The SWMF will use a single geosynthetic liner system consisting of a prepared subgrade, 30-mil polyvinyl chloride liner geomembrane, leachate collection layer (including piping), and protective cover. These layers are constructed to contain the waste and collect leachate that may accumulate, while protecting the ground water downgradient of the site.

The facility will utilize a 24-inch vegetated soil cap system placed over the final waste grades to close the site. The cap system is comprised of an 18-inch infiltration layer (low permeable soil) and a 6-inch erosion layer (earthen material) capable of sustaining vegetation. The infiltration layer is designed to create a barrier between the waste material and precipitation, to reduce leachate generation. The erosion layer, with vegetation, is designed to shed stormwater runoff and reduce erosion. The final capped surface will have maximum slopes of

3H:1V with benches constructed approximately every 20 vertical feet, for stability and drainage.

Additional infrastructure for the facility will include a paved haul road from the station to the disposal area, lined drainage channels, lined sedimentation/stormwater management ponds, a lined leachate management pond, a ground water monitoring system, material stockpile and processing areas, maintenance and repair facilities, and other access roads for operations and maintenance.

### **Single Valley Design Scenario**

As stated previously, the SWMF is designed to utilize the entire area of Curley Hollow, ridge-to-ridge, once final development is complete. The SWMF must be able to contain CCB materials for an approximate 25- to 30-year timeframe with an expected CCB generation rate of approximately 2,000,000 tons from the Power Plant. Given these parameters and for construction consideration, a single contiguous location has been identified for CCB storage. Because of the area required for the Waste Management Unit Boundary of approximately 188 acres and the topographic region of the site, the only usable space for effective design and construction is a valley. In this region of Southwest Virginia, most valleys have first order and second order waterbodies in the center of the valley. A design to avoid impact to the center of the valley would require a significant reduction in the storage life of the SWMF and would require Dominion to utilize additional valleys in the area. This would result in additional land cover impacts and potentially more impacts to wetlands and waterbodies.

### **Description of Liner System**

The following is a brief description of each of the disposal area liner system layers (from bottom to top) and their function (Refer to Figure 1 for a detail.):

#### Ground Water Underdrain

The ground water underdrain consists of a network of pipe- and aggregate-filled trenches to intercept ground water beneath the liner system. Ground water underdrains are typically constructed as needed when seeps are identified during subgrade earthwork.

#### Prepared Subgrade/Compacted Subbase

The subgrade/subbase is the final grade of which the liner system's synthetic layers will be installed upon. The subgrade consists of the compacted rough excavation and structural fill required to develop the proposed SWMF base grade. Subgrade slopes typically range from 2% minimum to a maximum of 33% (3H:1V), for adequate structural stability drainage. The subbase is typically a compacted 6-inch soil layer on top of the subgrade which is free of large rocks, debris, organic matter, and any other deleterious material. The subbase provides a clean, smooth surface for the placement of the liner system geosynthetics. The subbase reduces the possibility of liner system punctures from objects beneath.

#### 30-mil Polyvinyl Chloride Geomembrane Liner

The polyvinyl chloride liner is an impermeable flexible geomembrane placed directly on the subbase. Panels of the material are heat-welded together to create a single impermeable layer between the waste and the ground beneath.

Non-Woven Geotextile

The non-woven geotextile is typically a polypropylene needle-punched fiber geotextile which functions as a cushion between the polyvinyl chloride liner system and the leachate collection system (typically granular material such as coarse sand or aggregate).

Leachate Collection System

The leachate collection system consists of a 12-inch thick layer of coarse material (with a minimum hydraulic conductivity of  $1 \times 10^{-3}$  cm/sec) above the polyvinyl chloride liner and geotextile. The coarse material may be in the form of sand, aggregate, or bottom ash to provide a drainage medium for leachate to be collected. The leachate collection system is also comprised of a network of perforated pipes within the 12-inch collection layer. Lateral pipes are spaced across the base of the liner system to minimize the leachate head on the liner system. Lateral pipes drain to header pipes to convey the leachate out of the disposal area to leachate ponds for treatment or reuse. Leachate may be used for ash conditioning at the Power Plant, dust control on active landfill areas, or may be conveyed to the Power Plant treatment system, and subsequently sent to the Town of St. Paul's Wastewater Treatment Plant (WWTP) for additional treatment, as required to meet the conditions of the WWTP's existing Virginia Pollutant Discharge Elimination System Permit.

Protective Cover

The protective cover is a 6-inch thick layer of coarse material (with a minimum hydraulic conductivity of  $1 \times 10^{-3}$  cm/sec) placed directly on top of the leachate collection system. The coarse material may be in the form of sand, aggregate, or bottom ash to provide an additional layer of protection/cushion between the waste and the other layers of the liner system. Leachate, if generated, will pass through this layer just as it does the collection layer.

