

Application Type Amendment, Major
 Facility Type Industrial
 Major / Minor Minor

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

Application No. PA0221317 A-1
 APS ID 1152835
 Authorization ID 1553127

Applicant and Facility Information

Applicant Name	<u>Allegheny Clarion Valley Development Corp</u>	Facility Name	<u>Allegheny Clarion Valley Ind Park</u>
Applicant Address	<u>PO Box 311 Foxburg, PA 16036-0311</u>	Facility Address	<u>9 Penn West Way Emlenton, PA 16373</u>
Applicant Contact	<u>James Hite</u>	Facility Contact	<u></u>
Applicant Phone	<u>(724) 355-1071</u>	Facility Phone	<u></u>
Client ID	<u>66157</u>	Site ID	<u>456456</u>
SIC Code	<u>6552</u>	Municipality	<u>Allegheny Township</u>
SIC Description	<u>Fin, Ins & Real Est - Subdividers and Developers, Nec</u>	County	<u>Butler</u>
Date Application Received	<u>December 22, 2025</u>	EPA Waived?	<u>Yes</u>
Date Application Accepted	<u>February 23, 2026.</u>	If No, Reason	<u></u>
Purpose of Application	<u>A Major NPDES Permit Amendment</u>		

Summary of Review

Allegheny Clarion Valley Industrial Park consists of a sewage treatment plant and a drinking water treatment plant. The STP is covered under NPDES Permit No. PA0221317 for the discharge of treated sewage via Outfall 001 while the DWTP is covered under Permit No. 1017506.

The existing 50-gpm drinking water treatment plant is currently operating under a Consent Decree and an Emergency Permit because it does not meet the standards of the Public Water Supply systems and needs to be upgraded. The required upgrades are a result of a change in the type of customers served, which resulted in the system's permit type being changed from Transient Non-Community to Public Water Supply. The existing treatment equipment cannot meet the Public Water Supply Standards.

In order to meet the new Public Water Supply permit limits, the addition of a Reverse Osmosis (RO) Treatment System is required in conjunction with the softening and iron removal processes. The RO treatment system will generate reject wastewater that will be discharged to Unnamed Tributary to Little Scrubgrass Creek (CWF) via Outfall 001, requiring an NPDES permit for the discharge of industrial waste.

The project consists of the construction of a new 50-gpm drinking water treatment plant that will be housed in a new operations building. The new treatment plant will be served by two existing raw water wells and will include chemical conditioning, softening, iron and manganese treatment, total dissolved solids treatment (by reverse osmosis) and disinfection. The new water treatment plant is currently under construction and will serve the AC Valley Business Park, one residential customer, and will support 500 jobs. The existing drinking water treatment facility will be decommissioned once the new facility is completed and approved for operation.

Approve	Deny	Signatures	Date
X		Aeshah Shameseldin Aeshah Shameseldin / Project Manager	February 27, 2026
X		Adam Olesnanik Adam Olesnanik, P.E. / Environmental Engineer Manager	February 27, 2026

Summary of Review

The purpose of this application is to amend the existing NPDES permit to authorize the discharge of the industrial wastewater generated from the RO treatment system in addition to the currently permitted treated sewage effluent. Both types of waste will be covered under the same permit, which will result in the change from a minor sewage permit type to an industrial waste permit. The amended permit will include effluent limitations and monitoring requirements for both treated sewage and industrial wastewater.

It was determined to establish two Internal Monitoring Points (IMPs 101 and 201) to monitor the two wastewater streams separately. The effluent limitations for sewage will be applied at IMP 101 and the effluent Limitations for water treatment plant wastes will be applied at IMP 201. The combined waste stream will be discharged to Unnamed Tributary to Little Scrubgrass Creek (CWF) via Outfall 001, at a design flow rate of 0.05067 MGD. The permittee is required to sample each waste stream separately before mixing occurs. No samples will be required to be taken of the combined wastewater at Outfall 001.

Act 14 – Proof of Notification was submitted and received.

This facility is currently using eDMR system.

SPECIAL CONDITIONS: NONE.

There is 1 open violation in WMS for the subject Client ID (66157) as of February 27, 2026, associated with the Safe Drinking Water Program.

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 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.

Discharge, Receiving Waters and Water Supply Information

Outfall No. 001 Design Flow (MGD) 0.05067

Latitude 41° 10' 14" Longitude -79° 45' 26"

Wastewater Description: Treated Sewage Effluent and IW Process Effluent Without ELGs

IMP No. 101 Design Flow (MGD) 0.045

Latitude 41° 10' 14" Longitude -79° 45' 26"

Wastewater Description: Treated Sewage Effluent

IMP No. 201 Design Flow (MGD) 0.00567

Latitude 41° 10' 14" Longitude -79° 45' 26"

Wastewater Description: IW Process Effluent Without ELGs

Quad Name Eau Claire Quad Code 41079B7

Receiving Waters Unnamed Tributary to Little
Scrubgrass Creek (CWF) Stream Code 51200

