

**COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WASTE MANAGEMENT**

**FORM NO. 13-A
MODIFICATION TO SOLID WASTE DISPOSAL AND/OR PROCESSING PERMIT**

Under the provisions of Act 97, the Pennsylvania Solid Waste Management Act, the Act of July 7, 1980, P.L. 380, 35 P.S. §§ 6018.101, *et seq.*, Solid Waste Permit Number 300558 originally issued on September 25, 1995 and reissued on October 11, 2005 to FirstEnergy Generation, LLC, 76 South Main Street, Akron, OH 44308 for operation of the Little Blue Run Residual Waste Disposal Impoundment located in Greene Township, Beaver County, Pennsylvania and Grant District, Hancock County, West Virginia is hereby modified as follows:

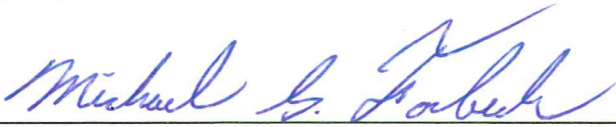
1. This permit modifies Solid Waste Permit No. 300558 originally issued September 25, 1995. It is issued in response to Solid Waste Management Permit Application No. 300558 dated March 29, 2013 and designated as Authorization Request No. 969957 for adoption of a Closure Plan for the permitted facility. The plans and specifications in the application, including subsequent revisions and addendum(s) submitted to the initial application, are approved by the Department and are enforceable as a part of this permit amendment.

This permit modification is issued based on the assumption that the information submitted in Solid Waste Management Authorization Request No. 969957, referenced in Permit Condition No. 2, is accurate. Any inaccuracies found in this information may be grounds for the revocation or modification of this permit and potential enforcement action.

2. This approved application consists of the following documents:

Form No./Letter	Form Title	Date (Revision)
Form GIF	General Information Form	3/29/13
Form A	Application For Municipal or Residual Waste Permit	3/29/13 (3/28/14)
Form B	Professional Certification	3/29/13 (3/5/14)
Form B1	Application Form Certification	3/29/13 (3/5/14)
Form C1	Compliance History Certification	3/29/13
Form D	Environmental Assessment	3/29/13 (3/5/14)
Form E	Contractual Consent of Landowner	3/29/13 (12/2/13)
Form F	Soils Information – Phase I	3/29/13 (3/5/14)
Form G(A)	Air Resources Protection – Dust Emissions Estimate and Control Plan	3/29/13 (12/2/13)
Form H	Revegetation	3/29/13 (12/2/13)
Form I	Erosion and Sedimentation Control Plan	3/29/13 (3/5/14)
Form J	Soils Information – Phase II	3/29/13
Form L	Contingency Plan for Emergency Conditions	3/29/13
Form Q	Request for Equivalency Review	3/29/13 (12/2/13)
Form 1R	Facility Plan	3/29/13 (5/24/13)
Form 2R	Map Requirements – Phase I	3/29/13
Form 3R	Map Requirements – Phase II	3/29/13
Form 6R	Geologic Information	5/24/13
Form 7R	Hydrogeologic Information	5/24/13 (12/2/13)

This modification shall be attached to the existing Solid Waste Permit described above and shall become a part thereof effective on April 3, 2014.



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Form No./Letter	Form Title	Date (Revision)
Form 8R	Baseline Groundwater Analyses	5/24/13 (12/2/13)
Form 11R	Alternative Water Supply	3/29/13
Form 12R	Operation Plan – Phase II	3/29/13 (12/2/13)
Form 13R	Water Quality Monitoring Plan	3/29/13 (3/28/14)
Form 16R	Liner System – Phase II	3/29/13 (3/5/14)
Form 17R	Leachate Management – Phase II	3/29/13 (3/5/14)
Form 18R	Closure/Post-Closure Monitoring Plan	3/29/13 (3/5/14)
Form 23R	Control Plans	3/29/13 (12/2/13)
Form 24R	Residual Waste Disposal Impoundments	3/29/13
Document	Investigation and Economic/Technical Feasibility Assessment	2/1/13 (3/28/14)
Correspondence	Public Notice Publication – Proof of Compliance	4/22/13
Correspondence	Municipal Notification Letter – Proof of Compliance	4/26/13
Correspondence	Contiguous Landowner Notification Letter – Proof of Compliance	4/26/13
Correspondence	Administrative Incompleteness Letter Response	5/24/13
Correspondence	Second Public Notice Publication – Proof of Compliance	6/4/13
Correspondence	Revised Public and Municipality Notice – Proof of Compliance	6/18/13
Correspondence	Municipal Notification Letters – Proof of Compliance	6/25/13
Correspondence	Third Public Notice Publication – Proof of Compliance	7/10/13
Correspondence	Revised Property Boundary Drawings	7/16/13
Correspondence	Technical Review Letter Response	12/2/13
Correspondence	Additional Technical Review Letter Responses	1/13/14
Document	Work Plan for Monitoring Well Installations – Background and Lawrenceville Assessments	1/13/14 (3/5/14)
Document	Cullen Drive Groundwater Assessment and Mitigation Strategies for Potential Future Impacts	1/13/14 (3/5/14)
Document	Feasibility Study Assessment of Arsenic Abatement Strategies	1/13/14
Document	Supplemental Materials (Closure Period)	2/24/14
Correspondence	Second Technical Review Letter Response	3/5/14
Correspondence	Financial Assurance Documents	3/14/14
Correspondence	Response to Technical Review Letter	3/28/14
Drawing No.	Drawing Title	Date (Revision)
P921-22X8010F001	Title Sheet	3/29/13 (3/5/14)
P921-22X8010F002-1	Permit Boundary (North)	3/29/13 (3/5/14)
P921-22X8010F002-2	Permit Boundary (South)	3/29/13 (3/5/14)
P921-22X8010F003-1	Streams and Wetlands (North)	3/29/13
P921-22X8010F003-2	Streams and Wetlands (South)	3/29/13
P921-22X8010F004-1	Monitoring Well and Spring Locations (North)	3/29/13 (3/5/14)
P921-22X8010F004-2	Monitoring Well and Spring Locations (South)	3/29/13 (3/5/14)
P921-22X8010F004-3	Monitoring Well and Spring Locations (West)	3/29/13 (3/5/14)
P921-22X8010F005-1	Water Supply Features (North)	3/29/13 (3/5/14)
P921-22X8010F005-2	Water Supply Features (South)	3/29/13 (3/5/14)