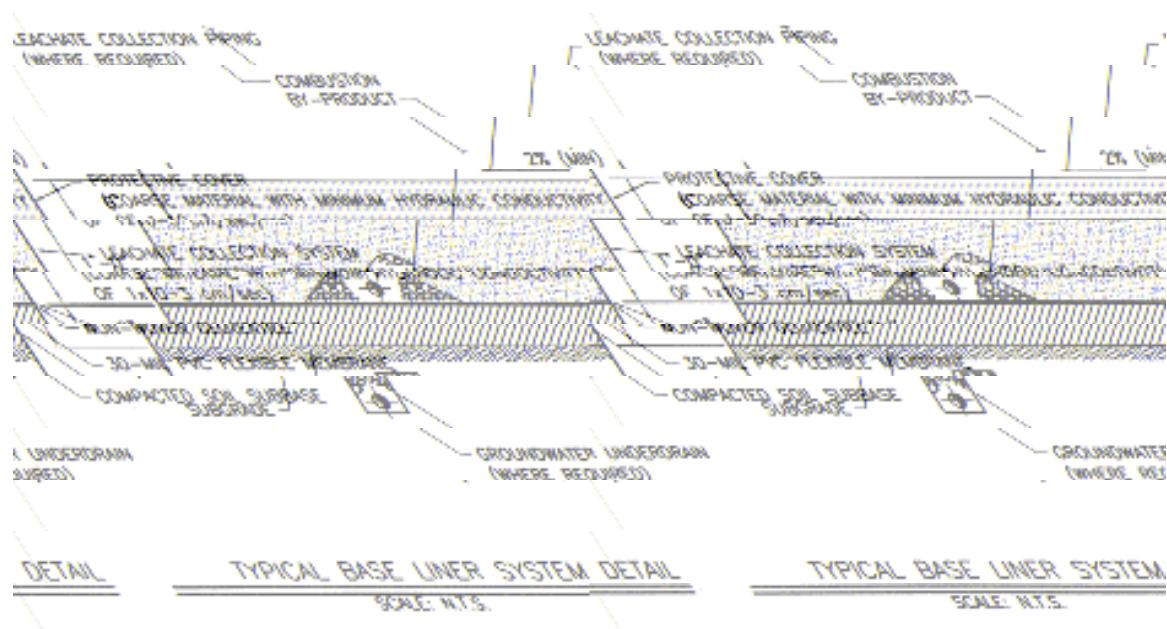


Figure 1. Liner System

### **Ground Water Monitoring**

A series of ground water monitoring wells will be installed around the perimeter of the site. These wells will be used to monitor flow rate, flow direction, and water quality of the ground water that passes beneath the site. The site is designed to meet regulations using a single layer system and ground water monitoring system, which will prevent discharge from entering the local ground water and reaching the Clinch River. If any problems are detected, then Dominion will address them immediately. Ground water monitoring will be conducted for the SWMF in accordance with § 9VAC20-80-300 of the Virginia Solid Waste Management Regulations.

Dominion is currently collecting data at the observation wells shown on plan view boring and test pit locations (Notice of Intent/Part A, Drawing 5) to identify the ground water flow paths and rates within the uppermost aquifer at the site. This information will be used to determine the locations of the permanent monitoring wells. In order to monitor the potential impacts to ground water from the proposed SWMF, six permanent monitoring wells will be installed. There will be three downgradient and three upgradient monitoring wells. Each well will be installed so that the screened interval will span first water encountered at each of the well locations. Monitoring of the first zone of saturation will provide for early detection of impacts.

Additionally, during construction of the SWMF, all seeps, springs, and other intrusions will be collected using an underdrain conveyance system and removed from the site area.

### **Solid Waste Management Facility Construction**

The SWMF site will be developed in stages using small disposal cells, to limit the amount of disturbed area at one time. An initial cell and the necessary supporting infrastructure will be constructed first. When the initial cell is open for waste disposal, construction of the next cell will begin. Once the initial cell reaches its disposal capacity, the second cell will be open for waste placement. Portions of the first cell that reach final grade will be capped (closed), and construction of the next cell will begin. This process will continue over the life of the SWMF until the site reaches its final development grade. The expected life of the SWMF is approximately 27 years.

The initial site development will consist of installing the ground water monitoring system, construction of sediment and leachate ponds, construction of haul/access roads, installation of stormwater collection and diversion channels, and development of the liner system for the first SWMF cell.

The remaining cells and infrastructure will be constructed according to a phased development and operation plan, based on disposal needs.

**BORING AND TEST PIT LOCATIONS  
NOI/PART A, DRAWING 5**