NHD Com ID 100479989 RMI for Outfall 001 2.37

Drainage Area 0.94 square miles Yield (cfs/mi²) 0.037

Q₇₋₁₀ Flow (cfs) 0.03478 Q₇₋₁₀ Basis Calculated

Elevation (ft) 1348 Slope (ft/ft) ---

Watershed No. 16-G Chapter 93 Class. CWF

Existing Use --- Existing Use Qualifier ---

Exceptions to Use --- Exceptions to Criteria ---

Assessment Status Attaining Use(s)

Cause(s) of Impairment ---

Source(s) of Impairment ---

TMDL Status Final Name Little Scrubgrass

Background/Ambient Data Data Source

pH (SU) 7.0 Default

Temperature (°F) 68 Default

Hardness (mg/L) 100 Default

Other: --- ---

Nearest Downstream Public Water Supply Intake Aqua Pennsylvania, Inc. - Emlenton

PWS Waters Allegheny River Flow at Intake (cfs) ---

PWS RMI 90.0 Distance from Outfall (mi) 15.0

Treatment Facility Summary

Treatment Facility Name: Allegheny-Valley Devel Corp STP

WQM Permit No.	Issuance Date
1018408	October 26, 2018
1094411 A-2	May 21, 2015
1094411 A-1	May 11, 1995

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Tertiary	Activated Sludge with Solids Removal	Chlorine	---

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
0.045	---	Not Overloaded	Sludge Holding	Other WWTP

Changes Since Last Permit Issuance: N/A

Other Comments: N/A

Compliance History

DMR Data for Outfall 001 (from January 1, 2025, to December 31, 2025)

Parameter	DEC-25	NOV-25	OCT-25	SEP-25	AUG-25	JUL-25	JUN-25	MAY-25	APR-25	MAR-25	FEB-25	JAN-25
Flow (MGD) Average Monthly	0.1116	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.0005	0.005	0.0005	0.005
Flow (MGD) Daily Maximum	0.133	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.0005	0.005	0.0005	0.005
pH (S.U.) Minimum	6.0	6.0	6.0	6.0	6.1	6.0	6.1	6.1	6.1	6.1	6.5	6.5
pH (S.U.) Maximum	6.2	6.3	6.3	6.2	6.2	6.4	6.4	6.3	6.3	6.6	6.8	7.4
DO (mg/L) Minimum	6.0	6.0	6.06	6.1	6.1	6.01	6.18	6.16	6.07	6.01	6.1	6.06
TRC (mg/L) Average Monthly	0.01	0.02	0.03	0.04	0.03	0.03	0.04	0.04	0.02	0.04	0.04	0.04
TRC (mg/L) Instantaneous Maximum	0.03	0.04	0.08	0.07	0.07	0.06	0.09	0.10	0.05	0.08	0.09	0.13
CBOD5 (mg/L) Average Monthly	< 2.8	< 2.0	< 7.7	< 2.7	< 12.7	30.4	< 2.0	30.9	21.7	14.8	11.3	7.7
TSS (mg/L) Average Monthly	< 13.0	< 5.0	7.5	< 5.0	< 36.0	56.5	20.5	70.0	12.0	15.0	10.0	10.0
Fecal Coliform (No./100 ml) Geometric Mean	< 1	< 1	< 1.0	< 1.0	2	< 3	< 2	2420	< 1	< 1	< 1	< 20
Fecal Coliform (No./100 ml) Instantaneous Maximum	< 1	1	< 1.0	< 1.0	5	9	3	2420	< 1	< 1	< 1	387
Total Nitrogen (mg/L) Average Quarterly	30.9			8.1			3.14			9.27		
Ammonia (mg/L) Average Monthly	< 2.3	9.5	7.4	1.8	< 10.0	15.7	10.5	11.8	10.7	18.6	3.8	< 0.2
Total Phosphorus (mg/L) Average Quarterly	3.02			2.8			< 0.15			1.12		

Compliance History

Effluent Violations for Outfall 001, from: February 1, 2025, To: December 31, 2025

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
CBOD5	07/31/25	Avg Mo	30.4	mg/L	25.0	mg/L
CBOD5	05/31/25	Avg Mo	30.9	mg/L	25.0	mg/L
TSS	07/31/25	Avg Mo	56.5	mg/L	30.0	mg/L
TSS	05/31/25	Avg Mo	70.0	mg/L	30.0	mg/L
TSS	08/31/25	Avg Mo	< 36.0	mg/L	30.0	mg/L
Fecal Coliform	05/31/25	Geo Mean	2420	No./100 ml	200	No./100 ml
Fecal Coliform	05/31/25	IMAX	2420	No./100 ml	1000	No./100 ml
Ammonia	08/31/25	Avg Mo	< 10.0	mg/L	2.0	mg/L
Ammonia	05/31/25	Avg Mo	11.8	mg/L	2.0	mg/L
Ammonia	11/30/25	Avg Mo	9.5	mg/L	6.0	mg/L
Ammonia	10/31/25	Avg Mo	7.4	mg/L	2.0	mg/L
Ammonia	04/30/25	Avg Mo	10.7	mg/L	6.0	mg/L
Ammonia	06/30/25	Avg Mo	10.5	mg/L	2.0	mg/L
Ammonia	07/31/25	Avg Mo	15.7	mg/L	2.0	mg/L
Ammonia	03/31/25	Avg Mo	18.6	mg/L	6.0	mg/L