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Drawing No.	Drawing Title	Date (Revision)
P921-22X8010F006	Public Water Sources (3 Mile)	3/29/13
P921-22X8010F007-1	Annual High Groundwater Levels (North)	3/29/13 (3/5/14)
P921-22X8010F007-2	Annual High Groundwater Levels (South)	3/29/13 (3/5/14)
P921-22X8010F008-1	Potentiometric Contours Map (North)	3/29/13 (3/5/14)
P921-22X8010F008-2	Potentiometric Contours Map (South)	3/29/13 (3/5/14)
P921-22X8010F009-1	Soils Information (North)	3/29/13
P921-22X8010F009-2	Soils Information (South)	3/29/13 (3/5/14)
P921-22X8010F010-1	Farmland Impacts (North)	3/29/13
P921-22X8010F010-2	Farmland Impacts (South)	3/29/13
P921-22X8010F011-1	Agricultural Security Areas and Preferential Tax Assessment Parcels (North)	3/29/13
P921-22X8010F011-2	Agricultural Security Areas and Preferential Tax Assessment Parcels (South)	3/29/13
P921-22X8010F012-1	Overlay of Greene Township Zoning Map (North)	3/29/13
P921-22X8010F012-2	Overlay of Greene Township Zoning Map (South)	3/29/13
P921-22X8010F013-1	Final Top of CCB Grades (North)	3/29/13
P921-22X8010F013-2	Final Top of CCB Grades (South)	3/29/13
P921-22X8010F014-1	Top of Final Cover System Grades (North)	3/29/13 (12/2/13)
P921-22X8010F014-2	Top of Final Cover System Grades (South)	3/29/13 (12/2/13)
P921-22X8010F015	Cross-Sections	3/29/13
P921-22X8010F016-1	Borrow Area Grades (North)	3/29/13 (12/2/13)
P921-22X8010F016-2	Borrow Area Grades (South)	3/29/13 (3/5/14)
P921-22X8010F016-3	Borrow Area Cross-Sections	12/2/13
P921-22X8010F016-4	Borrow Area Cross-Sections	12/2/13
P921-22X8010F016-5	Borrow Area Cross-Sections	12/2/13
P921-22X8010F016-6	Borrow Area Cross-Sections	12/2/13
P921-22X8010F017-1	Seep Management System Plan (North)	3/29/13 (12/2/13)
P921-22X8010F017-2	Seep Management System Plan (South)	3/29/13 (12/2/13)
P921-22X8010F018	Surface Water Management Plan - Closure	3/29/13
P921-22X8010F019	Surface Water Management Plan – Post-Settlement	3/29/13
P921-22X8010F020	Operation Sequence Plan: March 2014	3/29/13
P921-22X8010F021	Operation Sequence Plan: March 2015	3/29/13 (12/2/13)
P921-22X8010F022	Operation Sequence Plan: March 2016	3/29/13 (12/2/13)
P921-22X8010F023	Operation Sequence Plan: End of Year 2016	3/29/13 (12/2/13)
P921-22X8010F024	Overall Closure Sequence Plan	3/29/13 (12/2/13)
P921-22X8010F025-A	Closure Phase 2015	3/29/13 (3/5/14)
P921-22X8010F025-B	Closure Phase 2016	3/29/13 (3/5/14)
P921-22X8010F025-C	Closure Phase 2017	3/29/13 (3/5/14)
P921-22X8010F025-D	Closure Phase 2018	3/29/13 (3/5/14)
P921-22X8010F025-E	Closure Phase 2019	3/29/13 (3/5/14)
P921-22X8010F025-F	Closure Phase 2020	3/29/13 (3/5/14)
P921-22X8010F025-G	Closure Phase 2021	3/29/13 (3/5/14)
P921-22X8010F025-H	Closure Phase 2022	3/29/13 (3/5/14)
P921-22X8010F025-I	Closure Phase 2023	3/29/13 (3/5/14)
P921-22X8010F025-J	Closure Phase 2024	3/29/13 (3/5/14)
P921-22X8010F025-K	Closure Phase 2025	3/29/13 (3/5/14)
P921-22X8010F025-L	Closure Phase 2026	3/29/13 (3/5/14)

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P921-22X8010F025-M	Closure Phase 2027	3/29/13 (3/5/14)
P921-22X8010F025-N	Closure Phase 2028	3/29/13 (3/5/14)
P921-22X8010F025-O	Closure Phase 2029	3/29/13 (3/5/14)
P921-22X8010F025-P	Closure Phase 2030	3/29/13 (3/5/14)
P921-22X8010F025-Q	Closure Phase 2031	3/29/13 (3/5/14)
P921-22X8010F026	Borrow Area Erosion Control Measures	3/29/13 (3/5/14)
P921-22X8010F027-1	Final Cover System Details	3/29/13 (12/2/13)
P921-22X8010F027-2	Final Cover System Details	3/29/13 (3/5/14)
P921-22X8010F028	Seep Management System Details	3/29/13
P921-22X8010F029	Cove M Groundwater Barrier and Collection System Details	3/29/13 (12/2/13)
P921-22X8010F030	Surface Water Management Details	3/29/13 (3/5/14)
92122.0100-1	Water Monitoring Wells and Residential Wells	3/28/14
92122.0100-2	Water Monitoring Wells and Residential Wells	3/28/14
92122.0100-3	Water Monitoring Wells and Residential Wells - Lawrenceville	3/28/14

3. This major permit modification is issued in accordance with 25 Pa. Code Chapters 287 and 289 for solid waste operations associated with closure, postclosure maintenance and monitoring, and groundwater contamination abatement measures in relation to the Little Blue Run Residual Waste Disposal Impoundment. In order to accomplish proper closure of the Impoundment, this permit modification authorizes the disposal of residual solid waste generated at the FirstEnergy Bruce Mansfield Plant within the limits of the 936-acre disposal area contained within the permit area as depicted on Drawing Nos. P921-22X8010F002-1 and P921-22X8010F002-2 dated December 2, 2013. Acceptance of hazardous waste as defined by 25 Pa. Code Section 261a is prohibited at this site.
4. This permit expires on April 3, 2024. The permittee shall submit an application for permit renewal pursuant to 25 Pa. Code Section 287.223 not later than April 3, 2023. Subsequent to permit expiration, and in accordance with 25 Pa. Code Section 287.211(c), the permittee shall comply with all terms and conditions of this permit until issuance of final closure certification pursuant to 25 Pa. Code Section 287.342 unless amended by the Department in a subsequent permit action.
5. This permit modification authorizes continued waste disposal operations for the purpose of achieving the waste elevations for closure depicted on Drawing Nos. P921-22X8010F013-1 and P921-22X8010F013-2 dated December 2, 2013 and described as the Final Top of CCB Grades until December 31, 2016 or until the waste elevations depicted on those drawings are achieved, whichever is earlier.
6. This permit modification approves the use of onsite borrow soils as described in Form F of the application for use as general fill and final cover soil for closure of the permitted facility, with the following conditions:
 - A. The approved soils consist of those located within the horizontal and vertical limits of the borrow areas delineated on Drawing Nos. P921-22X8010F016-1 through P921-22X8010F016-6.
 - B. Soils recovered from Borrow Areas BA-11 and BA-14 shall not be used as final cover soil.
 - C. Onsite processing of soil to achieve required specification for use as general fill and/or final cover soil is prohibited, until and unless the necessary authorizations are obtained.

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- D. Removal of vegetation prior to initiation of soil borrow operations shall be limited to the boundaries of active borrow areas, and in inactive areas vegetation shall be left in place until the soil borrow is required.
7. Fugitive particulate emissions shall be controlled and the permittee shall comply with the fugitive particulate emission standards adopted under the Chapter 123 (Standards for Contaminants) regulations issued under the Air Pollution Control Act, the Act of January 8, 1960, P.L. 2119, 35 P.S. Section 4005 and with all the applicable sections of the Fugitive Emissions Sections 123.1 and 123.2.
- A. All roadways must be maintained to minimize fugitive particulate emissions. Paved roadways must be flushed with a pressurized water truck or similar vehicle. If this method of control is deemed to be inadequate, the Department reserves the right to require the use of a vacuum type road sweeper to further control fugitive emissions. Paved roadways must be maintained so that dust control measures can be effectively applied or operated. Unpaved roadways must be treated on an as needed basis using dust suppressants and/or water to minimize fugitive dust generation.
- B. For paved roadways, the following records must be maintained on site and available for Department inspection:
- i. Daily log of time and location of any water flushing or vacuum sweeping conducted.
 - ii. Identification, time, and location of any maintenance repairs, patching, or repaving of roads.
 - iii. A log explaining why any water flushing or vacuum sweeping was not performed.
- C. For unpaved roadways, the following records must be maintained on-site and available for Department inspection:
- i. A daily log of time and location of treated areas.
 - ii. An identification of dust suppressants used.
 - iii. A log of dilution ratios of dust suppressants and diluent used if chemical suppressants are used.
 - iv. A purchase record of all dust suppressants used.
- D. A pressurized water truck or similar vehicle must be available and fully operational on site to minimize the generation of fugitive dust during closure construction.
- E. Vehicle traffic operating within the facility shall be restricted to a 10 mph speed limit on facility roadways. This limit shall be clearly posted and easily legible along all access routes and be strictly enforced by facility personnel.
- F. All areas of exposed CCB shall be seeded and mulched in accordance with Form H, Attachment H-1 of the approved application at the earliest possible time (up until October 1st) to prevent winter freeze-drying events. Areas that cannot be mulched and seeded shall be sprayed with a latex dust suppressant to prevent dust emissions or other suitable dust suppression measures shall be implemented.
- G. Areas of the Impoundment on which the final cover deployment has not been completed shall be monitored during the months of November through March in accordance with the procedures set forth in the December 30, 2005 Dust Management and Monitoring Plan. The following documentation regarding the monitoring activities shall be submitted to the Department as follows:

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- i. The first report, due on November 1st each year, shall present a comprehensive description and assessment of the dust control measures conducted to prepare the site for winter; describe and delineate the areas upon which surface stabilization measures (i.e., vegetation, mulch, co-polymer) were implemented; evaluate the effectiveness of those measures; and propose specific remedial actions to address any deficiencies and timeframes for their completion.
 - ii. Subsequent reports, due on or before the 10th of the ensuing months, shall describe the inspection and monitoring activities conducted pursuant to Section 4.0 of the approved plan that occurred during the previous month, confirmation that the remedial actions recommended in the previous month's report were completed within 72 hours, an updated description and assessment of surface stabilization measures and recommendations for any necessary further remedial actions. Attachments to the report shall include copies of the inspection records, photographs, and any other pertinent documentation accumulated during the previous month.
- H. The existing network of dustfall collectors shall be maintained and monitored as described in Exhibit 23R-1.2 of the approved application until vegetative cover is established at completion of closure construction. Dustfall reports shall be submitted as part of the quarterly report package required by Permit Condition No. 28 below. Reports must be received no later than 60 days from the end of each calendar quarter. If review of this data indicates a violation of the Department's Ambient Air Quality Standard for total settled particulates, more sophisticated sampling, monitoring and remedial measures may be required.
- I. Nothing contained herein shall relieve the applicant's obligation to comply with any provisions of the Pennsylvania Clean Air Act or the Department's Air Quality Regulations. These include but are not limited to fugitive emission regulations contained in 25 Pa. Code Sections 123.1-2, the Department's odor regulations contained in 25 Pa. Code Section 123.31, and the ambient air quality standard specified in 25 Pa. Code Chapter 131.
8. The exposed surface of CCB, final cover and borrow areas shall be protected from erosion and revegetated in the manner described in Form H of the approved application. Vegetative coverage shall conform to the standard set forth in 25 Pa. Code Section 289.245. An initial visual check on the success of vegetation shall be conducted between four and six weeks after germination, periodic visual checks shall be conducted thereafter on a calendar quarterly basis and incidental visual checks shall be conducted within 24 hours after storm events of 1-inch or greater over a 24-hour period. Areas with inadequate vegetative cover shall be remedied at the first available opportunity to do so. For the purposes of this permit condition, the adequacy of the vegetative cover shall be measured as a minimum uniform 70% perennial vegetative cover, with no more than 1% of the total area having less than 30% ground cover and no single or contiguous area exceeding 3,000 square feet having less than 30% ground cover. If inclement weather prevents the establishment of vegetative cover, exposed surfaces shall be mulched or otherwise stabilized to reduce erosion until conditions are conducive to the establishment of vegetation. Remedial revegetation work will be done in a manner which minimizes the disturbance of existing vegetation or stubble.
9. The Soil Erosion and Sedimentation Control Plan shall be implemented as described in Form I of the approved application. In addition:
- A. The permittee shall notify the Beaver County Conservation District ten (10) days prior to the start of earth moving associated with construction at the permitted facility.

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- B. The permittee shall construct, implement and maintain the erosion and sedimentation control structures in accordance with the approved plan prior to any earth disturbance activities in the areas tributary to those structures.
 - C. The permittee shall maintain all erosion and sedimentation control channels to ensure that the required design dimensions and protective linings are available at all times. Damaged channel linings shall be repaired or replaced immediately. The permittee shall inspect and maintain channels constructed with segments having flow gradient less than 1% in the manner described in Exhibit 12R-1 of the approved application to assure a free flow along the entire length of the channel. When accumulations of sediment or debris are observed, the permittee shall remove them as soon as practicable.
 - D. The permittee shall employ compost filter socks for erosion and sedimentation control purposes that conform to the material standards that appear in Tables 4.1 and Table 4.2 of the Department's Erosion and Sediment Pollution Control Program Manual. Biodegradable filter socks shall be replaced after 6 months; photodegradable socks after 1 year. Polypropylene socks shall be replaced according to manufacturer's recommendations. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired according to manufacturer's specifications or replaced within 24 hours of inspection. Accumulated sediment shall be removed when it reaches half the aboveground height of the sock.
 - E. The permittee shall remove sediments that accumulate in the Impoundment's pool area when the level of sediment reaches an elevation of 1082' amsl. Such sediment may be placed in the Impoundment prior to capping at locations where the surface elevation is below the permitted waste elevation depicted on Drawing Nos. P921-22X8010F013-1 and P921-22X8010F013-2 or be otherwise managed as solid waste
 - F. The permittee shall obtain any necessary township approvals prior to beginning construction.
10. This permit approves, pursuant to 25 Pa. Code Section 287.231, a request for equivalency review with respect to the cover soil requirements in 25 Pa. Code Section 289.242(f) as described in DEP Form Q of the approved application. The performance of the final cover soil layer shall be assessed on a calendar quarterly basis during the construction closure period for evidence of inadequate vegetative cover, erosion, ponding, differential settlement, veneer instability or other conditions relative to the performance of the final cover soil and cap. The assessment shall involve visual observation of surface conditions along a serpentine path that traverses all areas where final cover has been placed at intervals not more than 200 feet apart. A report of each cover soil assessment event describing the procedures employed, including a map of the area observed and path traversed, conditions observed and corrective actions implemented based on those conditions shall be incorporated into the quarterly monitoring report submission required by Permit Condition No. 28 below.
11. The permittee shall implement the Operation Plan as described DEP Form 12R of the approved application, subject to the following conditions:
- A. The permittee may engage in construction activities only at the following times: Monday through Saturday 6 a.m. to 9 p.m. (except for supervised geotube filling) or such other expanded days and hours that the host municipality may set by ordinance. The permittee may engage in construction activities within the limits of the closure area at other days and times only with the prior written approval of the host municipality. For the purpose of achieving final waste elevations for closure, and subject to the requirements of this permit, waste may be disposed at the facility on a 24-hour per day, seven day per week basis.

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- B. For the purpose of achieving final waste elevations for closure, and subject to the requirements of this permit, the facility is approved to accept waste streams generated at the Bruce Mansfield Plant which are transferred via pipeline to the permitted facility, or otherwise conveyed to the facility with Department approval, consisting of: FOG plant low solids waters, stabilized CCB sludge (includes Flue Gas Desulfurization (FGD) scrubber sludge mixed with additional lime), FOG Plant high solids water, fly ash, bottom ash, waste streams from the Low and High Dissolved Solids Ponds and calcilox (or approved equivalent).
- C. The permittee shall conduct operations consistent with the following:
- i. The Indiana Bat Mist Netting Guidelines and Protocol for Assessing Abandoned Mine/Caves for Bat Surveys set forth in the attachment to the US Fish and Wildlife Service's April 23, 2013 correspondence presented in Exhibit D-5.1 of the approved application.
 - ii. The Adaptive Management Practices for Conserving Migratory Birds set forth in the attachment to the US Fish and Wildlife Service's April 23, 2013 correspondence presented in Exhibit D-5.1 of the approved application.
 - iii. Silver Maple floodplain forest conservation measures recommended in the Pa. Department of Conservation and Natural Resources, Bureau of Forestry's March 12, 2013 correspondence presented in Exhibit D-5.3 of the approved application.
- D. The permittee may construct geotubes only as required to establish the final waste elevations depicted on Drawing Nos. P921-22X8010F013-1 and P921-22X8010F013-2; any geotubes constructed prior to closure shall be installed at the general locations depicted on Drawing Nos. P921-22X8010F020, P921-22X8010F021, P921-22X8010F022 and P921-22X8010F023 and consistent with annual sequencing plan updates in accordance with the procedures set forth in Exhibit 12R-1.2 of the approved application. Geotubes shall conform to the following specifications:

Property	Test Method	Acceptance Criteria	MQC Test Frequency	CQA Test Frequency
Tensile Strength	ASTM D 4595	MD>400 lbs/in CD>550 lbs/in	1 per 100,000 ft ²	1 per lot
Apparent Opening Size (AOS)	ASTM D 4751	US Sieve 50	1 per 100,000 ft ²	
Factory Seam Strength	ASTM D 4884	>350 lbs/in	1 per 100,000 ft ²	1 per lot
Mass per Unit Area	ASTM D 5261	15.7 oz/yd ²	1 per 100,000 ft ²	

- E. The permittee shall maintain an operational record for each day that residual waste is received, processed or disposed at the Impoundment, and each day that construction, monitoring or postclosure activity occurs. Copies of the daily record shall include the following and shall be maintained and available for review at an onsite building at the Impoundment:
- i. Daily Dam Inspection.
 - ii. Daily River Discharge and pH Control System.
 - iii. Daily Pipeline and Impoundment Daily Inspection Sheet.
 - iv. Dust Management Observation Forms.
 - v. Pipe Cleaning Log.
 - vi. Bottom Ash Usage Log.

