pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

**Southwest Regional Office**
**CLEAN WATER PROGRAM**

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|---|---|---|---|
| Application Type | **Renewal** | Application No. | **PA0091910** |
| Facility Type | **Industrial** | APS ID | **662600** |
| Major / Minor | **Minor** | Authorization ID | **1395672** |

# NPDES PERMIT FACT SHEET INDIVIDUAL INDUSTRIAL WASTE (IW) AND IW STORMWATER

## Applicant and Facility Information

| | | | |
|---|---|---|---|
| Applicant Name | **Alex E. Paris Contracting Company, Inc.** | Facility Name | **Paris Flyash Landfill** |
| Applicant Address | P.O. Box 369, 1595 Smith Township State Road (Rt. 18) | Facility Address | Frankfort Springs – Murdocksville Road |
| | Atlasburg, PA 15004 | | Hookstown, PA 15050 |
| Applicant Contact | Emanuel Paris | Facility Contact | Emanuel Paris |
| Applicant Phone | 724-947-2235 | Facility Phone | 724-947-2235 |
| Client ID | 33092 | Site ID | 521850 |
| SIC Code | 4953 | Municipality | Hanover Township |
| SIC Description | Trans. & Utilities - Refuse Systems | County | Beaver |
| Date Application Received | November 5, 2008 | EPA Waived? | Yes |
| Date Application Accepted | November 12, 2008 | If No, Reason | N/A |
| Purpose of Application | Renewal of NPDES permit PA0091910 | | |

## Summary of Review

The Pennsylvania Department of Environmental Protection (Department) received an NPDES permit renewal application for the Paris Flyash Landfill in Hanover Township of Beaver County on November 5, 2008. The current permit was issued on May 6, 2004 and became effective June 1, 2004. The permit expired on May 31, 2009 and has been administratively extended following receipt of the complete renewal application on December 4, 2020 and additional data on December 18, 2020 and March 22, 2021.

The landfill received flyash, bottom ash and flue gas desulfurization sludge exclusively from the Applied Energy Services Beaver Valley Generation Plant (AES) in Monaca. The coal-fired cogeneration plant closed in October 2015 and the Paris Flyash Landfill ceased operations shortly after.

After the NPDES permit was renewed in 2004, the facility expanded the landfill to the north and east to allow for continued operation since the landfill was approaching closure in the existing area. The entire landfill has an HDPE liner system over compacted soil. There is no membrane cap on the landfill but is covered with at least two feet of soil and vegetation. This results in precipitation infiltrating through the cover, percolating through the waste material and commingling with the leachate.

Leachate Treatment System

The current, newer leachate treatment system in the northeast corner of the property was approved by the Department and permitted under Water Quality Management (WQM) Part II Permit 0400203. The older, now closed leachate treatment plant was previously permitted by Water Quality Management Part II Permit No. 0492201 and subsequent amendment. That treatment plant was closed when the landfill expanded, and the newer sedimentation basin construction was completed.

| Approve | Deny | Signatures | Date |
|---|---|---|---|
| X | | Adam Olesnanik / Project Manager | 5/11/2022 |
| X | | Michael E. Fifth, P.E. / Environmental Engineer Manager | 5/11/2022 |

**Summary of Review**

The leachate is collected by a series of underdrains which directs the water by gravity to Manhole MH-D adjacent to the leachate treatment basin. Another adjacent manhole, Manhole A, receives groundwater from below the original leachate pond constructed in 1993 and also enters the current leachate pond for treatment. The capacity of the treatment pond is 2.6 million gallons, not including the additional volume provided by 2 feet of freeboard. At the maximum design flow of 0.35 MGD the detention time is 7.4 days and at an average flow of approximately 0.02 MGD the detention time is 130 days.

The basin has an outlet pipe that can be adjusted for elevation to control the discharge. Water cascades over this outlet pipe and into a wet well equipped with a composite sampler, manual pump station and flow meter. Water then flows via a 4-inch HDPE 100 psig rated force main pipeline for 3.3 miles to the receiving stream, Raccoon Creek. Flow is non-continuous and varies based on precipitation. Discharges are present for approximately 84 days per year (roughly 25%). The pump is typically operated for 7 consecutive days at the beginning of each month. A flow meter is located at the outfall to compare to the pump station as a means to determine if there are any leaks or other compromises to the pipeline.

The treatment basin was designed to utilize chemical injection and recirculation pumps only as needed, if needed. The facility has been able to meet effluent limits without either of these technologies, and so they have been removed from the site. The chemical feed was installed to precipitate manganese from the leachate if the influent manganese was elevated as it was in the past due to the AMD in the groundwater below the landfill liner.

It was planned that solids would be removed once per year and placed in the landfill. Since the landfill has ceased operations, solids are generated at a continuously reducing rate. Solids are currently removed based on visual observation of the sludge depth. The solids are disposed of in the landfill since the site is not at final closure, though no other wastes other than solids at the landfill itself are disposed of since 2015.

Outfall Descriptions

The facility has a total of four outfalls. Outfall 001 discharges the treated landfill leachate to Raccoon Creek, designated in Pa Code Chapter 93.9w as a Warm Water Fishery (WWF). Raccoon Creek is impaired for aquatic life due to metals and pH from acid mine drainage (AMD). A Total Maximum Daily Load (TMDL) was finalized on February 3, 2005 for the Raccoon Creek Watershed. The TMDL notes the cause of the impairment to be low pH and elevated iron, aluminum, and manganese stemming from AMD in the affected stream segments.

Outfalls 002, 003 and 004 discharge surface runoff stormwater from sedimentation basins that were constructed for erosion and sedimentation (E&S) control during the landfill expansion. Outfall 002 was approved in the 2004 NPDES permit for discharge from Sedimentation Basin A. Outfall 003 is a new discharge from Sedimentation Basin B whose construction was completed in 2010. Both outfalls discharge to Wingfield Run, designated in Pa Code Chapter 93.9w as a Warm Water Fishery (WWF). Wingfield Run is attaining its designated use and supporting aquatic life, but it is a part of the Raccoon Creek TMDL watershed. Stormwater from Sedimentation Basin C (constructed in the 1990s), discharges through Outfall 004. The basin was constructed as an outfall for the now closed landfill under Solid Waste Permit 300595. This is a new outfall in the renewal and is not currently included in the NPDES permit. The discharge enters an unnamed Tributary 33776 of Wingfield Run.

*Truck Wheel Wash - Ceased*

The facility had a truck wheel wash near the property entrance that discharged through Outfall 001. Since the landfill closed, the truck wheel wash has been abandoned in place and there is no discharge pumped to Outfall 001 from this area.

*Acid Mine Drainage*

A benthic macroinvertebrate investigation was conducted in 1991 to collect information for a database which documents stream conditions above and below the proposed landfill permit area. Additionally, conditions in Wingfield Run above and below the unnamed tributary that originates at the landfill were also included in the investigation. Three stations in Wingfield Run were sampled, as well as one station in the unnamed tributary to Wingfield Run (ST-4D). Based on the map of sampling locations, ST-4D appears to be at approximately latitude 40° 28’ 52” and longitude -80° 25’ 44”. The unnamed tributary originated at the edge of the proposed location for the new landfill. The investigation report notes that at this station was a white precipitate that was thought to be aluminum and/or manganese which was not observed at any of the other sampling stations. Chemical and biological data analyzed from ST-4D indicated severe impact from acid mine drainage (AMD). Some chemical data was pH 3.7 S.U., alkalinity <2 mg/L, aluminum 43.7 mg/L, iron 2.36 mg/L, zinc 0.521 mg/L, TDS 1780 mg/L and manganese 18.3 mg/L. The reported concluded AMD from the unnamed tributary was impacting Wingfield Run as observed in results at station ST-2D located downstream of the tributary. Another tributary to Wingfield Run originating at the existing landfill appeared to

**Summary of Review**

buffer the impacts of the AMD and a recovering macroinvertebrate community was observed at ST-1D downstream of ST-2D. See Attachment E for more details.

During the 1992 NPDES permit renewal review, it was noted that groundwater underneath the newer landfill area was to be intercepted and directed to the newer leachate treatment system to prevent the liner from uplifting. The groundwater was impacted from the AMD. The 1993 WQM Part II Permit 0492201 Fact Sheet for the treatment system states that the underdrain is 4-inch diameter PVC but could not be visually located by the Department during site visits. The drainpipe originated beneath the liner. The 1997 WQM Part II Permit 0492201-A1 amendment Fact Sheet addresses aluminum, manganese and boron exceedances in the discharge. The facility added a floating baffle to split the basin into multiple zones to properly settle aluminum (neutral pH) and manganese (9.0 pH or greater), a pump and sump to convey the underdrain, gravity chemical feed system, and pond recirculating pumps. Manhole No. 1 received the landfill leachate before entering the treatment pond, and Manhole No. 2 received the groundwater separation drain and AMD before entering the treatment pond.

In 2000 the permittee received WQM Part II Permit 0400203 to construct a new treatment facility for the expanded landfill. The basin had to be relocated and enlarged to accommodate the expansion project. It is noted in the fact sheet that in addition to treating fly ash, bottom ash and flue gas desulfurization sludge leachate, the treatment facility will also receive and treat acid mine drainage. The basin is to treat the remaining leachate from the old landfill area, as well as leachate from the expanded area.

A Consent Order and Agreement (CO&A) was signed on November 6, 1992 and later amended on June 24, 1996. The CO&A amendment states “The Department has determined that the discharge from the pond underdrain system is not authorized by the NPDES permit. By letter dated June 22, 1993 accompanying Amendment 1 to the NPDES permit, the Department advised Paris to uncover the underdrain and route the discharge to the treatment facility. The Department has determined that this discharge can be conveyed to the existing treatment facility without an amendment to the NPDES permit.” The CO&A goes on to require a detailed plan for conveyance of the underdrain discharge to the existing treatment facility, submit a WQM Part II permit application, complete construction, and comply with limitations at Outfall 002. Since Outfall 002 and the associated treatment facility closed, the CO&A is no longer in effect.

The current NPDES permit issued in 2004 includes “acid mine drainage” in the Outfall 001 description. The WQM Part II Permit 0400203 notes acid mine drainage will be received. The permittee has confirmed that the underdrain from the original leachate pond was extended to Manhole A which discharges into the new, current leachate pond and was performed as part of construction that started in 2000.

The WQM Part II permit fact sheet noted occasional high manganese concentrations from an old mine drainage discharge on the property. It was expected that the expansion of the landfill would result in a lower AMD proportion of the total wastewater flow and that chemical treatment may not be needed. The permit authorized sodium hypochlorite for oxidation and potassium hydroxide for precipitation of manganese if needed. The chemicals have not been in use at the facility for years since the reroute of the discharge through the forced main to Raccoon Creek.

Site Specific Criteria Expired

The discharge from Outfall 001 previously discharged to an unnamed tributary of Wingfield Run. A November 1995 Report for the development of site-specific criteria for boron was reviewed and approved by the Department. The statewide criteria for boron at the time, listed in 25 Pa Code Chapter 16, Water Quality Toxics Management Strategy, Statement of Policy, was 1610 ug/L (criteria continuous concentration), 8050 ug/L (criteria maximum concentration), and 3000 ug/L (human health). The approved site-specific criteria were 25 mg/L (criteria continuous concentration) and 125 mg/L (criteria maximum concentration). The human health criterion was not altered and remained at 3 mg/L. The permittee decided to pipe the landfill leachate discharge to the larger Raccoon Creek water body. Stormwater continues to discharge to Wingfield Run. The permittee sampled for boron from Outfall 002 and 003. There is no potential to exceed the criteria based on the resultant concentrations, and so the permittee has decided not to renew the site-specific criterion for boron.