Development of Effluent Limitations

IMP No.	101	Design Flow (MGD)	0.045
Latitude	41° 10' 14.00"	Longitude	-79° 45' 26.00"
Wastewater Description: Treated Sewage Effluent			

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
CBOD ₅	25	Average Monthly	133.102(a)(4)(i)	92a.47(a)(1)
	40	Average Weekly	133.102(a)(4)(ii)	92a.47(a)(2)
Total Suspended Solids	30	Average Monthly	133.102(b)(1)	92a.47(a)(1)
	45	Average Weekly	133.102(b)(2)	92a.47(a)(2)
pH	6.0 – 9.0 S.U.	Min – Max	133.102(c)	95.2(1)
Fecal Coliform (5/1 – 9/30)	200 / 100 ml	Geo Mean	-	92a.47(a)(4)
Fecal Coliform (5/1 – 9/30)	1,000 / 100 ml	IMAX	-	92a.47(a)(4)
Fecal Coliform (10/1 – 4/30)	2,000 / 100 ml	Geo Mean	-	92a.47(a)(5)
Fecal Coliform (10/1 – 4/30)	10,000 / 100 ml	IMAX	-	92a.47(a)(5)
Total Residual Chlorine	0.5	Average Monthly	-	92a.48(b)(2)
E. Coli	Report (No./100 ml)	IMAX	-	§ 92a.61

Comments: Monitoring for E. Coli is placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BCW-PMT-033)".

Water Quality-Based Limitations

CBOD₅, Ammonia, and DO are evaluated using WQM 7.0 (Attachment 2). TRC is evaluated using the Department's TRC evaluation spreadsheet (Attachment 3).

Parameter	Limit (mg/L)	SBC	Model
Dissolved Oxygen	5.0	Daily Min.	WQM 7.0
CBOD ₅	25.0	Average Monthly	WQM 7.0
Ammonia Nitrogen (May 1 – Oct 31)	2.93	Average Monthly	WQM 7.0
	5.86	IMAX	
TRC	0.082	Average Monthly	TRC Evaluation Spreadsheet
	0.268	IMAX	

Comment 1: A minimum Dissolved Oxygen limit of 6.0 mg/L established in the current permit will be retained.

Comment 2: Water Quality Modeling recommended the existing limit of 25.0 mg/L for CBOD₅.

Comment 3: Water Quality Modeling did not calculate a more stringent average monthly Ammonia Nitrogen limit under perennial flow conditions. The existing effluent limitations established in the current permit are attainable and will be retained.

Comment 4: The TRC evaluation spreadsheet didn't calculate more stringent average monthly TRC limit at perennial conditions using the plant design flow. The technology-based limitations established in previous permits are attainable and will be retained.

Best Professional Judgment (BPJ) Limitations

Total Nitrogen and Total Phosphorus

Monitoring for Total Nitrogen and Total Phosphorus are placed in the permit in accordance with the Department's SOP entitled "Establishing Effluent Limitations for Individual Sewage Permits (SOP No. BCW-PMT-033)". The current 1/quarter monitoring frequency for TN and TP will be retained.

Anti-Backsliding

Effluent limits, monitoring requirements and conditions are being retained from the current permit in accordance with the EPA's anti-backsliding regulation 40 CFR 122.44(l). No changes to the current effluent limits or monitoring requirements are proposed as part of this renewal.

Development of Effluent Limitations

IMP No. 201 Design Flow (MGD) 0.00567
 Latitude 41° 10' 14.00" Longitude -79° 45' 26.00"
 Wastewater Description: IW Process Effluent Without ELGs

Technology-Based Limitations

The following technology-based limitations apply, subject to water quality analysis and BPJ where applicable:

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
Total Aluminum	4	Average Monthly	-	-
	8	Daily Maximum	-	-
Total Suspended Solids	30	Average Monthly	-	-
	45	Average Weekly	-	-
pH	6.0 – 9.0 S.U.	Min – Max	-	--
Total Iron	2	Average Monthly	-	-
	4	Daily Maximum	-	-
Total Manganese	1	Average Monthly	-	-
	2	Daily Maximum	-	-
Total Residual Chlorine	0.5	Average Monthly	-	-
	1.0	IMAX	-	-

Comments: In accordance with the Department’s guidance entitled “Technology-Based Control Requirements for Water Treatment Plant Wastes (Guidance No. 362-2183-003)”, it was determined that these limits considered to be the “Best Practicable Control Technology Currently Available (BPT)” for discharges from WTPs. Therefore, these limits will be established in this permit.

Water Quality-Based Limitations

A Reasonable Potential Analysis was performed using the Department's Toxic Management Spreadsheet (Attachment 4). Based on the facility’s maximum operating IW flow of 0.00567 MGD, the spreadsheet did not recommend monitoring requirements or WQBELs for parameters expected to be at detected concentrations in the discharge and sampled in “Pollutant Group 1” and “Pollutant Group 2”, submitted with the amendment application.