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- vii. Pipe Reuse Log.
- viii. Daily Solids Worksheet.
- ix. Daily Sludge Pumps and pH Logs.

- F. The waste distribution system for the Impoundment shall be equipped so that flow of residual waste into any area of the Impoundment can be shut off immediately in the event of an emergency situation. All over-land waste distribution pipes shall be located within the permit area.
- G. The permittee shall apply larvicide monthly during the period of May to October on areas of stagnant water to control mosquito breeding.
- H. The permittee shall implement the nuisance minimization and control provisions described in Form 12R of the approved application to minimize construction-related noise generated during constructed activities associated with operation and closure of the permitted facility and shall:
- Conduct routine maintenance, including inspection and verification that muffler systems are intact and functioning, moving parts are lubricated, worn parts are replaced, and brake systems are in good condition; in accordance with the manufacturer's recommendations.
 - Monitor construction equipment to maintain an operating level of each piece of equipment at 85 decibels or less at all times.
 - Employ two-stage back-up alarms with high and low output levels on all construction equipment to mitigate off-site noise whenever construction activities are conducted at the site prior to 8:00 am, after 6:00 pm or on weekends or holidays provided such use meets worker safety requirements.

If the Department determines during operation of the facility that the plan is inadequate to minimize or control public nuisances, the Department may take enforcement action, modify the plan, and/or require the operator to modify the plan and obtain Department approval.

- I. The permittee shall perform regular, frequent and comprehensive site inspections to evaluate the effectiveness of cover, waste acceptance and all other waste management practices in reducing the potential for offsite odor creation, and promptly address and correct problems and deficiencies discovered in the course of inspections performed under the Odor Control Plan described in Exhibit 23R-1.1 of the approved application.
- J. The permittee shall have available in proper working condition the following equipment at the immediate operating area of the permitted facility:
- A communications or alarm system capable of providing immediate emergency instruction by voice or signal to facility personnel.
 - A communications system capable of summoning emergency assistance from local police, fire departments, emergency medical services and from state and local emergency response agencies.
 - Portable fire extinguishers, spill control equipment, self-contained breathing apparatus and decontamination equipment.
- K. The permittee shall restrict access to the permit area in accordance with 25 Pa. Code Section 289.222 and as described in Section K of Attachment 12R-1 of the approved application, or as otherwise required by the Department. Permanent gates shall be maintained at the junction of each access road and public road for the duration of operations and closure. All gates shall have a sign which is clearly visible and can be easily

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seen and read specifying the owner, permit number, telephone number of the person or municipality that operates the facility and that the facility is a waste disposal impoundment. The gates and signs shall be constructed of a durable weather-resistant material and be maintained.

12. The permittee shall implement the Water Quality Monitoring Plan as described in this permit and DEP Form 13R of the approved application, subject to the following conditions:
- A. The water quality monitoring points listed in Tables 1 through 4 on Pages 18 through 25 of this permit and depicted on Drawing Nos. 92122.0100-1, 92122.0100-2 and 92122.0100-3 shall be sampled and analyzed for all parameters outlined in 25 Pa. Code Section 289.264(a)(1) and (2) with the addition of mercury, arsenic and boron which will also be analyzed on a quarterly basis. The results of these analyses shall be reported on Form 14R-Residual Waste Landfills and Disposal Impoundments Quarterly and Annual Water Quality Analyses Report and shall be incorporated into the quarterly monitoring report submission required by Permit Condition No. 28.
 - B. The permittee may submit a written justification and request to the Department to discontinue further monitoring for the location(s) listed in Tables 1 through 4 on Pages 18 through 25 of this permit, based upon physical location and other circumstances demonstrating that the monitoring point is no longer capable of being monitored.
 - C. If increases in the concentration of parameters for upgradient monitoring points are observed, the permittee shall re-evaluate the groundwater flow to assure proper location of the wells and submit a report of the results of that evaluation as a component of the quarterly monitoring report submission required by Permit Condition No. 28. If the upgradient wells show degradation, the permittee shall within sixty (60) days conduct a groundwater investigation as required by 25 Pa. Code Section 289.266 to define background quality and flow characteristics.
 - D. All water well drilling including but not limited to monitoring wells, replacement water wells and public water supplies shall, depending on the location of the well, be performed by a person licensed by the Pennsylvania Waterwell Drillers Licensing Act of 1956 or individual certified by the Commissioner of the West Virginia Bureau of Public Health, as appropriate. An original copy of well records, upon the completion of a well or wells, shall be submitted by the well driller to either the Pennsylvania Geologic Survey or Commissioner of the West Virginia Bureau of Public Health, depending on the location of the well.
 - E. The permittee shall conduct quarterly seep reconnaissance as follows:
 - i. Reconnaissance shall be conducted within three-quarters ($\frac{3}{4}$) of a mile in Pennsylvania and West Virginia surrounding the ultimate waste disposal limits of the Impoundment, unless otherwise agreed by the Department, and at more distant locations hydrogeologically connected to the Impoundment as specified by the Department, to locate any and all seeps or springs which have developed as of or prior to such reconnaissance, using best efforts to obtain access to properties not owned or controlled by the permittee.
 - ii. The Department shall be notified in writing of the location of newly identified seeps within seven (7) days of discovering a seep.

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iii. Unless revised in a permit modification subsequently issued by the Department, newly identified seeps shall be sampled within thirty (30) days of discovery for flow quantity and the following constituents: ammonia-nitrogen, bicarbonate, calcium, chloride, fluoride, chemical oxygen demand, nitrate-nitrogen, pH, specific conductance, sulfate, total alkalinity, total dissolved solids, total organic carbon, turbidity, iron, manganese, magnesium, potassium, sodium; total and dissolved concentrations of barium, boron, cadmium, chromium, copper, lead, mercury, selenium, silver, zinc, arsenic, molybdenum, thallium, and cyanide. The analytical results of all such sampling shall be submitted to the Department within sixty (60) days of sampling.

Any seep identified by the permittee or Department subsequent to issuance of this permit that is hydrogeologically connected to the Impoundment shall automatically become a permitted monitoring point and the permittee shall comply with the sampling, analysis and reporting requirements set forth in Condition 12.A of this permit for such seeps.

- F. The permittee shall, within thirty (30) days of receiving notice from the Department, or the permittee's own determination (whichever occurs earlier), that a seep is or has become contaminated by the permitted facility, submit a written plan to the Department describing the means by which the permittee will manage such seep in conformance with this condition, and shall thereafter fully implement such plan as approved by the Department. Within sixty (60) days of receiving the aforementioned notice from the Department or determination by the permittee, the permittee shall submit to the Department:
- i. Confirmation that a full and complete application has been made to the appropriate governmental authority requesting authorization to discharge the seep to a surface water pursuant to an NPDES permit, or
 - ii. A design and implementation schedule to collect and convey the seep to a discharge point approved by the Department; such schedule shall provide that the plan will be implemented no later than ninety (90) days following Department approval unless another time frame is approved by the Department, or
 - iii. A plan for review and approval of an alternative means for seep management that is consistent with the foregoing provisions to the full extent practicable.
- G. The permittee shall take all measures necessary to ensure that groundwater within and leaving the property (including but not limited to groundwater impacted by the Impoundment through contributions to or exacerbation of groundwater contamination due to the Impoundment) does not exceed, and if necessary, is abated to applicable regulatory standards, including those set forth in 25 Pa. Code Section 289.267. This shall include, but is not limited to:
- i. Installation of Lawrenceville Pumping Wells PW-112 and PW-113 at the location depicted in Figure No. 2 of Attachment 13R-1 of the approved application. The approved wells shall be operated to maintain a water level of approximately 930' amsl. Groundwater pumped from these wells shall be conveyed to the Impoundment for management in accordance with the Leachate Management Plan provisions in Form 17R of the approved application.
 - ii. Implementation of the Cullen Drive Groundwater Assessment plan dated January 13, 2014 as revised on March 5, 2014. Within three (3) months of issuance of this permit modification, the permittee shall submit to the Department an assessment report documenting the direction of groundwater flow in the Cullen Drive Area and a construction schedule and design of a slurry wall or pumping removal

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technology to effectively impede contaminant migration from the Impoundment for the Department's approval. The permittee shall address any questions or concerns from the Department regarding the slurry wall schedule and design, and implement construction of the slurry wall pursuant to the Department-approved schedule and design.