Public Participation

DEP will publish notice of the receipt of the NPDES permit application and a tentative decision to issue the individual NPDES permit in the *Pennsylvania Bulletin* in accordance with 25 Pa. Code § 92a.82. Upon publication in the *Pennsylvania Bulletin*, DEP will accept written comments from interested persons for a 30-day period (which may be extended for one additional 15-day period at DEP’s discretion), which will be considered in making a final decision on the application. Any person may request or petition for a public hearing with respect to the application. A public hearing may be held if DEP determines that there is

**Summary of Review**

significant public interest in holding a hearing. If a hearing is held, notice of the hearing will be published in the *Pennsylvania Bulletin* at least 30 days prior to the hearing and in at least one newspaper of general circulation within the geographical area of the discharge.

Compliance

The Department conducted an inspection of the facility on July 23, 2021 and found that during the months of May 2018, May 2019, June 2019, October 2019 and June 2020 effluent limitations were exceeded. A Notice of Violation was sent to the permittee on October 1, 2021. These violations have since been resolved. The Permittee has no open violations.

Conclusion

It is recommended that a draft permit be issued for public comment for renewal of NPDES permit PA0091910.

## Discharge, Receiving Waters and Water Supply Information

| | | | |
|---|---|---|---|
| Outfall No. | 001 | Design Flow (MGD) | 0.114 |
| Latitude | 40º 28' 39" | Longitude | -80º 21' 44" |
| Quad Name | Clinton | Quad Code | 1503 |
| Wastewater Description: | Landfall Leachate | | |

| | | | |
|---|---|---|---|
| Receiving Waters | Raccoon Creek (WWF) | Stream Code | 33564 |
| NHD Com ID | 99686684 | RMI | 27.86 |
| Drainage Area | 76.1 $mi^2$ | Yield ($cfs/mi^2$) | 0.022 |
| $Q_{7-10}$ Flow (cfs) | 1.67 | $Q_{7-10}$ Basis | USGS StreamStats |
| Elevation (ft) | 860 | Slope (ft/ft) | 0.0049 |
| Watershed No. | 20-D | Chapter 93 Class. | WWF |
| Existing Use | Not Attaining | Existing Use Qualifier | Impaired Aquatic Life |
| Exceptions to Use | None | Exceptions to Criteria | None |
| Assessment Status | Non-attaining | | |
| Cause(s) of Impairment | Metals, pH | | |
| Source(s) of Impairment | Acid Mine Drainage | | |
| TMDL Status | Final | Name | Raccoon Creek Watershed TMDL |

| Background/Ambient Data | | Data Source |
|---|---|---|
| pH (SU) | 7.0 | Default |
| Temperature (°F) | Ambient | Default |
| Hardness (mg/L) | 742 | Analytical Results from immediately upstream of the forced main discharge |
| Other: | N/A | N/A |

| | | | |
|---|---|---|---|
| Nearest Downstream Public Water Supply Intake | Nova Chemicals Beaver Valley Plant | | |
| PWS Waters | Ohio River | Flow at Intake (cfs) | 4,730 |
| PWS RMI | 969 | Distance from Outfall (mi) | ~28 |

## Treatment Facility Summary

**Treatment Facility Name:** Leachate Treatment Pond

| WQM Permit No. | Issuance Date | Status |
|---|---|---|
| 0400203 | September 28, 2000 | Active |

| Waste Type | Process Type | Disinfection | Hydraulic Capacity (MGD) | Average Flow (MGD) |
|---|---|---|---|---|
| Industrial | Underdrain Collection Settling Basin | N/A | 0.114 | 0.020 |

Changes Since Last Permit Issuance: The landfill is now closed. Leachate is produced by precipitation infiltrating and contacting the waste material through the vegetative cover.

**Discharge, Receiving Waters and Water Supply Information**

| | | | |
|---|---|---|---|
| Outfall No. | 002 | Design Flow (MGD) | Intermittent and Variable |
| Latitude | 40º 28' 54" | Longitude | -80º 25' 38" |
| Quad Name | Burgettstown | Quad Code | 1502 |
| Wastewater Description: | Stormwater Runoff | | |
| Receiving Waters | Wingfield Run (WWF) | Stream Code | 33770 |
| NHD Com ID | 99686408 | RMI | 3.74 |
| Watershed No. | 20-D | Chapter 93 Class. | WWF |
| Existing Use | WWF | Existing Use Qualifier | Supporting Aquatic Life |
| Exceptions to Use | None | Exceptions to Criteria | None |
| Assessment Status | Attaining Use(s) | | |
| Cause(s) of Impairment | N/A | | |
| Source(s) of Impairment | N/A | | |
| TMDL Status | Final | Name | Raccoon Creek Watershed |

**Discharge, Receiving Waters and Water Supply Information**

| | | | |
|---|---|---|---|
| Outfall No. | 003 | Design Flow (MGD) | Intermittent and Variable |
| Latitude | 40º 28' 53" | Longitude | -80º 25' 50" |
| Quad Name | Burgettstown | Quad Code | 1502 |
| Wastewater Description: | Stormwater Runoff | | |
| Receiving Waters | Wingfield Run (WWF) | Stream Code | 33770 |
| NHD Com ID | 99686408 | RMI | 3.89 |
| Watershed No. | 20-D | Chapter 93 Class. | WWF |
| Existing Use | WWF | Existing Use Qualifier | Supporting Aquatic Life |
| Exceptions to Use | None | Exceptions to Criteria | None |
| Assessment Status | Attaining Use(s) | | |
| Cause(s) of Impairment | N/A | | |
| Source(s) of Impairment | N/A | | |
| TMDL Status | Final | Name | Raccoon Creek Watershed |

**Discharge, Receiving Waters and Water Supply Information**

| | | | |
|---|---|---|---|
| Outfall No. | 004 | Design Flow (MGD) | Intermittent and Variable |
| Latitude | 40º 28' 42" | Longitude | -80º 25' 29" |
| Quad Name | Burgettstown | Quad Code | 1502 |
| Wastewater Description: | Stormwater Runoff | | |
| Receiving Waters | Unnamed Tributary of Wingfield Run (WWF) | Stream Code | 33776 |
| NHD Com ID | 99686666 | RMI | 0.21 |
| Watershed No. | 20-D | Chapter 93 Class. | WWF |
| Existing Use | WWF | Existing Use Qualifier | Supporting Aquatic Life |
| Exceptions to Use | None | Exceptions to Criteria | None |
| Assessment Status | Attaining Use(s) | | |
| Cause(s) of Impairment | N/A | | |
| Source(s) of Impairment | N/A | | |
| TMDL Status | Final | Name | Raccoon Creek Watershed |

## Development of Effluent Limitations

**Outfall No.** 001 **Design Flow (MGD)** 0.0144
**Latitude** 40º 28' 39" **Longitude** -80º 21' 44"
**Wastewater Description:** Treated Landfill Leachate

**Technology-Based Effluent limitations:**

Regulatory Effluent Standards and Monitoring Requirements

Flow monitoring is required pursuant to 25 Pa. Code § 92a.61(d)(1).

Effluent standards for pH are also imposed on industrial wastes by 25 Pa. Code § 95.2(1).

**Table 1: Regulatory Effluent Standards and Monitoring Requirements for Outfall 001**

| Parameter | Monthly Average | Daily Maximum | Units |
|---|---|---|---|
| Flow | Monitor and Report | | MGD |
| pH | Not less than 6.0 nor greater than 9.0 | | S.U. |

Federal Effluent Limitations Guidelines

The Effluent Limitation Guidelines under 40 CFR 423, Steam Electric Power Generating Point Source Category, are no longer applicable to the discharges from the site.

EPA promulgated the Steam Electric Power Generating Effluent Guidelines and Standards (40 CFR Part 423) in 1974, and amended the regulations in 1977, 1978, 1980, 1982 and 2015. The regulations cover particular wastewater discharges from power plants operating as utilities. The Technical Development Document (TDD) for the 2015 amendment states in the footnotes of Table 6-13 that combustion residual leachate wastewater was previously regulated under the low volume waste category of the ELG. In 2015, combustion residual leachate was separated from low volume wastes and specifically listed under 40 CFR 423.12(b)(11) and 423.13(l) for BPT and BAT, respectively.

On April 12, 2019, the Fifth Circuit of the United States Court of Appeals filed a decision on petitions for rehearing Case No. 15-60821 filed by Southwestern Electric Power Company (and others) against the United States Environmental Protection Agency. The challenge was to the final rule updates for "Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category" 80 Fed. Reg. 67,838 (Nov. 3, 2015). The rule updated Best Available Technology Economically Available (BAT) guidelines for some of the waste streams from the power industry. Petitioners specifically challenged the new ELGs for "legacy wastewater" and for "combustion residual leachate" claiming that the EPA set unlawful BAT for these two categories by arbitrarily setting BAT the same as the BPT impoundments set in 1982. The Courts concluded that the portions of the 2015 final rule regulating legacy wastewater and residual combustion leachate are unlawful and capricious and shall be vacated in part and remanded to the agency for reconsideration.

On August 31, 2020, EPA finalized a rule revising the 40 CFR 423 ELG for the Steam Electric Power Generating Category, but specifically revised only the waste streams for flue gas desulfurization (FGD) wastewater and bottom ash (BA) transport water. The Federal Register Notice on October 13, 2020 stated "…EPA is not establishing BAT for leachate in the current rulemaking…".

**Water Quality-Based Effluent limitations**:

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations

for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 2. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment A of this Fact Sheet. The water quality-based effluent limitations and monitoring requirements that are recommended by the Toxics Management Spread Sheet are displayed below in Table 3.

***Table 2: TMS Inputs for Outfall 001***

| **Parameter** | **Value** |
|---|---|
| River Mile Index | 27.86 |
| Discharge Flow (MGD) | 0.114 |
| **Basin/Stream Characteristics** | |
| **Parameter** | **Value** |
| Area in Square Miles | 76.1 |
| $Q_{7\text{-}10}$ (cfs) | 1.67 |
| Low-flow yield (cfs/mi$^2$) | 0.022 |
| Elevation (ft) | 860 |
| Slope | 0.0049 |

**Table 3: Water Quality Based Effluent Limitations at Outfall 001**

| Parameters | Average Monthly (mg/L) | Daily Maximum (mg/L) | Instant. Maximum (mg/L) |
|---|---|---|---|
| Total Arsenic | 0.105 | 0.163 | 0.262 |
| Total Boron | 16.751 | 26.134 | 41.877 |
| Total Selenium | 0.0522 | 0.0815 | 0.131 |

Toxics Reduction Evaluation (TRE)

The permittee will be required to complete a Toxics Reduction Evaluation (TRE) to investigate approaches, strategies and feasibility to provide treatment to achieve the final WQBELs for arsenic, boron, and selenium. The evaluation may also include a further analysis of water quality of the leachate and any other possible sources to the landfill that may be impacting the arsenic, selenium and boron levels. Details will be included in Part C of the permit. The TRE will be provided for three years. During the TRE period, only monitoring will be required for these parameters.

The TRE will be required to address the following:

1. The source(s) of the toxic pollutants in the effluent through a comprehensive review of influent and effluent quality and contributors to the facility, if applicable.
2. An evaluation of approaches and strategies that exist to reduce or eliminate sources to achieve the final WQBELs.
3. An evaluation of approaches and strategies that exist to provide treatment to achieve the final WQBELs.
4. An analysis of the feasibility of the approaches and strategies identified in paragraphs 2 and 3, above.

The Part C condition outlines milestones for the work plan, data collection, implementation, final report, action completion, and compliance with the final permit limit.