The TRC evaluation spreadsheet didn’t calculate more stringent average monthly TRC limit at perennial conditions using the IW design flow (Attachment 5). The spreadsheet calculated an IMAX value of 1.6 mg/L, while the recommended technology-based IMAX for WTPs is 1.0 mg/L. Because the TRC technology-based limitations for WTPs are more protective of the receiving stream, these limitations will be imposed in this permit.

Best Professional Judgment (BPJ) Limitations

Total Dissolved Solids

Monitoring for TDS is placed in the permit in accordance with the Department’s SOP entitled “Establishing Effluent Limitations for Individual Industrial Permits (SOP No. BCW-PMT-032)”, which states the following:

“Determine if the treatment requirements of Chapter 95.10 related to TDS and its constituent parameters are applicable. Refer to Policy and Procedure for NPDES Permitting of Discharges of Total Dissolved Solids (TDS) -- 25 Pa. Code §95.10 (DEP-ID: 385-2100-002). At a minimum, establish a monitoring requirement for TDS for any discharge that exceeds 1,000 mg/L TDS”.

According to the submitted estimated effluent concentrations for “Pollutant Group 1”, the expected effluent concentration for TDS is 2,340 mg/L. Therefore, 2/month monitoring frequency for TDS will be established in this permit.

Anti-Backsliding: N/A – This is a new discharge.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

IMP 101, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Maximum	Instant. Maximum		
Flow (MGD)	Report	Report Daily Max	XXX	XXX	XXX	XXX	1/week	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
DO	XXX	XXX	6.0 Daily Min	XXX	XXX	XXX	1/day	Grab
TRC	XXX	XXX	XXX	0.08	XXX	0.27	1/day	Grab
CBOD5	XXX	XXX	XXX	25.0	XXX	50	2/month	8-Hr Composite
TSS	XXX	XXX	XXX	30.0	XXX	60	2/month	8-Hr Composite
Fecal Coliform (No./100 ml) Oct 1 - Apr 30	XXX	XXX	XXX	2000 Geo Mean	XXX	10000	2/month	Grab
Fecal Coliform (No./100 ml) May 1 - Sep 30	XXX	XXX	XXX	200 Geo Mean	XXX	1000	2/month	Grab
E. Coli (No./100 ml)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
Total Nitrogen	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite
Ammonia Nov 1 - Apr 30	XXX	XXX	XXX	6.0	XXX	12	2/month	8-Hr Composite
Ammonia May 1 - Oct 31	XXX	XXX	XXX	2.0	XXX	4	2/month	8-Hr Composite
Total Phosphorus	XXX	XXX	XXX	Report Avg Qrtly	XXX	XXX	1/quarter	8-Hr Composite

Compliance Sampling Location: At Internal Monitoring Point 101, After Disinfection and Prior to Mixing with the IW Process Effluent.

Proposed Effluent Limitations and Monitoring Requirements

The limitations and monitoring requirements specified below are proposed for the draft permit, and reflect the most stringent limitations amongst technology, water quality and BPJ. Instantaneous Maximum (IMAX) limits are determined using multipliers of 2 (conventional pollutants) or 2.5 (toxic pollutants). Sample frequencies and types are derived from the "NPDES Permit Writer's Manual" (386-0400-001), SOPs and/or BPJ.

IMP 201, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day) ⁽¹⁾		Concentrations (mg/L)				Minimum ⁽²⁾ Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	XXX	XXX	XXX	XXX	XXX	Continuous	Measured
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	2/month	Grab
TRC	XXX	XXX	XXX	0.5	1.0	XXX	2/month	Grab
TSS	XXX	XXX	XXX	30.0	60.0	XXX	2/month	Grab
Total Dissolved Solids	XXX	XXX	XXX	XXX	Report	XXX	2/month	Grab
Total Aluminum	XXX	XXX	XXX	4.0	8.0	XXX	2/month	Grab
Total Iron	XXX	XXX	XXX	2.0	4.0	XXX	2/month	Grab
Total Manganese	XXX	XXX	XXX	1.0	2.0	XXX	2/month	Grab

Compliance Sampling Location: At Internal Monitoring Point 201, Prior to Mixing with the Treated Sewage Discharge.

Outfall Location & Receiving Stream – eMap with Aerial Imagery

The screenshot displays the Pennsylvania eMapPA web application interface. At the top, the Pennsylvania Department of Environmental Protection logo is on the left, and navigation links for PA State Agencies, Online Services, and state officials are on the right. The main map area shows a landscape with various stream types overlaid on aerial imagery. A legend on the left categorizes streams into 'Existing Use Streams' (Cold Water Fish, Exceptional Value, High Quality, Trout Stocking, Warm Water Fish, Overlap) and 'Designated Use Streams' (Cold Water Fish, Exceptional Value, High Quality, Trout Stocking, Warm Water Fish, Overlap, Missing from CH93). A 'Designated Use Streams (1 of 3)' popup window is open, displaying the following details for a selected stream:

- Designated Use Gen ID: 39787
- GNIS Name:
- GNIS ID:
- ReachCode: 05010003000492
- COMID: 100479981
- Length Miles: 2.354
- Map Symbology: CWF
- Length Miles: 2.354
- Designated Use: 1
- DES Use ID: 1
- Use Description: CWF(COLD WATER FISHES)
- Migratory_Fish: N
- HUC: 05010003
- Basin: N
- Basin Narrative: Null
- Segment Narrative: Null
- Evaluation Date: Null
- Last Fdit Date: Null
- Zoom to

Additional interface elements include a 'Locate Latitude and Longitude' dialog box with input fields for Degrees, Minutes, and Seconds (Latitude: 41, 10, 14; Longitude: -79, 45, 26), and a scale bar at the bottom of the map area. The map controls at the top include options for ESRI Streets & Imagery, Topographic, and National Geographic.