- iii. The permittee shall implement any necessary groundwater abatement activities, including but not limited to the Feasibility Study Work Plan for Arsenic Abatement Strategies dated January 13, 2014 as follows:
- a. Not more than two (2) months from issuance of this permit modification, the permittee shall submit to the Department a report of the permittee's investigation of the potential effect of chloride interference on the analytical results reported for arsenic in groundwater samples previously collected at the Impoundment, and shall supplement the report as requested by the Department.
 - b. Not more than twelve (12) months from issuance of this permit modification, the permittee shall submit to the Department a report presenting the results of background water quality in formation aquifers collected at Monitoring Wells 30A through 30F.
 - c. Not more than twelve (12) months from issuance of this permit modification, the permittee shall submit for approval by the Department the permittee's selection (including all analytical bases supporting such selection) of one or more standards for groundwater, in compliance with 25 Pa. Code Section 289.267, that the permittee meets or will meet for the entire facility. If the permittee contends that groundwater abatement activities are unnecessary based upon the results of either or both of the foregoing reports, the permittee shall provide notice to the public (consistent with the provisions of 25 Pa. Code Section 287.151 and within thirteen months from the issuance of this permit modification) of the conclusions of such report(s). The permittee shall commence any necessary groundwater abatement activities as approved by the Department and as set forth below.
 - d. If groundwater abatement is necessary to achieve compliance with 25 Pa. Code Section 289.267, the permittee shall submit for the Department's approval not more than twenty-four (24) months from issuance of this permit modification a report of its evaluation of treatment technologies and conceptual designs for technically feasible treatment system(s) to be constructed and operated to achieve the applicable groundwater standards in compliance with 25 Pa. Code Section 289.267. The permittee shall coincidentally notify the public regarding the report and its conclusions, in a manner that is consistent with the requirements of 25 Pa. Code Section 287.151. The permittee shall implement the abatement activities as approved by the Department.
13. The permittee shall deploy a final cover system on the Impoundment that conforms to the design set forth in Form 16R of the approved application, subject to the following conditions:
- A. The final cover system shall be constructed in accordance with the Construction Quality Assurance/Quality Control (QA/QC) Plan presented in Attachment 16R-6 and Technical Specifications presented in Attachment 16R-5 of the approved application.
 - B. Textured geomembrane shall be employed as the impervious component of the final cover system in areas of the Impoundment depicted on Drawing Nos. P921-22X8010F014-1 and P921-22X8010F014-2 and in all areas where the slope is greater than 6.9% at the time of placement.

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- C. The nonwoven geotextile to be placed between the cap geomembrane and final cover soil shall be specified by the manufacturer to possess a minimum water flow rate of 110 gallons per minute per square foot.
- D. Certification of each component of this facility's design and construction shall be submitted to the Department by a professional engineer, registered in the Commonwealth of Pennsylvania, for construction and placement of: completion of each phase of construction, as specified by 25 Pa. Code Section 289.202, measures specified in Permit Condition 12.G, geotube placement, disposal impoundment embankment construction, final CCB grading and acceptance, final cover geosynthetics (flexible membrane and geotextile), piping, vents and revegetation. The permittee shall notify the Department in writing, within seventy-two (72) hours, before commencing construction of major phases as defined in 25 Pa. Code Section 289.202 and for those activities requiring certification noted previously. Permittee shall submit one original set and two copies of as-built drawings and the construction certification report document to the Department upon completion of the construction activity. Geotube certification reports shall be submitted no more than 21 days after completion of geotube placement.

The permittee must obtain Department approval of the certification reports for the disposal impoundment embankments and geotubes prior to any waste disposal within the adjacent disposal area.

A registered Pennsylvania professional engineer shall certify in writing on Form 19R, provided by the Department, for each phase of the construction, under penalty of law respecting unsworn falsification to authority (18 Pa. C.S. Section 4904), indicating that he/she has personally examined the construction of said phase and it is constructed and prepared in accordance with the documents, statements, design, and plans submitted as part of the application as approved by the Department. The above certifications shall include at a minimum the test results required in the approved Construction Quality Assurance/Quality Control Plan in Attachment 16R-6 of the approved application.

14. All wastewater (supernatant, contact surface water, leachate and seeps that have been contaminated by the Impoundment (determined either by the permittee or Department)) collected in or conveyed to the permitted facility shall be managed as described in Form 17R of the approved application, subject to the following conditions:
- A. The permittee shall take all measures necessary to ensure that NPDES permit limitations for point source discharges from or associated with the Impoundment are not exceeded.
- B. Wastewater discharged from the permitted facility shall be measured at the NPDES Outfall 022 sampling location on a daily basis for flow rate in accordance with 25 Pa. Code Section 289.456(a)(1). Flow measurement data collected in compliance with this condition shall be incorporated into the quarterly monitoring report submission required by Permit Condition No. 28 below.
- C. The chemical composition of the wastewater discharged through the secondary spillway at the permitted facility shall be analyzed in accordance with 25 Pa. Code Section 289.456(a)(2). The parameters and frequency of analyses shall correspond to the requirements for water quality monitoring as set forth in 25 Pa. Code Section 289.264(a)(1) and (a)(3). The results of the chemical analyses performed relative to this condition shall be incorporated into the quarterly monitoring report submission required by Permit Condition No. 28 below.
- D. The discharge of collected seeps directly into the secondary spillway is prohibited until approval to do so is granted by the Department's Clean Water Program.

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15. The permittee shall conduct closure and postclosure maintenance and monitoring as described in Form 18R of the approved application, subject to the following conditions:
- A. Closure construction shall be completed on or before December 31, 2028. In the event that the permittee is prevented from complying in a timely manner with this completion period solely because of a strike, fire, flood, act of God, or other circumstance beyond the permittee's control (including unexpected site conditions that have or will slow closure progress) and which the permittee, by the exercise of all reasonable diligence, is unable to prevent, mitigate or rectify, then the permittee may petition the Department for an extension of time by submitting an application for a major permit modification and providing documentation to the Department establishing sufficient justification for the requested extension.
 - B. The permittee shall conduct an annual closure construction progress evaluation to assess the rate of progress achieved during the preceding construction season, analyze the circumstances which impeded or accelerated the rate of progress, propose measures by which to improve the rate of progress and revise the closure sequence drawings for the remainder of closure construction consistent with the results of the evaluation. A report of the results of that evaluation shall be submitted to the Department on or before December 31 each year until completion of closure construction.
 - C. Beginning on the date of closure and continuing until issuance of final closure certification by the Department, the permittee shall conduct periodic inspections of the Impoundment and environmental control systems installed at the facility in accordance with the schedule presented in Exhibit 18R-2.1.
16. Surety Bond Nos. K0839941 and K0839953 dated March 12, 2014 with FirstEnergy Generation, LLC as principal and Westchester Fire Insurance Company as surety for the amount of \$169,272,180 and executed between the permittee and Department is approved in support of this 1694.9 acre permit.
17. The permittee shall within sixty (60) days of issuance of this permit submit to the Department's Regional Air Quality Program a completed 'Request for Determination of Changes of Minor Significance and Exemption from Plan Approval/Operating Permit under 25 Pa. Code Sections 127.14 or 127.449', and all requisite supporting documentation, in a format conforming to the instructions contained in DEP Document No. [2700-BK-DEP4103](#).
18. The permittee shall not allow any blasting to be performed within the permit area, or at any location owned by the permittee that is within 300 feet of the permit area, without first having obtained a major modification to this permit and all required Blasting Activity and Dam Safety approvals.
19. The permittee shall implement closure and postclosure activities for the Impoundment in accordance with this permit and the Department's residual waste regulations.
- A. If the permittee believes that all closure and postclosure requirements applicable to the Impoundment have been met, the permittee may file a request with the Department for "Final Closure Certification" which, when issued, is the date after which no further treatment, maintenance, or other action is or will be necessary at the Impoundment to ensure compliance with the Solid Waste Management Act and the Department's residual waste regulations.
 - B. The Department will not issue a final closure certification unless the permittee demonstrates that:

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- i. The applicable operating requirements of the act, the environmental protection acts, the Department's residual waste regulations, the permit, the approved closure plan and orders of the Department have been complied with.
 - ii. The applicable remediation standards are met and maintained at the applicable compliance points.
 - iii. No further remedial action, maintenance or other activity by the permittee is necessary to continue compliance with the act, the environmental protection acts, the residual waste regulations, the permit, the approved closure plan and orders of the Department.
 - iv. The facility is not causing adverse effects on the environment, and is not causing a nuisance.
- C. Upon a request for final closure certification, the Department will inspect the Impoundment to verify that closure, postclosure and final closure have been completed as provided in this Section (B).
- D. The date of the Department's final closure certification shall be the date of commencement of the 10-year postclosure bond liability period following final closure.
- E. The final closure certification will not be construed as a guarantee of future performance nor will it constitute a waiver or release of bond liability or other liability existing in law or equity for adverse environmental effects or conditions of noncompliance at the time of the certification or at a future time, for which the permittee shall remain expressly liable. The issuance of a final closure certification does not discharge an owner or operator from liability to restore the groundwater to remediation standards and to maintain groundwater quality, at a minimum, at those levels.
- F. If subsequent to the issuance of a certification of final closure, the Department determines that additional postclosure measures are required to abate or prevent adverse effects upon the environment or the public health, safety and welfare, the Department will issue a written notice to the permittee setting forth the schedule of measures to be taken to bring the facility into compliance. The measures include the applicable requirements of the Department's residual waste regulations.
- G. If after the issuance of a certification of final closure the Department determines that the level of risk is increased beyond the acceptable range at the Impoundment due to substantial changes in exposure conditions, such as in a change in land use from a nonresidential to a residential use, or new information is obtained about a substance associated with the Impoundment which revises exposure assumptions beyond the acceptable range, additional remediation shall be required.
20. If there is a conflict between the application, its supporting documents and/or amendments and the terms and conditions of this permit, the terms and conditions of this permit shall apply.
21. Any final operational, design or other plan developed subsequent to permit issuance which exhibits changes in structure, location, specification or other changes of substance shall be submitted to the Department for subsequent permit action. Any deviation from the plans herein approved shall not be implemented before first obtaining a permit amendment or written approval from the Department.
22. Approval of this permit modification does not guarantee site stability or operational effectiveness, or connote Department concurrence in all opinions or conclusions set forth in the application documents. Failure of this site to perform as intended or designed according to the application documents herein approved for any reason,

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or in accordance with the requirements of any applicable law or regulations or in a manner protective of human health and the environment, shall be sufficient grounds for modification, revocation or suspension of this permit.

23. This permit shall not be construed to supersede, amend, or authorize a violation of any of the provisions of any valid and applicable local law, ordinance, or regulations; providing that said local law, ordinance, regulation, or condition is not preempted by the Pennsylvania Solid Waste Management Act, the Act of July 7, 1980, P.L. 380, No. 97, 35 P.S. 6018.101 *et seq.*
24. This permit does not authorize nor shall be construed as an approval to discharge industrial waste, including without limitation, any wastewater discharge from the permitted area, without first obtaining necessary permits required by the Clean Streams Law.
25. This permit shall not be construed to authorize the removal of minerals by surface mining without the permittee first obtaining all necessary permits and authorizations pursuant to the Surface Mining Conservation and Reclamation Act, 52 P.S. Sections 1396.1, *et seq.*, and the Clean Streams Law, 35 P.S. Sections 691.1 *et seq.*
26. The permittee shall comply with and construct, implement and maintain all structures in accordance with the following permits: NPDES Nos. PA0027481 and WV0117021, WQM Part II No. 0474204, Air Quality Operating Permit No. 04-0235, Dam Safety Permit Nos. D04-049 and D04-068, Water Obstruction and Encroachment Permit I.D. No. E04-308, General Permit No. 09-Agricultural Activities LD Nos. GP090406202, GP090406203, GP090406204 and GP090406204, and all applicable amendments and modifications thereto.
27. The requirements of this permit may be supplemented or modified pursuant to the requirements of the NPDES Permits, or other permit or order, issued by the Department.
28. On a quarterly basis, the permittee shall prepare and submit a report to the Department in accordance with Condition Nos. 7.H, 10, 12.A, 12.C, 14.B and 14.C of this permit. The quarterly report shall be presented in two volumes, divided as follows:

Volume 1: Groundwater sampling results
Surface water sampling results
Seep and spring sampling results
Domestic water supply sampling results

Volume 2: Sampling and monitoring results per Permit
Condition Nos. 14.B and 14.C
Dustfall monitoring results
Final Cover Assessment Report

An original and one copy of each volume shall be submitted to:

PA Department of Environmental Protection
Regional Manager, Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

One copy shall also be submitted to:

Assistant Director of Permits
Division of Water and Waste
WV Department of Environmental Protection
601 57th Street SE
Charleston, WV 25304

Beaver County Planning Commission
Beaver County Courthouse
810 Third Street
Beaver, PA 15009

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Hancock County Commissioners
P.O. Box 485
New Cumberland, WV 26047

Greene Township
262 Pittsburgh Grade Road
Hookstown, PA 15050

29. On or before June 30 and December 31 of each year, the permittee shall submit semi-annual reports regarding operation and closure of the permitted facility and compliance with this permit. The report due by December 31 shall contain the following:

- A Summary of Seep Identification, Monitoring, and Management activities during the preceding reporting period,
- A Closure Construction Progress Evaluation for the preceding construction season pursuant to Permit Condition No. 15.C,
- An updated Closure Sequencing and Construction Schedule for the ensuing construction seasons,
- A CCB Settlement and Piezometric Monitoring Report based on information collected pursuant to Attachment 16R-7 of the approved application, and
- An aerial photograph depicting the permit area and reproduced on photographic paper at a scale of 1-inch = 500 feet.

The report due by June 30 shall contain the following:

- A Summary of Seep Identification, Monitoring, and Management activities during the preceding reporting period, and
- Documentation required in 25 Pa. Code Section 289.303 for the preceding calendar year.

An original and one copy of the semi-annual reports shall be submitted to:

PA Department of Environmental Protection
Regional Manager, Waste Management
400 Waterfront Drive
Pittsburgh, PA 15222-4745

One copy shall also be submitted to:

Assistant Director of Permits
Division of Water and Waste
WV Department of Environmental Protection
601 57th Street SE
Charleston, WV 25304

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Table 1 - Groundwater Monitoring Wells

WELL NO.	FORMATION	GRADIENT POSITION
MW-1	Clarion/Homewood	downgradient
MW-2R	Clarion	downgradient
MW-3A	Freeport	downgradient
MW-3B	Lower Glenshaw	downgradient
MW-4AR	Freeport	downgradient
MW-4B	Lower Glenshaw	downgradient
MW-5R	Lower Glenshaw	downgradient
MW-6	Lower Glenshaw	downgradient
MW-7A	Freeport	downgradient
MW-7B	Mid/Low Glenshaw	downgradient
MW-8	Lower Glenshaw	downgradient
MW-9BR	Lower Glenshaw	downgradient
MW-10R	Lower Glenshaw	downgradient
MW-11A	Freeport	downgradient
MW-11B	Lower Glenshaw	downgradient
MW-12B	Lower Glenshaw	downgradient
MW-12C	Middle Glenshaw	downgradient
MW-13A	Clarion/Homewood	downgradient
MW-13B	Kittanning/Clarion	downgradient
MW-14AR	Lower Glenshaw	downgradient
MW-14BR	Freeport	downgradient
MW-15A	Clarion	downgradient
MW-15B	Clarion Coal	downgradient
MW-16A	Lower Glenshaw	downgradient
MW-16B	Freeport	downgradient
MW-16C	Lower Kittanning Coal	downgradient
MW-17A	Lower Glenshaw	downgradient
MW-17B	Freeport	downgradient
MW-18A	Worthington	downgradient
MW-18B	Lower Kittanning	downgradient
MW-19A	Kittanning Coal	downgradient
MW-19B	Kittanning	downgradient
MW-20A	Worthington	downgradient
MW-20B	Kittanning	downgradient
MW-21A	Freeport	downgradient
MW-21B	Worthington	downgradient
MW-22B	Kittanning	downgradient
MW-23A	Kittanning	downgradient
MW-23B	Clarion	downgradient
MW-24	Middle Glenshaw	downgradient
MW-25	Middle Glenshaw	upgradient
MW-26	water table	downgradient
MW-26A	water table	to be determined