Raccoon Creek Watershed TMDL

This segment of Raccoon Creek is a part of the Raccoon Creek Watershed TMDL. The TMDL was established in accordance with Section 303(d)(1)(c) and (2) of the Clean Water Act to address impairments of water quality as identified on Pennsylvania's Section 303(d) lists. The TMDL was finalized on February 3, 2005 and determined the cause of the impairments to be metals (iron, manganese, aluminum) and pH (low) from acid mine drainage from abandoned coalmines.

The TMDL establishes the amount of a pollutant that a waterbody can assimilate without exceeding its water quality standard for that pollutant. TMDLs provide the scientific basis for a state to establish water quality-based controls to reduce pollution from both point and nonpoint sources to restore and maintain the quality of the state's water resources. A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit Margin of Safety (MOS) to account for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody.

There are nine active mining permits in the Raccoon Creek watershed. Discharges from the mining operations that are active are considered to be point sources. All remaining discharges in the watershed are from abandoned mines and are considered to be nonpoint sources. Most of the pollution sources in the watershed are non-point sources, and so the largest part of the TMDL is expressed as Load Allocations (LAs). All allocations are specified as long-term average daily concentration which are expected to meet water quality criteria 99% of the time as required in PA Title 25 Chapter 96.3(c).

The Paris Flyash Landfill was not assigned waste load allocations by the Raccoon Creek Watershed TMDL. Discharges that do not have TMDL waste load allocations can be accommodated by permitting the discharges at criteria levels or by revising the TMDL to assign waste load allocations. In the case of the latter option, it is likely that a discharge's waste load allocations would be equivalent to water quality criteria because load available to allocate to the site was already allocated to other point and non-point sources.

Effluent data shows that the site does not contribute to the impairment of Raccoon Creek because effluent concentrations are generally less than water quality criteria. Nevertheless, 40 CFR § 122.44(d)(1)(vii)(B) requires that:

(vii) When developing water quality-based effluent limits under this paragraph the permitting authority shall ensure that: […]

(B) Effluent limits developed to protect a narrative water quality criterion, a numeric water quality criterion, or both, are consistent with the assumptions and requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA pursuant to 40 CFR 130.7 [regarding TMDL development].

To comply with 40 CFR § 122.44(d)(1)(vii)(B) and given that there are no waste load allocations for Outfall 001 in the TMDL, effluent limits equivalent to water quality criteria will be imposed at Outfall 001 for the TMDL's pollutants of concern (aluminum, iron, and manganese).

The methods used to implement water quality criteria are described in 25 Pa. Code §§ 96.3 and 96.4. In addition, DEP's *Water Quality Toxics Management Strategy* [Doc. No. 361-2000-003] addresses design conditions in detail (Table 1 in that document), including the appropriate durations to assign to water quality criteria. The design duration for Criteria Maximum Concentration (CMC) criteria is 1 hour (acute). The design duration for Criteria Continuous Concentration (CCC) criteria is 4 days (chronic). The design duration for Threshold Human Health (THH) criteria is 30 days (chronic). The design duration for Cancer Risk Level (CRL) criteria is 70 years (chronic).

The 750 µg/L aluminum criterion in 25 Pa. Code § 93.8c is a CMC (acute) criterion. Therefore, 750 µg/L is imposed as a maximum daily effluent limit. There is no CCC criterion for aluminum necessitating the imposition of a more stringent average monthly limit. Imposing 750 µg/L as both a maximum daily and average monthly limit is protective of water quality uses.

The 1.5 mg/L iron criterion is given as a 30-day average in 25 Pa. Code § 93.7(a). Therefore, 1.5 mg/L is imposed as an average monthly limit and the maximum daily effluent limit is calculated using a multiplier of two times the average monthly limit based on DEP's *Technical Guidance for the Development and Specification of Effluent Limitations and Other Permit Conditions in NPDES Permits*.

The 1 mg/L potable water supply criterion for manganese in 25 Pa. Code § 93.7(a) is a human health criterion (chronic). Per Table 1 of the *Water Quality Toxics Management Strategy*, the duration for a THH criterion is 30 days. Therefore, an average monthly effluent limit of 1 mg/L is imposed, and the maximum daily effluent limit is calculated using a multiplier of two times the average monthly limit consistent with the technical guidance cited above.

The TMDL limits and the site discharge concentrations are summarized in Table 4.

**Table 4. Raccoon Creek Watershed TMDL Pollutants of Concern and Facility Discharge Concentrations**

| Parameter | Average Monthly (mg/L) | Daily Maximum (mg/L) | Instant. Maximum (mg/L) | Maximum Discharge Concentration (mg/L) |
|---|---|---|---|---|
| Aluminum, Total | 0.75 | 0.75 | 0.75 | 0.025 |
| Iron, Total | 1.50 | 3.0 | 3.75 | 0.147 |
| Manganese, Total | 1.00 | 2.0 | 2.5 | 0.162 |

IMAX limits are calculated using an average monthly limit multiplier of 2.5.

Only aluminum, iron, and manganese limits are imposed because the TMDL does not directly limit sediment and pH. The TMDL used a surrogate approach for both of those constituents by which reductions of in-stream concentrations of aluminum, iron, and manganese will result in acceptable reductions of sediment and mitigation of acidic pH.

**Anti-Backsliding**

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). The previous limitations for Outfall 001 are displayed below in Table 5. The limits for Total Suspended Solids, Iron, and Manganese were developed using Best Professional Judgement (BPJ) based on the treatability of the treatment system. TRC was imposed in the 1998 NPDES permit based on monitoring requirements in the previous permit per the fact sheet. It was noted that TRC results were high in the renewal application A letter dated January 16, 1998 from the permittee's consultant states that "Chlorination was found after much experimentation at the Paris flyash landfill to be an effective method of treatment for manganese removal." The renewal application in 1997 noted that oxidation was a treatment process for the landfill leachate. The facility no longer utilizes any chemicals at the facility, however the facility is authorized to, so the TRC limit, along with the Part C TRC minimization clause, will continue to be imposed.

**Table 5: Effluent Limitations in the Current Permit for Outfall 001**

| Parameter | Average Monthly | Daily Maximum | Instantaneous Maximum | Sample Frequency | Sample Type |
|---|---|---|---|---|---|
| Flow (MGD) | Report | XXX | XXX | Daily | Continuous |
| Suspended Solids | 30 | 60 | 75* | 1/Week | 24-hr composite |
| Total Residual Chlorine | 0.5 | XXX | 1.25 | 1/Week | Grab |
| Iron | 3.0 | 6.0 | 7.5* | 1/Week | 24-hr composite |
| Manganese | 2.0 | 4.0 | 5.0* | 1/Week | 24-hr composite |
| pH | Not less than 6.0 nor greater than 9.0 | | | 1/Week | Grab |

*Part C.5: Instantaneous maximum limitations are imposed to allow for a grab sample to be collected by the appropriate regulatory agency to determine compliance. The permittee is not required to monitor for the instantaneous maximum limitation. However, if grab samples are collected by the permittee, the results must be reported.

**Final Effluent Limitations**

The proposed effluent limitations and monitoring requirements for Outfall 001 are shown below in Table 6. The limits are the most stringent values from the above limitation analysis.

**Table 6: Proposed Effluent Limitations in the Permit for Outfall 001**

| Parameter | Average Monthly | Daily Maximum | Instantaneous Maximum | Sample Frequency | Sample Type |
|---|---|---|---|---|---|
| Flow (MGD) | Report | XXX | XXX | Daily | Continuous |
| Total Suspended Solids | 30 | 60 | 75* | 1/Week | 24-hr composite |
| Total Residual Chlorine | 0.5 | XXX | 1.25 | 1/Week | Grab |
| Total Iron | 1.5 | 3.0 | 3.75* | 1/Week | 24-hr composite |
| Total Manganese | 1.0 | 2.0 | 2.5* | 1/Week | 24-hr composite |
| Total Aluminum | 0.75 | 0.75 | 0.75* | 1/Week | 24-hr composite |
| Total Arsenic | 0.105 | 0.163 | 0.262* | 1/Week | 24-hr composite |
| Total Boron | 16.7 | 26.1 | 41.9* | 1/Week | 24-hr composite |
| Total Selenium | 0.0522 | 0.0815 | 0.131* | 1/Week | 24-hr composite |
| pH | Not less than 6.0 nor greater than 9.0 | | | 1/Week | Grab |

*A Footnote is included in the Draft Permit indicating that these Instantaneous maximum limitations are imposed to allow for a grab sample to be collected by the appropriate regulatory agency to determine compliance. The permittee is not required to monitoring for the instantaneous maximum limitation. However, if grab samples are collected by the permittee, the results must be reported.

Final WQBEL Compliance Report and Interim Monitoring

The WQBELs listed in Table 6 above for Arsenic, Boron, and Selenium are new to Outfall 001. Alex E. Paris Contracting Company does not have the necessary controls in place to ensure compliance with the WQBELs upon permit issuance. Therefore, in accordance with 25 Pa. Code § 92a.51(a) of DEP's regulations, Alex E. Paris Contracting Company will be granted three years to come into compliance with the WQBELs. Because the new WQBELs will not be effective upon permit issuance, the permit will be tiered to have interim and final effluent limitations. For the first three years, Arsenic. Boron, and Selenium will have monitor and report requirements, and after three years, the WQBELs will take effect. Additionally, because the WQBELs were developed using the default or model-derived estimates, the permittee shall collect site-specific data and conduct a Toxics Reduction Evaluation (TRE). The site-specific data and TRE will be submitted to the Department as part of a Final WQBEL Compliance Report.

The TMDL WQBELs listed in Table 6 above for Iron, Manganese and Aluminum are new to Outfall 001, as well. However, the discharge concentrations from the site are well below the new limitations and Alex E. Paris Contracting Company is expected to meet the limitations upon issuance. Therefore, there will be no schedule of compliance for the TMDL WQBELs.

**Development of Effluent Limitations**

| | | | | | |
|---|---|---|---|---|---|
| **Outfall No.** | 002 | **Latitude** | 40º 28' 54" | **Longitude** | -80º 25' 38" |
| **Outfall No.** | 003 | **Latitude** | 40º 28' 53" | **Longitude** | -80º 25' 50" |
| **Outfall No.** | 004 | **Latitude** | 40º 28' 42" | **Longitude** | -80º 25' 29" |

**Wastewater Description:** Stormwater

**Technology-Based Effluent limitations:**

Outfalls 002, 003, and 004 will be subject to PAG-03 General Stormwater Permit conditions as a minimum requirement because the outfall discharges stormwater. Based on Paris Flyash Landfill's SIC Code of 4953, the facility would be classified under Appendix A – Hazardous Waste Treatment, Storage or Disposal Facilities of the PAG-03 General Permit for Stormwater Associated with Industrial Activity if the facility were eligible for this permit coverage. However, since the facility received combustion residual from a coal-fired power plant, Appendix H – Steam Electric Generating Facilities, is the more appropriate appendix. The proposed monitoring requirements are shown in Table 7 below.

**Table 7: PAG-03 Appendix (H) Monitoring Requirements**

| Parameters | Mass (lb/day) | | Concentration (mg/l) | | | |
|---|---|---|---|---|---|---|
| | Average Monthly | Daily Maximum | Minimum | Average Monthly | Daily Maximum | Instant. Maximum |
| pH (S.U.) | XXX | XXX | XXX | XXX | Report | XXX |
| Total Suspended Solids (TSS) (mg/L) | XXX | XXX | XXX | XXX | Report | XXX |
| Oil and Grease (mg/L) | XXX | XXX | XXX | XXX | Report | XXX |
| Total Iron (mg/L) | XXX | XXX | XXX | XXX | Report | XXX |

**Water Quality-Based Effluent limitations**:

Water quality analyses are typically performed under low-flow (Q7-10) conditions. Stormwater discharges occur at variable rates and frequencies but not however during Q7-10 conditions. Since the discharges from Outfalls 002, 003, and 004 are composed entirely of stormwater, a formal water quality analysis cannot be accurately conducted. Accordingly, water quality-based effluent limitations based on water quality analyses are not proposed.