Drainage Area Location – StreamStats with Aerial Imagery

StreamStats Report

Region ID:

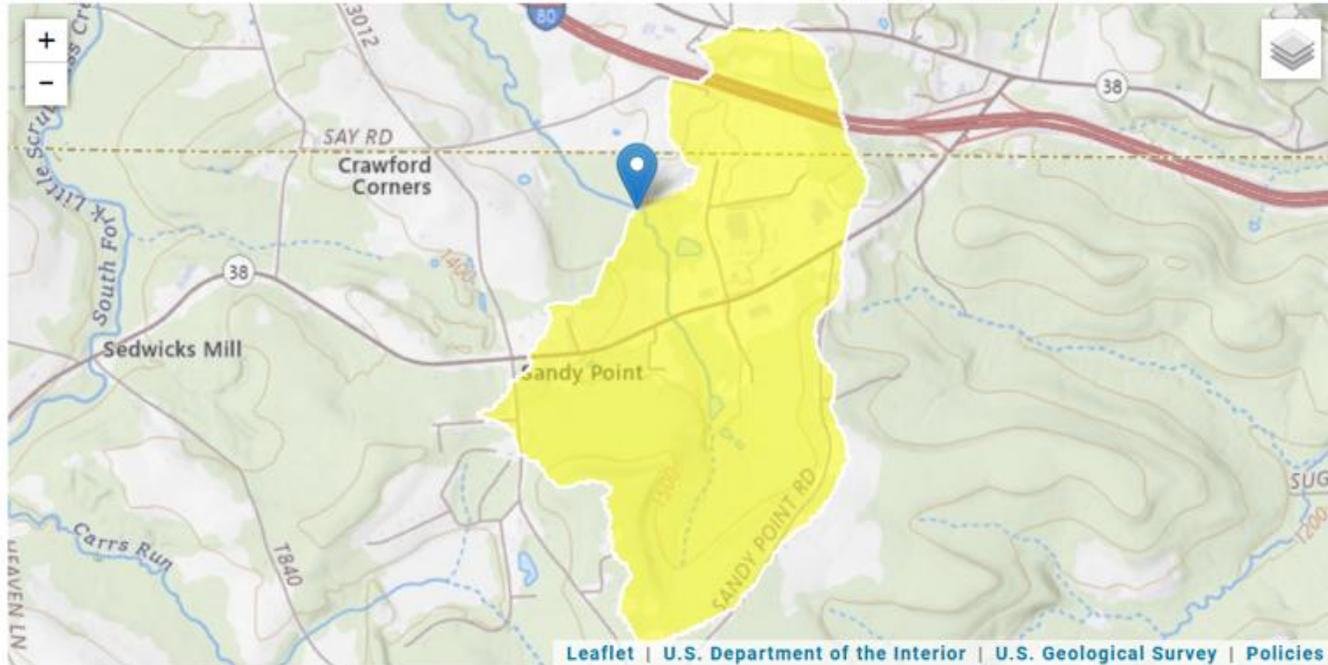
PA

Clicked Point (Latitude, Longitude):

41.17064, -79.75683

Time:

2026-02-23 13:44:43 -0500

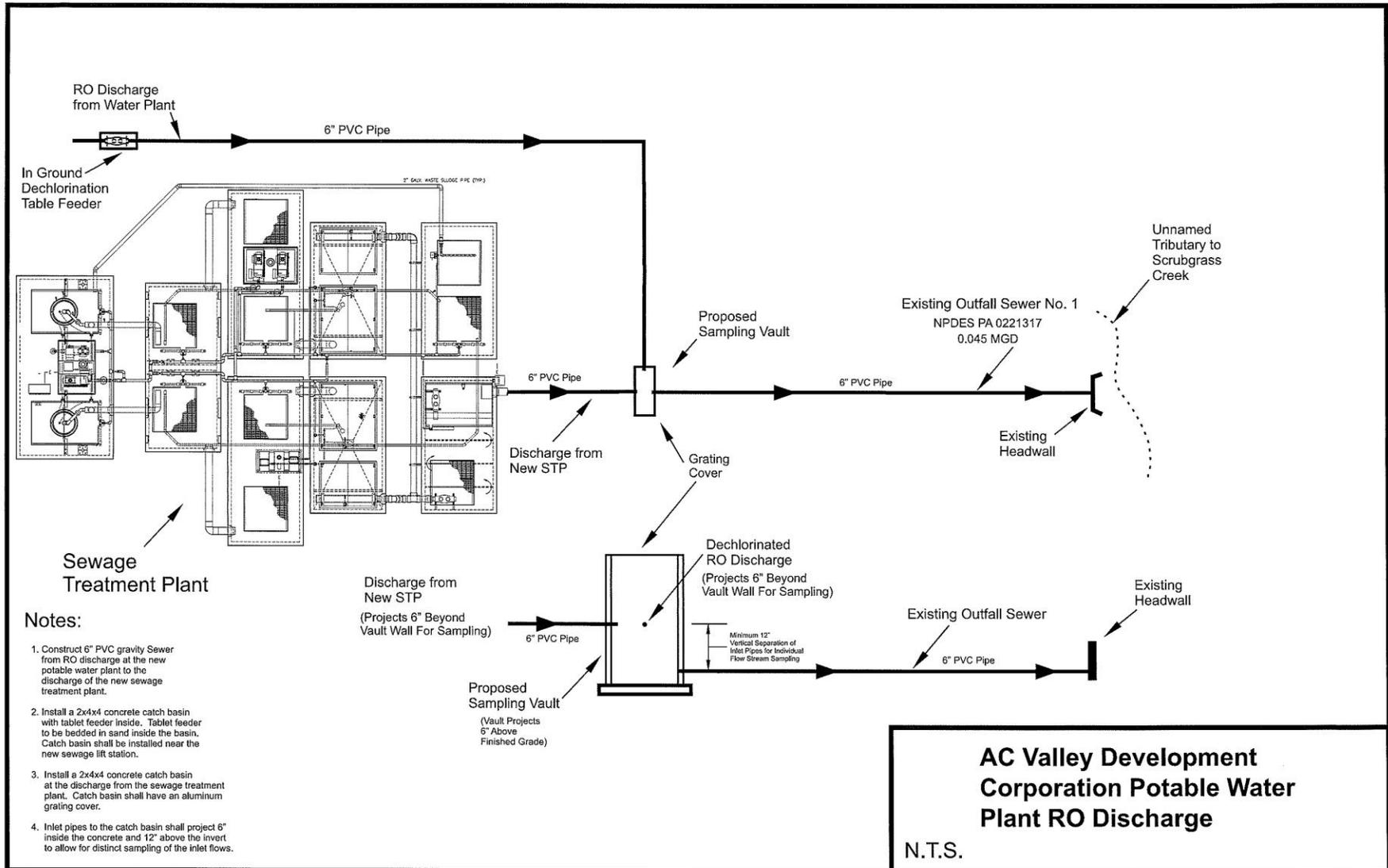


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Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.94	square miles

Attachment 1



Attachment 2

WQM 7.0 Effluent Limits

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>					
16G	51200	Trib 51200 to Little Scrubgrass Cr					
RMI	Name	Permit Number	Disc Flow (mgd)	Parameter	Effl. Limit 30-day Ave. (mg/L)	Effl. Limit Maximum (mg/L)	Effl. Limit Minimum (mg/L)
2.370	AC Valley	PA0221317	0.045	CBOD5	25		
				NH3-N	2.93	5.86	
				Dissolved Oxygen			5

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	<input checked="" type="checkbox"/>
WLA Method	EMPR	Use Inputted W/D Ratio	<input type="checkbox"/>
Q1-10/Q7-10 Ratio	0.64	Use Inputted Reach Travel Times	<input type="checkbox"/>
Q30-10/Q7-10 Ratio	1.36	Temperature Adjust Kr	<input checked="" type="checkbox"/>
D.O. Saturation	90.00%	Use Balanced Technology	<input checked="" type="checkbox"/>
D.O. Goal	6		

WQM 7.0 D.O.Simulation

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>		
16G	51200	Trib 51200 to Little Scrubgrass Cr		
<hr/>				
<u>RMI</u>	<u>Total Discharge Flow (mgd)</u>	<u>Analysis Temperature (°C)</u>	<u>Analysis pH</u>	
2.370	0.045	23.334	6.343	
<u>Reach Width (ft)</u>	<u>Reach Depth (ft)</u>	<u>Reach WDRatio</u>	<u>Reach Velocity (fps)</u>	
4.459	0.352	12.674	0.067	
<u>Reach CBOD5 (mg/L)</u>	<u>Reach Kc (1/days)</u>	<u>Reach NH3-N (mg/L)</u>	<u>Reach Kn (1/days)</u>	
17.34	0.855	1.98	0.905	
<u>Reach DO (mg/L)</u>	<u>Reach Kr (1/days)</u>	<u>Kr Equation</u>	<u>Reach DO Goal (mg/L)</u>	
6.080	26.397	Owens	6	
<u>Reach Travel Time (days)</u>	Subreach Results			
2.167	<u>TravTime (days)</u>	<u>CBOD5 (mg/L)</u>	<u>NH3-N (mg/L)</u>	<u>D.O. (mg/L)</u>
	0.217	13.97	1.63	7.53
	0.433	11.26	1.34	7.74
	0.650	9.07	1.10	7.76
	0.867	7.31	0.91	7.76
	1.084	5.89	0.74	7.76
	1.300	4.74	0.61	7.76
	1.517	3.82	0.50	7.76
	1.734	3.08	0.41	7.76
	1.951	2.48	0.34	7.76
	2.167	2.00	0.28	7.76