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Table 1 (cont.) - Groundwater Monitoring Wells

WELL NO.	FORMATION	GRADIENT POSITION
MW-26B	Lower Glenshaw	to be determined
MW-27	water table	to be determined
MW-28	water table	to be determined
MW-29A	Freeport	downgradient
MW-29B	Worthington	downgradient
MW-29C	Kittanning	downgradient
MW-29D	Clarion	downgradient
MW-30A	Middle Glenshaw	upgradient
MW-30B	Lower Glenshaw	upgradient
MW-30C	Freeport	upgradient
MW-30D	Worthington	upgradient
MW-30E	Kittanning	upgradient
MW-30F	Clarion	upgradient
MW-31A	Kittanning	downgradient
MW-31B	Clarion	downgradient
MW-32A	Freeport	downgradient
MW-32B	Worthington	downgradient
MW-32C	Kittanning	downgradient
MW-32D	Clarion	downgradient
MW-33A	Freeport	downgradient
MW-33B	Worthington	downgradient
MW-33C	Kittanning	downgradient
MW-33D	Clarion	downgradient
MW-34	water table	downgradient
MW-101	Middle Glenshaw	downgradient
MW-102	Middle Glenshaw	downgradient
MW-102B	Mahoning Coal	downgradient
MW-103A	Middle Glenshaw	downgradient
MW-103B	Mahoning Coal	downgradient
MW-103C	Lower Glenshaw	downgradient
MW-105B	Mahoning Coal	downgradient
MW-106	Middle Glenshaw	downgradient
MW-106B	Mahoning Coal	downgradient
MW-107A	Middle Glenshaw	downgradient
MW-107B	Mahoning Coal	downgradient
MW-107C	Lower Glenshaw	downgradient
MW-108	Middle Glenshaw	downgradient
MW-110	Middle Glenshaw	downgradient
MW-111	Middle Glenshaw	downgradient
MW-113	Middle Glenshaw	downgradient
MW-114A	Middle Glenshaw	downgradient
MW-114B	Middle Glenshaw	downgradient
MW-116A	Middle Glenshaw	downgradient
MW-116B	Mahoning Coal	downgradient

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Table 2 – Surface Water Points

SAMPLE POINT	LOCATION	POSITION
SW-1R	Stream to Impoundment (PA Finger)	upstream
SW-1R2	Stream to Impoundment (PA Finger)	downstream
SW-3	Stilling Basin (Outfall 022)	downstream
SW-4	Little Blue Run	downstream
SW-5	Impoundment Leachate	
SW-6	Toe Drain to Stilling Basin	downstream
SW-7	Impoundment	
S-8A	Spring to Mill Creek	downstream
S-9A	Surface Water to Laughlin Collection System (pumped to Impoundment)	downstream
S-10-MC	Mill Creek	downstream
S-11-MC	Mill Creek	downstream
S-12-MC	Mill Creek (Hookstown Fair Grounds)	upstream
S-16-MC	Mill Creek	downstream
S-19AC	Spring to Mill Creek	downstream
S-23	Unnamed Trib. to Marks Run	downstream
S-23A	Unnamed Trib. to Marks Run	downstream
S-29A	Hillyard Pond to Ohio River	downstream
S-30CD	Stream to S-30 Collection System (pumped to Impoundment)	downstream
S-31D	Drop Inlet at Bottom of S-31 Access Road	downstream
S-31 Tributary	Spring/Seep to Unnamed Trib. to Marks Run	downstream
S-32	Unnamed Tributary to Mill Creek	downstream
S-33	Unnamed Tributary to Mill Creek	downstream
S-34	Unnamed Tributary to Mill Creek	downstream
S-35	Unnamed Tributary to Mill Creek	downstream
S-37P	Spring/Seep to Unnamed Trib. to Marks Run (Hebrock front yard)	downstream
S-37P1	Spring/Seep to Unnamed Trib To Marks Run (Hebrock front yard)	downstream
S-44	Seep to Unnamed Trib. to Marks Run	downstream
S-45	Surface Water to Unnamed Tributary to Marks Run	downstream
S-52	Unnamed Tributary to Marks Run	downstream
S-55	Stream to Impoundment (WV Finger)	downstream
Doberman-1	Storm Sewer to Unnamed Trib. to Marks Run	downstream
Doberman-2	Storm Sewer to Unnamed Trib. to Marks Run	downstream
LR-1	Unnamed Tributary to Marks Run	downstream
LR-2	Unnamed Tributary to Marks Run	downstream
MR	Marks Run	downstream
First Valley	Spring to Ohio River	downstream
Second Valley	Spring to Ohio River	downstream
Haven's Ditch	Seep to Hillyard Pond to Ohio River	downstream
Outfall 021	Spring/Seep to Unnamed Trib. to Marks Run	downstream
Outfall 022	NPDES Discharge Point	downstream
Outfall 027	Spring/Seep to Outfall 022	downstream

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Table 3 – Seeps and Springs (downgradient unless otherwise noted)

SAMPLE POINT	LOCATION
S-1VA	Spring to unnamed tributary to Ohio River
S-1VB	Spring to unnamed tributary to Ohio River
S-1VC	Spring to unnamed tributary to Ohio River
S-1VD	Spring to unnamed tributary to Ohio River
S-1VE	Spring to unnamed tributary to Ohio River
S-1VF	Spring to unnamed tributary to Ohio River
S-1VG	Spring to unnamed tributary to Ohio River
S-1VH	Spring to unnamed tributary to Ohio River
S-1VI	Spring to unnamed tributary to Ohio River
S-2VA	Spring to unnamed tributary to Ohio River
S-2VB	Spring to unnamed tributary to Ohio River
S-2VC	Spring to unnamed tributary to Ohio River
S-2VD	Spring to unnamed tributary to Ohio River
S-2VE	Spring to unnamed tributary to Ohio River
S-2VF	Spring to unnamed tributary to Ohio River
S-5	Spring/Seep to Little Blue Run (discharged through Outfall 027) sample at source
S-8	Spring/Seep to Mill Creek
S-9B	Spring to unnamed tributary to Mill Creek
S-9C	Spring to unnamed tributary to Mill Creek
S-9D	Spring to unnamed tributary to Mill Creek
S-9E	Spring to unnamed tributary to Mill Creek
S-9F	Spring to unnamed tributary to Mill Creek
S-9G	Spring to unnamed tributary to Mill Creek
S-9H	Spring to unnamed tributary to Mill Creek
S-9I	Spring to unnamed tributary to Mill Creek
S-9J	Spring to unnamed tributary to Mill Creek
S-11A	Spring to unnamed tributary to Mill Creek
S-11B	Spring to unnamed tributary to Mill Creek
S-11C	Spring to unnamed tributary to Mill Creek
S-11D	Spring to unnamed tributary to Mill Creek
S-11E	Spring to unnamed tributary to Mill Creek
S-11F	Spring to unnamed tributary to Mill Creek
S-13	Spring/Seep to Mill Creek
S-14	Spring/Seep to Up. Freeport Collection System (pumped to Stilling Basin)
S-15	Spring/Seep to Up. Freeport Collection System (pumped to Stilling Basin)
S-16	Spring/Seep to Mill Creek
S-16 South	Spring/Seep to Mill Creek
S-16A	Spring to unnamed tributary to Mill Creek
S-16B	Spring to unnamed tributary to Mill Creek
S-16C	Spring to unnamed tributary to Mill Creek
S-16D	Spring to unnamed tributary to Mill Creek
S-16E	Spring to unnamed tributary to Mill Creek
S-17	Spring/Seep to Outfall 027