Raccoon Creek Watershed TMDL

Details of the Raccoon Creek Watershed TMDL are described for Outfall 001 above. Wingfield Run is a part of the TMDL and so the concentration of aluminum, iron, manganese and the pH should be considered. Wingfield Run is attaining its use, but the iron, aluminum, manganese and pH will be monitored as discussed above. Acid mine drainage was known to be present at the facility.

**Anti-Backsliding**

Previous limits can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l). Previous Limits imposed at Outfall 002 are displayed below in Table 8. Outfalls 003 and 004 are new to the permit and do not have any existing limits. The current permit requires monitoring for TSS, nitrate+nitrite nitrogen, total iron and manganese based on construction activity at the time of the renewal in 2004.

**Table 8. Existing Limitations at Outfall 002**

| Parameter | Average Monthly | Daily Maximum | Measurement Frequency | Sample Type |
|---|---|---|---|---|
| Total Suspended Solids | Monitor | Monitor | 1/quarter | Grab |
| Nitrate + Nitrite Nitrogen | Monitor | Monitor | 1/quarter | Grab |
| Total Iron | Monitor | Monitor | 1/quarter | Grab |
| Total Manganese | Monitor | Monitor | 1/quarter | Grab |

**Final Effluent Limitations**

Monitoring Requirements for Outfalls 002, 003, and 004 are displayed in Table 9 below. Nitrate + Nitrite Nitrogen has been low and is no longer a pollutant of concern; therefore, nitrate + nitrite nitrogen monitoring will be removed from the renewed permit. The monitoring for TSS, Total Iron and Manganese will remain in the permit because these parameters are still pollutants of concern based on the above PAG-03 and TMDL evaluations. The monitoring frequency imposed at this outfall will reflect what is required in the PAG-03 general permit, semi-annual monitoring. A Part C condition is included in the Draft permit stating that in the event that stormwater discharge concentrations for a parameter exceeds the benchmark values in the Part C condition at the same outfall for two or more consecutive monitoring periods, the permittee shall develop a corrective action plan to reduce the concentrations of the parameters in stormwater discharges.

**Table 9: Proposed Effluent Monitoring Requirements at Outfall 001**

| Parameter | Max Daily Concentration | Benchmark Values (mg/L) | Measurement Frequency | Sample Type |
|---|---|---|---|---|
| pH (S.U.) | Monitor and Report | - | 1/6 Months | Grab |
| Total Suspended Solids (TSS) | Monitor and Report | 100 | 1/6 Months | Grab |
| Oil and Grease | Monitor and Report | 30 | 1/6 Months | Grab |
| Total Aluminum | Monitor and Report | - | 1/6 Months | Grab |
| Total Iron | Monitor and Report | - | 1/6 Months | Grab |
| Total Manganese | Monitor and Report | - | 1/6 Months | Grab |

| Tools and References Used to Develop Permit | |
|---|---|
| | |
| ☐ | WQM for Windows Model (see Attachment ) |
| ☒ | Toxics Management Spreadsheet (see Attachment **A**) |
| ☐ | TRC Model Spreadsheet (see Attachment ) |
| ☐ | Temperature Model Spreadsheet (see Attachment ) |
| ☐ | Toxics Screening Analysis Spreadsheet (see Attachment ) |
| ☐ | Water Quality Toxics Management Strategy, 361-0100-003, 4/06. |
| ☒ | Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97. |
| ☐ | Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98. |
| ☐ | Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96. |
| ☐ | Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97. |
| ☐ | Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97. |
| ☐ | Pennsylvania CSO Policy, 385-2000-011, 9/08. |
| ☐ | Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03. |
| ☐ | Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97. |
| ☐ | Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97. |
| ☐ | Implementation Guidance Design Conditions, 391-2000-006, 9/97. |
| ☐ | Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004. |
| ☐ | Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997. |
| ☐ | Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99. |
| ☒ | Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004. |
| ☐ | Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97. |
| ☐ | Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008. |
| ☐ | Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994. |
| ☐ | Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09. |
| ☐ | Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97. |
| ☐ | Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97. |
| ☐ | Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99. |
| ☐ | Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999. |
| ☐ | Design Stream Flows, 391-2000-023, 9/98. |
| ☐ | Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98. |
| ☐ | Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97. |
| ☐ | Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07. |
| ☒ | SOP: Establishing Effluent Limitations for Individual Industrial Permits (SOP No. BCW-PMT-032, Version 1.5) |
| ☒ | SOP: Establishing Water Quality-Based Effluent Limitations (WQBELs) and Permit Conditions for Toxic Pollutants in NPDES Permits for Existing Dischargers (SOP No. BCW-PMT-037, Version 1.2) |

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Attachment A

Toxics Management Spreadsheet
Version 1.3, March 2021

## Discharge Information

Instructions | Discharge | Stream

Facility: **Paris Flyash Landfill** NPDES Permit No.: **PA0091910** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Flyash Landfill Leachate**

| Discharge Characteristics | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Design Flow (MGD)* | Hardness (mg/l)* | pH (SU)* | Partial Mix Factors (PMFs) | | | | Complete Mix Times (min) | |
| | | | AFC | CFC | THH | CRL | $Q_{7-10}$ | $Q_h$ |
| 0.114 | 5063 | 7.86 | | | | | | |

| | | | | | 0 if left blank | | 0.5 if left blank | | 0 if left blank | | | 1 if left blank | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Discharge Pollutant | Units | Max Discharge Conc | | Trib Conc | Stream Conc | Daily CV | Hourly CV | Stream CV | Fate Coeff | FOS | Criteria Mod | Chem Transl |
| Group 1 | Total Dissolved Solids (PWS) | mg/L | | 9640 | | | | | | | | | |
| | Chloride (PWS) | mg/L | | 1150 | | | | | | | | | |
| | Bromide | mg/L | | 15.6 | | | | | | | | | |
| | Sulfate (PWS) | mg/L | | 3590 | | | | | | | | | |
| | Fluoride (PWS) | mg/L | | 5.66 | | | | | | | | | |
| Group 2 | Total Aluminum | µg/L | | 25 | | | | | | | | | |
| | Total Antimony | µg/L | | 4.5 | | | | | | | | | |
| | Total Arsenic | µg/L | | 97 | | | | | | | | | |
| | Total Barium | µg/L | | 33 | | | | | | | | | |
| | Total Beryllium | µg/L | < | 0.3 | | | | | | | | | |
| | Total Boron | µg/L | | 88900 | | | | | | | | | |
| | Total Cadmium | µg/L | | 0.82 | | | | | | | | | |
| | Total Chromium (III) | µg/L | | 0.9 | | | | | | | | | |
| | Hexavalent Chromium | µg/L | < | 5 | | | | | | | | | |
| | Total Cobalt | µg/L | | 1 | | | | | | | | | |
| | Total Copper | µg/L | | 70 | | | | | | | | | |
| | Free Cyanide | µg/L | | | | | | | | | | | |
| | Total Cyanide | µg/L | | 10 | | | | | | | | | |
| | Dissolved Iron | µg/L | | 7 | | | | | | | | | |
| | Total Iron | µg/L | | 147 | | | | | | | | | |
| | Total Lead | µg/L | < | 1 | | | | | | | | | |
| | Total Manganese | µg/L | | 162 | | | | | | | | | |
| | Total Mercury | µg/L | < | 0.04 | | | | | | | | | |
| | Total Nickel | µg/L | | 2 | | | | | | | | | |
| | Total Phenols (Phenolics) (PWS) | µg/L | | 6 | | | | | | | | | |
| | Total Selenium | µg/L | | 29 | | | | | | | | | |
| | Total Silver | µg/L | < | 0.5 | | | | | | | | | |
| | Total Thallium | µg/L | < | 0.5 | | | | | | | | | |
| | Total Zinc | µg/L | | 6 | | | | | | | | | |
| | Total Molybdenum | µg/L | | 1580 | | | | | | | | | |
| | Acrolein | µg/L | < | | | | | | | | | | |
| | Acrylamide | µg/L | < | | | | | | | | | | |
| | Acrylonitrile | µg/L | < | | | | | | | | | | |
| | Benzene | µg/L | < | | | | | | | | | | |
| | Bromoform | µg/L | < | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group 3 | Carbon Tetrachloride | µg/L | < | | | | | | | | | | |
| | Chlorobenzene | µg/L | | | | | | | | | | | |
| | Chlorodibromomethane | µg/L | < | | | | | | | | | | |
| | Chloroethane | µg/L | < | | | | | | | | | | |
| | 2-Chloroethyl Vinyl Ether | µg/L | < | | | | | | | | | | |
| | Chloroform | µg/L | < | | | | | | | | | | |
| | Dichlorobromomethane | µg/L | < | | | | | | | | | | |
| | 1,1-Dichloroethane | µg/L | < | | | | | | | | | | |
| | 1,2-Dichloroethane | µg/L | < | | | | | | | | | | |
| | 1,1-Dichloroethylene | µg/L | < | | | | | | | | | | |
| | 1,2-Dichloropropane | µg/L | < | | | | | | | | | | |
| | 1,3-Dichloropropylene | µg/L | < | | | | | | | | | | |
| | 1,4-Dioxane | µg/L | < | | | | | | | | | | |
| | Ethylbenzene | µg/L | < | | | | | | | | | | |
| | Methyl Bromide | µg/L | < | | | | | | | | | | |
| | Methyl Chloride | µg/L | < | | | | | | | | | | |
| | Methylene Chloride | µg/L | < | | | | | | | | | | |
| | 1,1,2,2-Tetrachloroethane | µg/L | < | | | | | | | | | | |
| | Tetrachloroethylene | µg/L | < | | | | | | | | | | |
| | Toluene | µg/L | < | | | | | | | | | | |
| | 1,2-trans-Dichloroethylene | µg/L | < | | | | | | | | | | |
| | 1,1,1-Trichloroethane | µg/L | < | | | | | | | | | | |
| | 1,1,2-Trichloroethane | µg/L | < | | | | | | | | | | |
| | Trichloroethylene | µg/L | < | | | | | | | | | | |
| | Vinyl Chloride | µg/L | < | | | | | | | | | | |
| Group 4 | 2-Chlorophenol | µg/L | < | | | | | | | | | | |
| | 2,4-Dichlorophenol | µg/L | < | | | | | | | | | | |
| | 2,4-Dimethylphenol | µg/L | < | | | | | | | | | | |
| | 4,6-Dinitro-o-Cresol | µg/L | < | | | | | | | | | | |
| | 2,4-Dinitrophenol | µg/L | < | | | | | | | | | | |
| | 2-Nitrophenol | µg/L | < | | | | | | | | | | |
| | 4-Nitrophenol | µg/L | < | | | | | | | | | | |
| | p-Chloro-m-Cresol | µg/L | < | | | | | | | | | | |
| | Pentachlorophenol | µg/L | < | | | | | | | | | | |
| | Phenol | µg/L | < | | | | | | | | | | |
| | 2,4,6-Trichlorophenol | µg/L | < | | | | | | | | | | |
| Group 5 | Acenaphthene | µg/L | < | | | | | | | | | | |
| | Acenaphthylene | µg/L | < | | | | | | | | | | |
| | Anthracene | µg/L | < | | | | | | | | | | |
| | Benzidine | µg/L | < | | | | | | | | | | |
| | Benzo(a)Anthracene | µg/L | < | | | | | | | | | | |
| | Benzo(a)Pyrene | µg/L | < | | | | | | | | | | |
| | 3,4-Benzofluoranthene | µg/L | < | | | | | | | | | | |
| | Benzo(ghi)Perylene | µg/L | < | | | | | | | | | | |
| | Benzo(k)Fluoranthene | µg/L | < | | | | | | | | | | |
| | Bis(2-Chloroethoxy)Methane | µg/L | < | | | | | | | | | | |
| | Bis(2-Chloroethyl)Ether | µg/L | < | | | | | | | | | | |
| | Bis(2-Chloroisopropyl)Ether | µg/L | < | | | | | | | | | | |
| | Bis(2-Ethylhexyl)Phthalate | µg/L | < | | | | | | | | | | |
| | 4-Bromophenyl Phenyl Ether | µg/L | < | | | | | | | | | | |
| | Butyl Benzyl Phthalate | µg/L | < | | | | | | | | | | |
| | 2-Chloronaphthalene | µg/L | < | | | | | | | | | | |
| | 4-Chlorophenyl Phenyl Ether | µg/L | < | | | | | | | | | | |
| | Chrysene | µg/L | < | | | | | | | | | | |
| | Dibenzo(a,h)Anthrancene | µg/L | < | | | | | | | | | | |
| | 1,2-Dichlorobenzene | µg/L | < | | | | | | | | | | |
| | 1,3-Dichlorobenzene | µg/L | < | | | | | | | | | | |
| | 1,4-Dichlorobenzene | µg/L | < | | | | | | | | | | |
| | 3,3-Dichlorobenzidine | µg/L | < | | | | | | | | | | |
| | Diethyl Phthalate | µg/L | < | | | | | | | | | | |
| | Dimethyl Phthalate | µg/L | < | | | | | | | | | | |
| | Di-n-Butyl Phthalate | µg/L | < | | | | | | | | | | |
| | 2,4-Dinitrotoluene | µg/L | < | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2,6-Dinitrotoluene | µg/L | < | | | | | | | | | | | |
| | Di-n-Octyl Phthalate | µg/L | < | | | | | | | | | | | |
| | 1,2-Diphenylhydrazine | µg/L | < | | | | | | | | | | | |
| | Fluoranthene | µg/L | < | | | | | | | | | | | |
| | Fluorene | µg/L | < | | | | | | | | | | | |
| | Hexachlorobenzene | µg/L | < | | | | | | | | | | | |
| | Hexachlorobutadiene | µg/L | < | | | | | | | | | | | |
| | Hexachlorocyclopentadiene | µg/L | < | | | | | | | | | | | |
| | Hexachloroethane | µg/L | < | | | | | | | | | | | |
| | Indeno(1,2,3-cd)Pyrene | µg/L | < | | | | | | | | | | | |
| | Isophorone | µg/L | < | | | | | | | | | | | |
| | Naphthalene | µg/L | < | | | | | | | | | | | |
| | Nitrobenzene | µg/L | < | | | | | | | | | | | |
| | n-Nitrosodimethylamine | µg/L | < | | | | | | | | | | | |
| | n-Nitrosodi-n-Propylamine | µg/L | < | | | | | | | | | | | |
| | n-Nitrosodiphenylamine | µg/L | < | | | | | | | | | | | |
| | Phenanthrene | µg/L | < | | | | | | | | | | | |
| | Pyrene | µg/L | < | | | | | | | | | | | |
| | 1,2,4-Trichlorobenzene | µg/L | < | | | | | | | | | | | |
| Group 6 | Aldrin | µg/L | < | | | | | | | | | | | |
| | alpha-BHC | µg/L | < | | | | | | | | | | | |
| | beta-BHC | µg/L | < | | | | | | | | | | | |
| | gamma-BHC | µg/L | < | | | | | | | | | | | |
| | delta BHC | µg/L | < | | | | | | | | | | | |
| | Chlordane | µg/L | < | | | | | | | | | | | |
| | 4,4-DDT | µg/L | < | | | | | | | | | | | |
| | 4,4-DDE | µg/L | < | | | | | | | | | | | |
| | 4,4-DDD | µg/L | < | | | | | | | | | | | |
| | Dieldrin | µg/L | < | | | | | | | | | | | |
| | alpha-Endosulfan | µg/L | < | | | | | | | | | | | |
| | beta-Endosulfan | µg/L | < | | | | | | | | | | | |
| | Endosulfan Sulfate | µg/L | < | | | | | | | | | | | |
| | Endrin | µg/L | < | | | | | | | | | | | |
| | Endrin Aldehyde | µg/L | < | | | | | | | | | | | |
| | Heptachlor | µg/L | < | | | | | | | | | | | |
| | Heptachlor Epoxide | µg/L | < | | | | | | | | | | | |
| | PCB-1016 | µg/L | < | | | | | | | | | | | |
| | PCB-1221 | µg/L | < | | | | | | | | | | | |
| | PCB-1232 | µg/L | < | | | | | | | | | | | |
| | PCB-1242 | µg/L | < | | | | | | | | | | | |
| | PCB-1248 | µg/L | < | | | | | | | | | | | |
| | PCB-1254 | µg/L | < | | | | | | | | | | | |
| | PCB-1260 | µg/L | < | | | | | | | | | | | |
| | PCBs, Total | µg/L | < | | | | | | | | | | | |
| | Toxaphene | µg/L | < | | | | | | | | | | | |
| | 2,3,7,8-TCDD | ng/L | < | | | | | | | | | | | |
| Group 7 | Gross Alpha | pCi/L | | | | | | | | | | | | |
| | Total Beta | pCi/L | < | | | | | | | | | | | |
| | Radium 226/228 | pCi/L | < | | | | | | | | | | | |
| | Total Strontium | µg/L | < | | | | | | | | | | | |
| | Total Uranium | µg/L | < | | | | | | | | | | | |
| | Osmotic Pressure | mOs/kg | | | | | | | | | | | | |
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pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