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
16G	51200	Trib 51200 to Little Scrubgrass Cr	2.370	1348.00	0.94	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary		Stream	
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	Temp (°C)	pH	Temp (°C)	pH
Q7-10	0.037	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
AC Valley	PA0221317	0.0450	0.0000	0.0000	0.000	25.00	6.20

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	4.00	8.24	0.00	0.00
NH3-N	25.00	0.10	0.00	0.70

Input Data WQM 7.0

SWP Basin	Stream Code	Stream Name	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope (ft/ft)	PWS Withdrawal (mgd)	Apply FC
16G	51200	Trib 51200 to Little Scrubgrass Cr	0.010	1135.00	2.83	0.00000	0.00	<input checked="" type="checkbox"/>

Stream Data

Design Cond.	LFY	Trib Flow	Stream Flow	Rch Trav Time	Rch Velocity	WD Ratio	Rch Width	Rch Depth	Tributary Temp	Tributary pH	Stream Temp	Stream pH
	(cfsm)	(cfs)	(cfs)	(days)	(fps)		(ft)	(ft)	(°C)		(°C)	
Q7-10	0.037	0.00	0.00	0.000	0.000	0.0	0.00	0.00	20.00	7.00	0.00	0.00
Q1-10		0.00	0.00	0.000	0.000							
Q30-10		0.00	0.00	0.000	0.000							

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	Disc Temp (°C)	Disc pH
		0.0000	0.0000	0.0000	0.000	25.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	25.00	2.00	0.00	1.50
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	25.00	0.00	0.00	0.70

WQM 7.0 Wasteload Allocations

<u>SWP Basin</u>	<u>Stream Code</u>	<u>Stream Name</u>
16G	51200	Trib 51200 to Little Scrubgrass Cr

NH3-N Acute Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.370	AC Valley	17.63	23.24	17.63	23.24	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (mg/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
2.370	AC Valley	1.78	2.93	1.78	2.93	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	<u>CBOD5</u>		<u>NH3-N</u>		<u>Dissolved Oxygen</u>		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (mg/L)		
2.37	AC Valley	25	25	2.93	2.93	5	5	0	0

WQM 7.0 Hydrodynamic Outputs

<u>SWP Basin</u>		<u>Stream Code</u>				<u>Stream Name</u>						
16G		51200				Trib 51200 to Little Scrubgrass Cr						
RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Reach Trav Time (days)	Analysis Temp (°C)	Analysis pH
Q7-10 Flow												
2.370	0.03	0.00	0.03	.0696	0.01709	.352	4.46	12.67	0.07	2.167	23.33	6.34
Q1-10 Flow												
2.370	0.02	0.00	0.02	.0696	0.01709	NA	NA	NA	0.06	2.328	23.79	6.30
Q30-10 Flow												
2.370	0.05	0.00	0.05	.0696	0.01709	NA	NA	NA	0.07	2.034	22.98	6.38

Attachment 3 - TRC Modeling for Sewage

TRC EVALUATION					
Input appropriate values in A3:A9 and D3:D9					
0.03478	= Q stream (cfs)		0.5	= CV Daily	
0.045	= Q discharge (MGD)		0.5	= CV Hourly	
30	= no. samples		1	= AFC_Partial Mix Factor	
0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor	
0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)	
0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)	
0	= % Factor of Safety (FOS)		0	=Decay Coefficient (K)	
Source	Reference	AFC Calculations		Reference	CFC Calculations
TRC	1.3.2.iii	WLA_afc = 0.178		1.3.2.iii	WLA_cfc = 0.166
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373		5.1c	LTAMULT_cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc = 0.066		5.1d	LTA_cfc = 0.097
Source	Effluent Limit Calculations				
PENTOXSD TRG	5.1f	AML_MULT = 1.231			
PENTOXSD TRG	5.1g	AVG_MON_LIMIT (mg/l) = 0.082		AFC	
		INST_MAX_LIMIT (mg/l) = 0.268			
WLA_afc	$(.019/e(-k*AFC_tc)) + [(AFC_Yc*Qs*.019/Qd*e(-k*AFC_tc))... + Xd + (AFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)$				
LTAMULT_afc	$EXP((0.5*LN(cvh^2+1))-2.326*LN(cvh^2+1)^0.5)$				
LTA_afc	wla_afc*LTAMULT_afc				
WLA_cfc	$(.011/e(-k*CFC_tc)) + [(CFC_Yc*Qs*.011/Qd*e(-k*CFC_tc))... + Xd + (CFC_Yc*Qs*Xs/Qd)]*(1-FOS/100)$				
LTAMULT_cfc	$EXP((0.5*LN(cvd^2/no_samples+1))-2.326*LN(cvd^2/no_samples+1)^0.5)$				
LTA_cfc	wla_cfc*LTAMULT_cfc				
AML_MULT	$EXP(2.326*LN((cvd^2/no_samples+1)^0.5)-0.5*LN(cvd^2/no_samples+1))$				
AVG_MON_LIMIT	MIN(BAT_BPJ,MIN(LTA_afc,LTA_cfc)*AML_MULT)				
INST_MAX_LIMIT	$1.5*((av_mon_limit/AML_MULT)/LTAMULT_afc)$				