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Table 3 (cont.) – Seeps and Springs

SAMPLE POINT	LOCATION
S-17A	Spring/Seep to Outfall 027
S-18	Spring/Seep to Mill Creek
S-19	Spring/Seep to Mill Creek (Outfall 026)
S-19A	Spring/Seep to Mill Creek
S-19B	Spring/Seep to Mill Creek
S-19D	Spring to unnamed tributary to Mill Creek
S-19E	Spring to unnamed tributary to Mill Creek
S-19F	Spring to unnamed tributary to Mill Creek
S-19G	Spring to unnamed tributary to Mill Creek
S-19U	Spring to unnamed tributary to Mill Creek
S-21	Spring/Seep to Mill Creek
S-21A	Spring/Seep to Mill Creek
S-21B	Spring/Seep to Mill Creek
S-21C	Spring/Seep to Mill Creek
S-21D	Spring/Seep to Mill Creek
S-22	Spring/Seep to Mill Creek (Outfall 024)
S-24	Spring/Seep to Up. Freeport Collection System (pumped to Stilling Basin)
S-24A	Spring/Seep to Up. Freeport Collection System (pumped to Stilling Basin)
S-25	Spring/Seep to Up. Freeport Collection System (pumped to Stilling Basin)
S-25A	Spring/Seep to Up. Freeport Collection System (pumped to Stilling Basin)
S-26	Seep to Outfall 027 sample at source
S-27	Seep to Outfall 027 sample at source
S-28	Betty Smith Spring to Unnamed Tributary to Ohio River
S-29	Spring/Seep to Hillyard Pond
S-29B	Spring/Seep to Ohio River
S-30	Stream to S-30 Collection System (pumped to the Impoundment)
S-31	Stream to S-31 Collection System (pumped to the Impoundment)
S-31 Mine	Stream to S-31 Collection System (pumped to the Impoundment)
S-32A	Spring to unnamed tributary to Mill Creek
S-32B	Spring to unnamed tributary to Mill Creek
S-32C	Spring to unnamed tributary to Mill Creek
S-32D	Spring to unnamed tributary to Mill Creek
S-32E	Spring to unnamed tributary to Mill Creek
S-33A	Spring to unnamed tributary to Mill Creek
S-33B	Spring to unnamed tributary to Mill Creek
S-34A	Spring to unnamed tributary to Mill Creek
S-34B	Spring to unnamed tributary to Mill Creek
S-34C	Spring to unnamed tributary to Mill Creek
S-34D	Spring to unnamed tributary to Mill Creek
S-34E	Spring to unnamed tributary to Mill Creek
S-34F	Spring to unnamed tributary to Mill Creek
S-35A	Spring to unnamed tributary to Mill Creek

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Table 3 (cont.) – Seeps and Springs

SAMPLE POINT	LOCATION
S-35B	Spring to unnamed tributary to Mill Creek
S-35C	Spring to unnamed tributary to Mill Creek
S-35D	Spring to unnamed tributary to Mill Creek
S-35E	Spring to unnamed tributary to Mill Creek
S-35F	Spring to unnamed tributary to Mill Creek
S-35G	Spring to unnamed tributary to Mill Creek
S-35H	Spring to unnamed tributary to Mill Creek
S-35I	Spring to unnamed tributary to Mill Creek
S-35J	Spring to unnamed tributary to Mill Creek
S-35K	Spring to unnamed tributary to Mill Creek
S-35L	Spring to unnamed tributary to Mill Creek
S-35M	Spring to unnamed tributary to Mill Creek
S-35N	Spring to unnamed tributary to Mill Creek
S-36	Spring/Seep to Unnamed Trib. to Marks Run
S-37	Spring/Seep to Unnamed Trib. to Marks Run
S-38	Spring/Seep to Unnamed Trib. to Marks Run
S-39	Spring/Seep to Unnamed Trib. to Marks Run
S-41	Spring/Seep to Unnamed Trib. to Marks Run
S-42	McLaughlin Spring to Unnamed Trib. to Marks Run
S-43	Cooper Spring to Unnamed Trib. to Marks Run
S-46	Neverly Seep/Spring
S-47	Miller Seep/Spring
S-48	Seep/Spring to Unnamed Trib. to Marks Run
S-49	Seeps to Sump Pump (Byers Driveway) to S-30 collection system (pumped to the Impoundment)
S-50	Spring to Unnamed Tributary to Marks Run (Diaz property)
S-51	Spring to Unnamed Tributary to Marks Run (Diaz property)
S-53	Spring/Seep (S-30 trib below pump station) to unnamed trib. to Marks Run
S-54	Johnsonville Road Seep to Unnamed Trib. to Marks Run
S-54A	Seep to Unnamed Trib. to Marks Run
S-56	Spring to unnamed tributary to Mill Creek
S-57	Spring to unnamed tributary to Mill Creek
S-59	Spring to unnamed tributary to Mill Creek
S-58	Spring to unnamed tributary to Mill Creek
S-59A	Spring to unnamed tributary to Mill Creek
S-60	Spring to unnamed tributary to Mill Creek
S-61	Spring to unnamed tributary to Mill Creek
S-62	Spring to unnamed tributary to Mill Creek
S-63	Spring to unnamed tributary to Mill Creek
S-64	Spring to unnamed tributary to Mill Creek
S-65	Spring to unnamed tributary to Mill Creek
S-66	Seep to Little Blue Run

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Table 3 (cont.) – Seeps and Springs

SAMPLE POINT	LOCATION
S-67	Cistern
S-68	Seep to unnamed tributary to Mill Creek
S-75	Seep to Stilling Basin
S-76	Seep to Stilling Basin
S-77	Seep to Stilling Basin
S-78	Seep to Stilling Basin
S-79	Seep to Stilling Basin
S-80	Seep to Stilling Basin
S-81	Seep to Stilling Basin
S-82	Seep to Stilling Basin
S-83	Seep to Stilling Basin
S-84	Seep to Stilling Basin
S-85	Seep to Stilling Basin
S-86	Seep to Stilling Basin
J-1	Spring/Seep to Mill Creek
J-1A	Spring/Seep to Mill Creek
J-1B	Spring/Seep to Mill Creek
J-1C	Spring/Seep to Mill Creek
J-2	Spring/Seep to Mill Creek
J-2A	Spring to unnamed tributary to Mill Creek
P. Byard	Spring to Unnamed Trib. to Marks Run
Stipec Spring	Spring to Unnamed Trib. To Ohio River
Right/East Abutment	Aggregate flow of right Dam Abutment Seeps to Stilling Basin
Left/West Abutment	Aggregate flow of left Dam Abutment Seeps to Stilling Basin
First Valley Landslide	Spring to Ohio River
First Pipe	Spring to Ohio River
Second Pipe	Spring to Ohio River
Third Pipe	Spring to Ohio River
S-3PA	Spring to Ohio River
Fourth Pipe	Spring to Ohio River
S-4PA	Spring to Ohio River
S-4PB	Spring to Ohio River
S-4PC	Spring to Ohio River
S-17 Pipe	Spring to Ohio River
AR-1	Spring to Mill Creek (Outfall 023) sample at source
OGW	Abandoned gas well

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Table 4 - Domestic Wells

Well Designation		Well Designation
DW-11A		DW-65
DW-11B		DW-66
DW-13		DW-67 (Derda)
DW-15		DW-72
DW-18		DW-74
DW-21		DW-83
DW-39		DW-86
DW-40		DW-87
DW-41		DWQ-3
DW-42		DWQ-69
DW-44		DWQ-04-1
DW-44A		DWQ-04-2
DW-45		M. Allison
DW-46		G. Conkle
DW-49		T. Cooper
DW-50		McGaffick
DW-51		McLaughlin
DW-52		A. Policastro
DW-53		C. Policastro
DW-59 (Stipec)		Rhodes #1
DW-60		Rhodes #2
DW-60HB		J. Smith
DW-61		