# Stream / Surface Water Information

**Paris Flyash Landfill, NPDES Permit No. PA0091910, Outfall 001**

Instructions | Discharge | *Stream*

Receiving Surface Water Name: **Raccoon Creek**

No. Reaches to Model: 1

- (●) Statewide Criteria
- ( ) Great Lakes Criteria
- ( ) ORSANCO Criteria

| Location | Stream Code* | RMI* | Elevation (ft)* | DA ($mi^2$)* | Slope (ft/ft) | PWS Withdrawal (MGD) | Apply Fish Criteria* |
|---|---|---|---|---|---|---|---|
| Point of Discharge | 033564 | 27.7 | 860 | 76.1 | 0.0049 | | Yes |
| End of Reach 1 | 033564 | 23.8 | 840 | 92.7 | 0.0049 | | Yes |

***$Q_{7-10}$***

| Location | RMI | LFY ($cfs/mi^2$)* | Flow (cfs) | | W/D Ratio | Width (ft) | Depth (ft) | Velocity (fps) | Travel Time (days) | Tributary | | Stream | | Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Stream | Tributary | | | | | | Hardness | pH | Hardness* | pH* | Hardness | pH |
| Point of Discharge | 27.7 | 0.0219448 | 1.67 | | | | | | | | | 742 | 7 | | |
| End of Reach 1 | 23.8 | 0.0228695 | 2.12 | | | | | | | | | 742 | 7 | | |

***$Q_h$***

| Location | RMI | LFY ($cfs/mi^2$) | Flow (cfs) | | W/D Ratio | Width (ft) | Depth (ft) | Velocity (fps) | Travel Time (days) | Tributary | | Stream | | Analysis | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Stream | Tributary | | | | | | Hardness | pH | Hardness | pH | Hardness | pH |
| Point of Discharge | 27.7 | | | | | | | | | | | | | | |
| End of Reach 1 | 23.8 | | | | | | | | | | | | | | |

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Toxics Management Spreadsheet
Version 1.3, March 2021

# Model Results

**Paris Flyash Landfill, NPDES Permit No. PA0091910, Outfall 001**

Instructions | Results | RETURN TO INPUTS | SAVE AS PDF | PRINT | ◉ All ○ Inputs ○ Results ○ Limits

☐ ***Hydrodynamics***

☑ ***Wasteload Allocations***

☑ ***AFC*** CCT (min): 15 PMF: 0.826 Analysis Hardness (mg/l): 1231.6 Analysis pH: 7.04

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | 750 | 750 | 6,619 | |
| Total Antimony | 0 | 0 | | 0 | 1,100 | 1,100 | 9,708 | |
| Total Arsenic | 0 | 0 | | 0 | 340 | 340 | 3,001 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 21,000 | 21,000 | 185,337 | |
| Total Boron | 0 | 0 | | 0 | 8,100 | 8,100 | 71,487 | |
| Total Cadmium | 0 | 0 | | 0 | 22.979 | 27.4 | 242 | Chem Translator of 0.839 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 4454.404 | 14,096 | 124,407 | Chem Translator of 0.316 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 16 | 16.3 | 144 | Chem Translator of 0.982 applied |
| Total Cobalt | 0 | 0 | | 0 | 95 | 95.0 | 838 | |
| Total Copper | 0 | 0 | | 0 | 143.157 | 149 | 1,316 | Chem Translator of 0.96 applied |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | | 0 | 848.445 | 1,996 | 17,613 | Chem Translator of 0.425 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 1.400 | 1.65 | 14.5 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 3917.440 | 3,925 | 34,643 | Chem Translator of 0.998 applied |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Selenium | 0 | 0 | | 0 | N/A | N/A | N/A | Chem Translator of 0.922 applied |
| Total Silver | 0 | 0 | | 0 | 241.561 | 284 | 2,508 | Chem Translator of 0.85 applied |
| Total Thallium | 0 | 0 | | 0 | 65 | 65.0 | 574 | |
| Total Zinc | 0 | 0 | | 0 | 983.582 | 1,006 | 8,876 | Chem Translator of 0.978 applied |

☑ ***CFC*** CCT (min): 21.964 PMF: 1 Analysis Hardness (mg/l): 1154.7 Analysis pH: 7.04

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 220 | 220 | 2,303 | |
| Total Arsenic | 0 | 0 | | 0 | 150 | 150 | 1,570 | Chem Translator of 1 applied |
| Total Barium | 0 | 0 | | 0 | 4,100 | 4,100 | 42,924 | |
| Total Boron | 0 | 0 | | 0 | 1,600 | 1,600 | 16,751 | |
| Total Cadmium | 0 | 0 | | 0 | 1.337 | 1.66 | 17.4 | Chem Translator of 0.807 applied |
| Total Chromium (III) | 0 | 0 | | 0 | 549.635 | 639 | 6,691 | Chem Translator of 0.86 applied |
| Hexavalent Chromium | 0 | 0 | | 0 | 10 | 10.4 | 109 | Chem Translator of 0.962 applied |
| Total Cobalt | 0 | 0 | | 0 | 19 | 19.0 | 199 | |
| Total Copper | 0 | 0 | | 0 | 72.442 | 75.5 | 790 | Chem Translator of 0.96 applied |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | 1,500 | 1,500 | 15,704 | WQC = 30 day average; PMF = 1 |
| Total Lead | 0 | 0 | | 0 | 31.131 | 71.6 | 750 | Chem Translator of 0.435 applied |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | 0.770 | 0.91 | 9.48 | Chem Translator of 0.85 applied |
| Total Nickel | 0 | 0 | | 0 | 412.017 | 413 | 4,327 | Chem Translator of 0.997 applied |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Selenium | 0 | 0 | | 0 | 4.600 | 4.99 | 52.2 | Chem Translator of 0.922 applied |
| Total Silver | 0 | 0 | | 0 | N/A | N/A | N/A | Chem Translator of 1 applied |
| Total Thallium | 0 | 0 | | 0 | 13 | 13.0 | 136 | |
| Total Zinc | 0 | 0 | | 0 | 938.928 | 952 | 9,970 | Chem Translator of 0.986 applied |

☑ ***THH*** CCT (min): 21.964 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | 500,000 | 500,000 | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | 250,000 | 250,000 | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | 250,000 | 250,000 | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | 2,000 | 2,000 | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | 5.6 | 5.6 | 58.6 | |
| Total Arsenic | 0 | 0 | | 0 | 10 | 10.0 | 105 | |
| Total Barium | 0 | 0 | | 0 | 2,400 | 2,400 | 25,126 | |
| Total Boron | 0 | 0 | | 0 | 3,100 | 3,100 | 32,455 | |
| Total Cadmium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Chromium (III) | 0 | 0 | | 0 | N/A | N/A | N/A | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Hexavalent Chromium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Cobalt | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Copper | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Dissolved Iron | 0 | 0 | | 0 | 300 | 300 | 3,141 | |
| Total Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Manganese | 0 | 0 | | 0 | 1,000 | 1,000 | 10,469 | |
| Total Mercury | 0 | 0 | | 0 | 0.050 | 0.05 | 0.52 | |
| Total Nickel | 0 | 0 | | 0 | 610 | 610 | 6,386 | |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | | 0 | 5 | 5.0 | N/A | |
| Total Selenium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Silver | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Thallium | 0 | 0 | | 0 | 0.24 | 0.24 | 2.51 | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |

☑ ***CRL*** CCT (min): 7.655 PMF: 1 Analysis Hardness (mg/l): N/A Analysis pH: N/A

| Pollutants | Stream Conc (µg/L) | Stream CV | Trib Conc (µg/L) | Fate Coef | WQC (µg/L) | WQ Obj (µg/L) | WLA (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Chloride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Sulfate (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Fluoride (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Aluminum | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Antimony | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Arsenic | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Barium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Boron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Cadmium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Chromium (III) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Hexavalent Chromium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Cobalt | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Copper | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Dissolved Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Iron | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Lead | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Manganese | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Mercury | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Nickel | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Phenols (Phenolics) (PWS) | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Selenium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Silver | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Thallium | 0 | 0 | | 0 | N/A | N/A | N/A | |
| Total Zinc | 0 | 0 | | 0 | N/A | N/A | N/A | |

☑ ***Recommended WQBELs & Monitoring Requirements***

**No. Samples/Month:** 4

| | *Mass Limits* | | *Concentration Limits* | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Pollutants | AML (lbs/day) | MDL (lbs/day) | AML | MDL | IMAX | Units | Governing WQBEL | WQBEL Basis | Comments |
| Total Arsenic | 0.1 | 0.16 | 105 | 163 | 262 | µg/L | 105 | THH | Discharge Conc ≥ 50% WQBEL (RP) |
| Total Boron | 15.9 | 24.8 | 16,751 | 26,134 | 41,877 | µg/L | 16,751 | CFC | Discharge Conc ≥ 50% WQBEL (RP) |
| Total Selenium | 0.05 | 0.077 | 52.2 | 81.5 | 131 | µg/L | 52.2 | CFC | Discharge Conc ≥ 50% WQBEL (RP) |
| | | | | | | | | | |

☑ ***Other Pollutants without Limits or Monitoring***

The following pollutants do not require effluent limits or monitoring based on water quality because reasonable potential to exceed water quality criteria was not determined and the discharge concentration was less than thresholds for monitoring, or the pollutant was not detected and a sufficiently sensitive analytical method was used (e.g., <= Target QL).

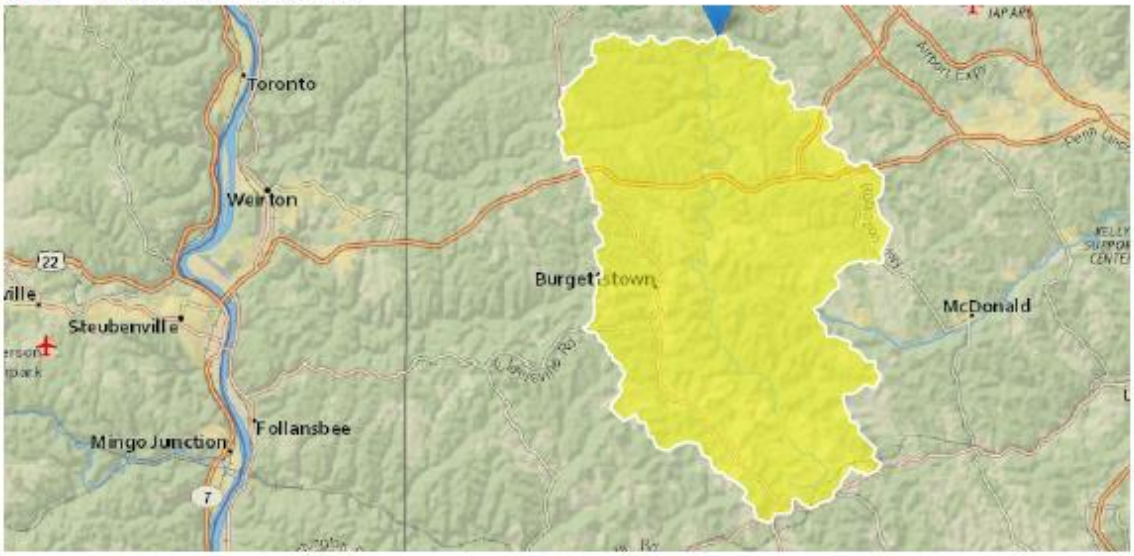
| Pollutants | Governing WQBEL | Units | Comments |
|---|---|---|---|
| Total Dissolved Solids (PWS) | N/A | N/A | PWS Not Applicable |
| Chloride (PWS) | N/A | N/A | PWS Not Applicable |
| Bromide | N/A | N/A | No WQS |
| Sulfate (PWS) | N/A | N/A | PWS Not Applicable |
| Fluoride (PWS) | N/A | N/A | PWS Not Applicable |
| Total Aluminum | 4,243 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Antimony | 58.6 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Barium | 25,126 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Beryllium | N/A | N/A | No WQS |
| Total Cadmium | 17.4 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Chromium (III) | 6,691 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Hexavalent Chromium | 92.2 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Cobalt | 199 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Copper | 790 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Cyanide | N/A | N/A | No WQS |
| Dissolved Iron | 3,141 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Iron | 15,704 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Lead | 750 | µg/L | Discharge Conc < TQL |
| Total Manganese | 10,469 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Mercury | 0.52 | µg/L | Discharge Conc < TQL |
| Total Nickel | 4,327 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Phenols (Phenolics) (PWS) | | µg/L | PWS Not Applicable |
| Total Silver | 1,608 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Thallium | 2.51 | µg/L | Discharge Conc < TQL |
| Total Zinc | 5,689 | µg/L | Discharge Conc ≤ 10% WQBEL |
| Total Molybdenum | N/A | N/A | No WQS |

Outfall 001

**Attachment B**

# StreamStats Report

**Region ID:** PA
**Workspace ID:** PA20200424193119314000
**Clicked Point (Latitude, Longitude):** 40.47806, -80.36181
**Time:** 2020-04-24 15:31:36 -0400




PA0091910 Paris Flyash Landfill Outfall 001, Raccoon Creek

Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 76.1 | square miles |
| ELEV | Mean Basin Elevation | 1140.4 | feet |

Low-Flow Statistics Parameters[Low Flow Region 4]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 76.1 | square miles | 2.26 | 1400 |
| ELEV | Mean Basin Elevation | 1140.4 | feet | 1050 | 2580 |

Low-Flow Statistics Flow Report[Low Flow Region 4]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

| Statistic | Value | Unit | SE | SEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 3.74 | ft^3/s | 43 | 43 |
| 30 Day 2 Year Low Flow | 5.88 | ft^3/s | 38 | 38 |
| 7 Day 10 Year Low Flow | 1.67 | ft^3/s | 66 | 66 |
| 30 Day 10 Year Low Flow | 2.57 | ft^3/s | 54 | 54 |

| Statistic | Value | Unit | SE | SEp |
|---|---|---|---|---|
| 90 Day 10 Year Low Flow | 4.21 | ft^3/s | 41 | 41 |

*Low-Flow Statistics Citations*

**Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)**

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Application Version: 4.3.11

Downstream

# StreamStats Report

| | |
|---|---|
| **Region ID:** | PA |
| **Workspace ID:** | PA20220125210328310000 |
| **Clicked Point (Latitude, Longitude):** | 40.51005, -80.36422 |
| **Time:** | 2022-01-25 16:03:48 -0500 |


Basin Characteristics

| Parameter Code | Parameter Description | Value | Unit |
|---|---|---|---|
| DRNAREA | Area that drains to a point on a stream | 92.7 | square miles |
| ELEV | Mean Basin Elevation | 1133 | feet |

Low-Flow Statistics Parameters [Low Flow Region 4]

| Parameter Code | Parameter Name | Value | Units | Min Limit | Max Limit |
|---|---|---|---|---|---|
| DRNAREA | Drainage Area | 92.7 | square miles | 2.26 | 1400 |
| ELEV | Mean Basin Elevation | 1133 | feet | 1050 | 2580 |

Low-Flow Statistics Flow Report [Low Flow Region 4]

Low-Flow Statistics Flow Report [Low Flow Region 4]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

| Statistic | Value | Unit | SE | ASEp |
|---|---|---|---|---|
| 7 Day 2 Year Low Flow | 4.66 | ft^3/s | 43 | 43 |
| 30 Day 2 Year Low Flow | 7.25 | ft^3/s | 38 | 38 |
| 7 Day 10 Year Low Flow | 2.12 | ft^3/s | 66 | 66 |
| 30 Day 10 Year Low Flow | 3.21 | ft^3/s | 54 | 54 |
| 90 Day 10 Year Low Flow | 5.21 | ft^3/s | 41 | 41 |

*Low-Flow Statistics Citations*

**Stuckey, M.H.,2006, Low-flow, base-flow, and mean-flow regression equations for Pennsylvania streams: U.S. Geological Survey Scientific Investigations Report 2006-5130, 84 p. (http://pubs.usgs.gov/sir/2006/5130/)**

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Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

| Stream | Zone | County | Water Uses Protected | Exceptions To Specific Criteria |
|---|---|---|---|---|
| 3—Streets Run | Basin | Allegheny | WWF; *Delete* PWS | None |

**Authority**

The provisions of this § 93.9v amended under sections 5(b)(1) and 402 of The Clean Streams Law (35 P. S. §§ 691.5(b)(1) and 691.402); and section 1920-A of The Administrative Code of 1929 (71 P. S. § 510-20).

**Source**

The provisions of this § 93.9v adopted March 6, 1992, effective March 7, 1992, 22 Pa.B. 1037; amended May 14, 1993, effective May 15, 1993, 23 Pa.B. 2325; amended November 19, 1993, effective November 20, 1993, 23 Pa.B. 5529; amended November 17, 2000, effective November 18, 2000, 30 Pa.B. 6059; amended September 27, 2002, effective September 28, 2002, 32 Pa.B. 4695; corrected December 27, 2002, effective December 7, 2002, 32 Pa.B. 6381; amended November 12, 2004, effective November 13, 2004, 34 Pa.B. 6133; amended January 5, 2007, effective January 6, 2007, 37 Pa.B. 11; amended May 15, 2009, effective May 16, 2009, 39 Pa.B. 2523. Immediately preceding text appears at serial pages (272199) to (272206) and (324923) to (324926).

**Cross References**

This section cited in 25 Pa. Code § 16.51 (relating to table); 25 Pa. Code § 93.1 (relating to definitions); 25 Pa. Code § 93.4 (relating to Statewide water uses); and 25 Pa. Code § 93.7 (relating to specific water quality criteria).

## § 93.9w. Drainage List W.

**Ohio River Basin in Pennsylvania**
***Ohio River***

| Stream | Zone | County | Water Uses Protected | Exceptions To Specific Criteria |
|---|---|---|---|---|
| 1—Ohio River | Main Stem, Confluence of Allegheny and Monongahela Rivers to PA-OH State Border | Beaver | WWF; *Add* N | See Orsanco Pollution Control Standards |
| 2—Unnamed Tributaries to Ohio River | Basins, Confluence of Allegheny and Monongahela Rivers to PA-OH State Border | Allegheny-Beaver | WWF | None |
| 2—Sawmill Run | Basin | Allegheny | WWF | None |
| 2—Chartiers Creek | Main Stem | Allegheny | WWF | None |



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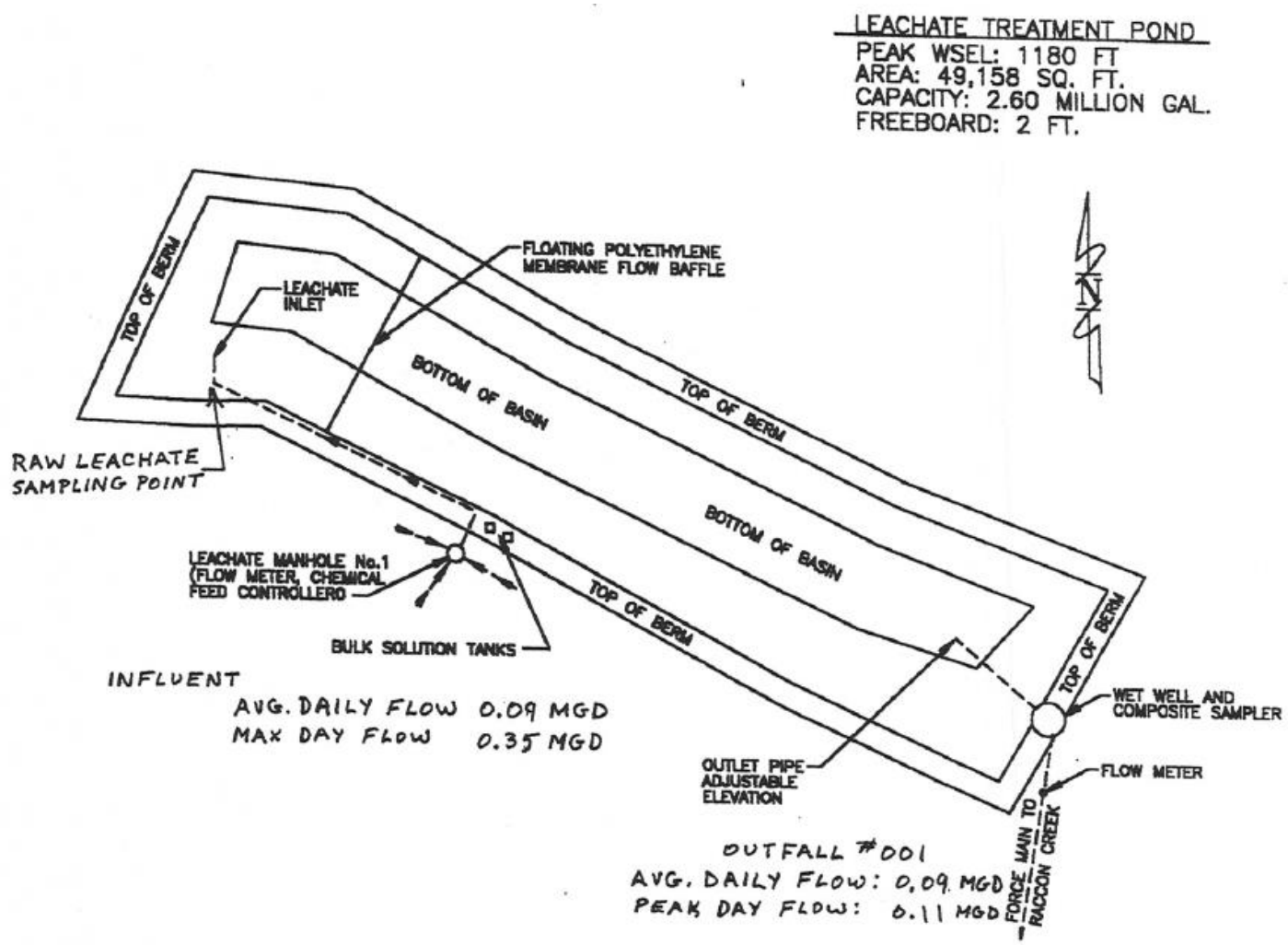
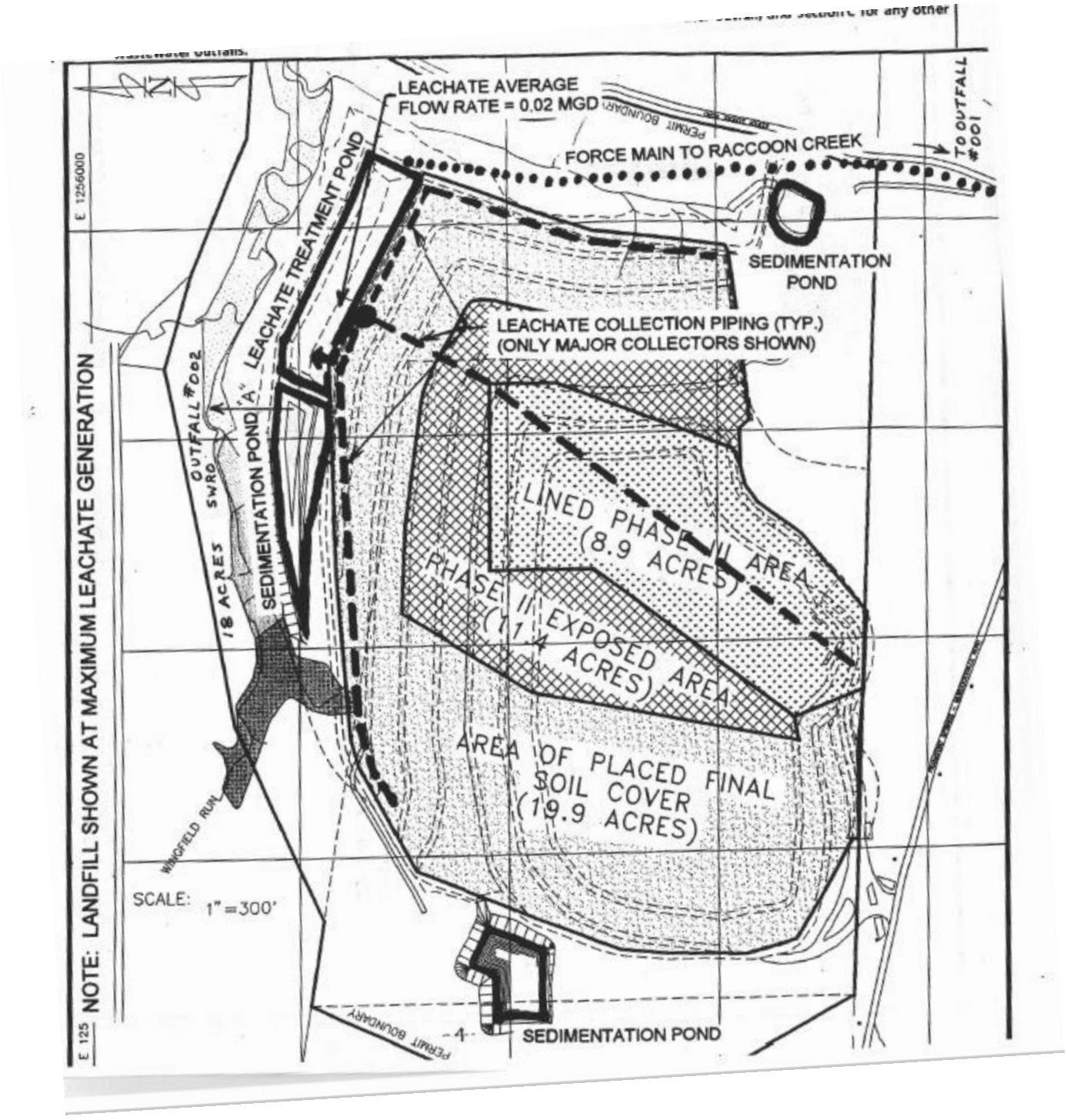
| Stream | Zone | County | Water Uses Protected | Exceptions To Specific Criteria |
|---|---|---|---|---|
| 4—Glade Run | Basin | Butler | WWF | None |
| 4—Muntz Run | Basin | Butler | WWF | None |
| 4—Doe Run | Basin | Butler | WWF | None |
| 4—Camp Run | Basin | Butler | WWF | None |
| 4—Hazen Run | Basin | Butler | WWF | None |
| 4—Brush Creek | Basin | Butler | WWF | None |
| 4—Slippery Rock Creek | Basin, Source to Muddy Creek | Lawrence | CWF | None |
| 5—Muddy Creek | Basin, Source to Moraine State Park Dam | Butler | HQ-CWF | None |
| 5—Muddy Creek | Basin, Moraine State Park Dam to Mouth | Lawrence | WWF | None |
| 4—Slippery Rock Creek | Basin, Muddy Creek to Hell Run | Lawrence | CWF | None |
| 5—Hell Run | Basin | Lawrence | EV | None |
| 4—Slippery Rock Creek | Basin, Hell Run to Mouth | Lawrence | CWF | None |
| 4—Duck Run | Basin | Lawrence | WWF | None |
| 3—Stockman Run | Basin | Beaver | WWF | None |
| 3—Clarks Run | Basin | Beaver | WWF | None |
| 3—Thompson Run | Basin | Beaver | WWF | None |
| 3—Wallace Run | Basin | Beaver | WWF | None |
| 3—Bennett Run | Basin | Beaver | WWF | None |
| 3—Walnut Bottom Run | Basin | Beaver | WWF | None |
| 3—Blockhouse Run | Basin | Beaver | WWF | None |
| 3—Brady Run | Basin | Beaver | TSF | None |
| 3—Hamilton Run | Basin | Beaver | WWF | None |
| 3—McKinley Run | Basin | Beaver | WWF | None |
| 2—Twomile Run | Basin | Beaver | WWF | None |
| 2—Poorhouse Run | Basin | Beaver | WWF | None |
| 2—Raccoon Creek | Basin, Source to Traverse Creek | Beaver | WWF | None |
| 3—Traverse Creek | Basin, Source to State Park Dam | Beaver | HQ-CWF | None |
| 3—Traverse Creek | Basin, State Park Dam to Mouth | Beaver | TSF | None |
| 2—Raccoon Creek | Main Stem, Traverse Creek to Mouth | Beaver | WWF | None |
| 3—Unnamed Tributaries to Raccoon Creek | Basins, Traverse Creek to Mouth | Beaver | WWF | None |
| 3—Little Traverse Run | Basin | Beaver | WWF | None |
| 3—Raredon Run | Basin | Beaver | WWF | None |

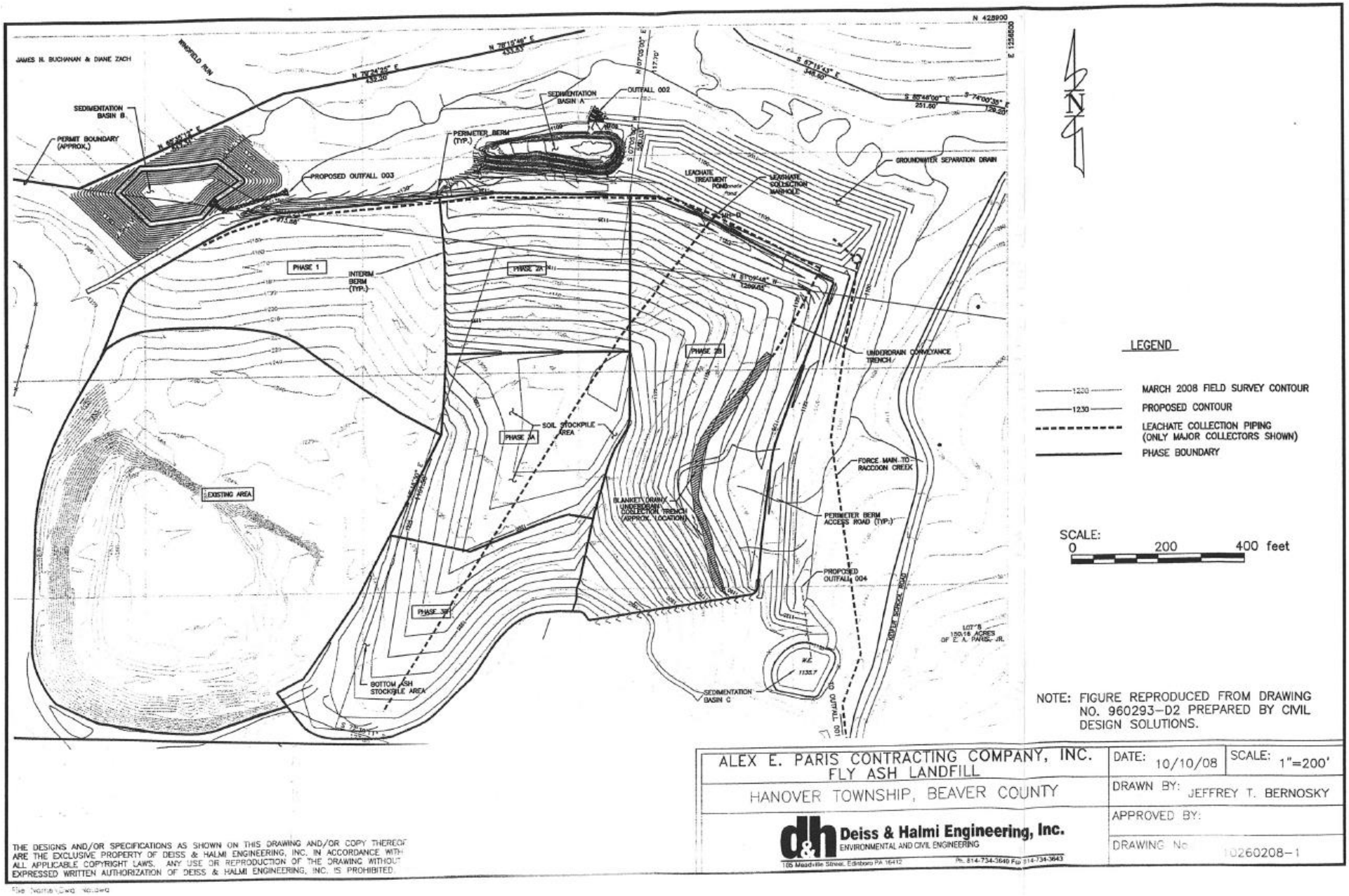
# Attachment D

## Permittee-Supplied Drawings from Application




TREATMENT FACILITY SIZE, CAPACITY, & DIMENSION DIAGRAM
NOT TO SCALE


LEACHATE AVERAGE
FLOW RATE = 0.02 MGD
PERMIT BOUNDARY
TO OUTFALL #001
FORCE MAIN TO RACCOON CREEK
SEDIMENTATION POND
LEACHATE COLLECTION PIPING (TYP.)
(ONLY MAJOR COLLECTORS SHOWN)
LEACHATE TREATMENT POND
"A"
OUTFALL #002
SWRO
18 ACRES
SEDIMENTATION POND
LINED PHASE II AREA
(8.9 ACRES)
PHASE II EXPOSED AREA
(1.4 ACRES)
AREA OF PLACED FINAL
SOIL COVER
(19.9 ACRES)
WINGFIELD RUN
SCALE: 1"=300'
NOTE: LANDFILL SHOWN AT MAXIMUM LEACHATE GENERATION
E 125
E 125600
PERMIT BOUNDARY
SEDIMENTATION POND


JAMES H. BUCHANAN & DIANE ZACH
WINGFIELD RUN
SEDIMENTATION BASIN B
PERMIT BOUNDARY (APPROX.)
SEDIMENTATION BASIN A
OUTFALL 002
PERIMETER BERM (TYP.)
PROPOSED OUTFALL 003
LEACHATE TREATMENT POND
LEACHATE COLLECTION MANHOLE
GROUNDWATER SEPARATION DRAIN
PHASE 1
INTERIM BERM (TYP.)
PHASE 2A
PHASE 2B
UNDERDRAIN CONVEYANCE TRENCH
SOIL STOCKPILE AREA
PHASE 3A
EXISTING AREA
FORCE MAIN TO RACCOON CREEK
BLANKET DRAIN/ UNDERDRAIN COLLECTION TRENCH (APPROX. LOCATION)
PERIMETER BERM ACCESS ROAD (TYP.)
PROPOSED OUTFALL 004
PHASE 3B
BOTTOM ASH STOCKPILE AREA
SEDIMENTATION BASIN C
OUTFALL 001
LOT "B" 150.18 ACRES OF E. A. PARIS, JR.
N 428900
E 1358800
N
LEGEND
1220 MARCH 2008 FIELD SURVEY CONTOUR
1230 PROPOSED CONTOUR
LEACHATE COLLECTION PIPING (ONLY MAJOR COLLECTORS SHOWN)
PHASE BOUNDARY
SCALE:
0 200 400 feet
NOTE: FIGURE REPRODUCED FROM DRAWING NO. 960293-D2 PREPARED BY CIVIL DESIGN SOLUTIONS.
ALEX E. PARIS CONTRACTING COMPANY, INC.
FLY ASH LANDFILL
HANOVER TOWNSHIP, BEAVER COUNTY
DATE: 10/10/08
SCALE: 1"=200'
DRAWN BY: JEFFREY T. BERNOSKY
APPROVED BY:
DRAWING No. 10260208-1
Deiss & Halmi Engineering, Inc.
ENVIRONMENTAL AND CIVIL ENGINEERING
105 Meadville Street, Edinboro PA 16412
Ph. 814-734-3640 Fax 814-734-3643
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**Attachment E**

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DER, Southwestern Region
Bureau of Waste Management

# A BENTHIC MACROINVERTEBRATE INVESTIGATION IN WINGFIELD RUN AND AN UNNAMED TRIBUTARY TO WINGFIELD RUN IN HANOVER TOWNSHIP, BEAVER COUNTY, PENNSYLVANIA

Prepared for:

ALEX E. PARIS CONTRACTING COMPANY
ROUTE 18
ATLASBURG, PA 15004

Prepared by:

KEYSTONE ENVIRONMENTAL RESOURCES
3000 TECH CENTER DRIVE
MONROEVILLE, PA 15146

PROJECT NO. 393800-01

JUNE 1991

## 5.0 CONCLUSION

Acid mine drainage (based on sampling results from station ST-4D) from the unnamed tributary that originates in the area of the proposed residual waste landfill is impacting Wingfield Run. This was observed in the results from sampling station ST-2D which is located downstream from this tributary. The confluence of a second tributary to Wingfield Run, originating at an existing residual waste landfill, appears to additionally buffer the impacts from the acid mine drainage. This was observed in the data collected from station ST-1D which showed that the benthic macroinvertebrate community is recovering from the impacts received upstream from this sampling location.

A similar study, performed by Free-col Laboratories at stations ST-1D and ST-2D in November, 1982, presented similar results and conclusions. No significant differences were noted when comparing these two studies.

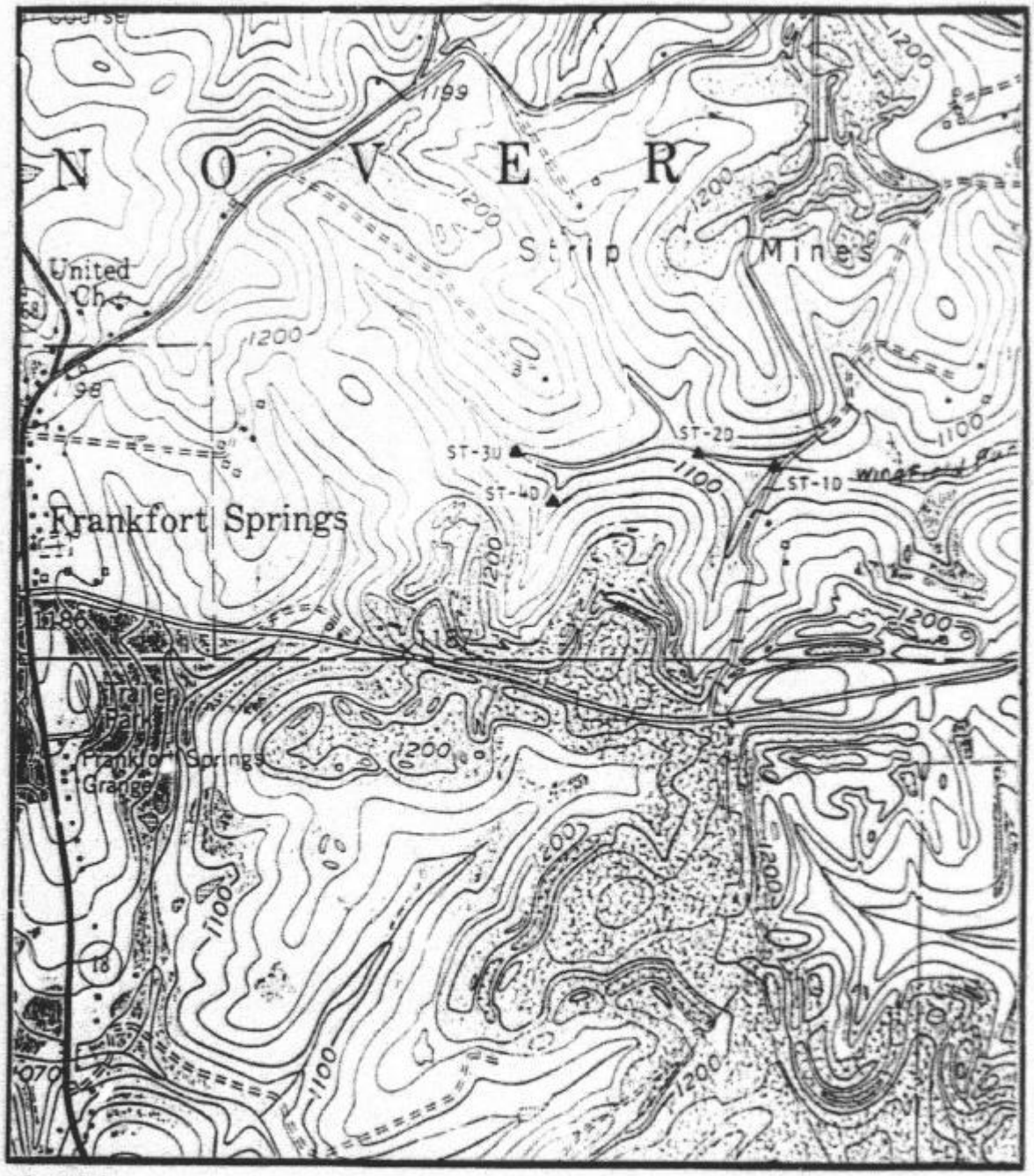


**Figure 1-1**
**Surface Water and Benthic Macroinvertebrate Sampling Stations**