Attachment 4



Toxics Management Spreadsheet
Version 1.4, May 2025

Discharge Information

Instructions Discharge Stream

Facility: Allegheny Clarion Valley Industrial Park NPDES Permit No.: PA0221317 Outfall No.: IMP 201
Evaluation Type: Major Sewage / Industrial Waste Wastewater Description: Reverse Osmosis Backwash

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
0.00567	100	7.4						

Discharge Pollutant	Units	Max Discharge Conc	0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
			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	2340								
	Chloride (PWS)	mg/L	168								
	Bromide	mg/L									
	Sulfate (PWS)	mg/L	1070								
	Fluoride (PWS)	mg/L	0.37								
Group 2	Total Aluminum	µg/L									
	Total Antimony	µg/L									
	Total Arsenic	µg/L									
	Total Barium	µg/L	210								
	Total Beryllium	µg/L									
	Total Boron	µg/L									
	Total Cadmium	µg/L									
	Total Chromium (III)	µg/L									
	Hexavalent Chromium	µg/L									
	Total Cobalt	µg/L									
	Total Copper	mg/L									
	Free Cyanide	µg/L									
	Total Cyanide	µg/L									
	Dissolved Iron	µg/L									
	Total Iron	µg/L									
	Total Lead	µg/L									
	Total Manganese	µg/L									
	Total Mercury	µg/L									
	Total Nickel	µg/L									
	Total Phenols (Phenolics) (PWS)	µg/L									
	Total Selenium	µg/L									
	Total Silver	µg/L									
Total Thallium	µg/L										
Total Zinc	mg/L										
Total Molybdenum	µg/L										
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)Anthracene	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	<																		

For modeling purposes, the Point of Discharge (POD) was assigned an RMI value of 15.0, representing the distance in miles between the POD and the End of Reach 1 (Public Water Supply) location. This value differs from the actual RMI on Unnamed Tributary to Little Scrubgrass Creek (Code 51200), which is 2.37. Similarly, the End of Reach 1 was assigned an RMI value of 0.01 for modeling consistency, although its actual RMI on the Allegheny River is 90.0.



Stream / Surface Water Information

Allegheny Clarion Valley Industrial Park, NPDES Permit No. PA0221317, Outfall IMP 201

Instructions Discharge Stream

Receiving Surface Water Name: UNT to Little Scrubgrass 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	051200	15	1348	0.94			Yes
End of Reach 1	042122	0.01	864	6391			Yes

Q₇₋₁₀

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	15	0.037										100	7		
End of Reach 1	0.01	0.24										100	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	15														
End of Reach 1	0.01														



Model Results

Allegheny Clarion Valley Industrial Park, NPDES Permit No. PA0221317, Outfall IMP 201

All
 Inputs
 Results
 Limits

Hydrodynamics

Q₇₋₁₀

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
15	0.03		0.03	0.009	0.006	0.307	3.788	12.336	0.037	24.462	0.943
0.01	1533.65		1533.64918								

Q_h

RMI	Stream Flow (cfs)	PWS Withdrawal (cfs)	Net Stream Flow (cfs)	Discharge Analysis Flow (cfs)	Slope (ft/ft)	Depth (ft)	Width (ft)	W/D Ratio	Velocity (fps)	Travel Time (days)	Complete Mix Time (min)
15	0.39		0.39	0.009	0.006	0.818	3.788	4.633	0.13	7.033	0.326
0.01	4521.821		4521.82								

Wasteload Allocations

AFC
 CCT (min):
 PMF:
 Analysis Hardness (mg/l):
 Analysis pH:

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 Barium	0	0		0	21,000	21,000	104,267	

CFC
 CCT (min):
 PMF:
 Analysis Hardness (mg/l):
 Analysis pH:

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 Barium	0	0	0	4,100	4,100	20,357	

THH CCT (min): PMF: Analysis Hardness (mg/l): Analysis pH:

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	0	500,000	500,000	N/A	
Chloride (PWS)	0	0	0	0	250,000	250,000	N/A	
Sulfate (PWS)	0	0	0	0	250,000	250,000	N/A	
Fluoride (PWS)	0	0	0	0	2,000	2,000	N/A	
Total Barium	0	0	0	0	2,400	2,400	11,916	

CRL CCT (min): PMF: Analysis Hardness (mg/l): Analysis pH:

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	0	N/A	N/A	N/A	
Chloride (PWS)	0	0	0	0	N/A	N/A	N/A	
Sulfate (PWS)	0	0	0	0	N/A	N/A	N/A	
Fluoride (PWS)	0	0	0	0	N/A	N/A	N/A	
Total Barium	0	0	0	0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month:

Pollutants	Mass Limits		Concentration Limits				Governing WQBEL	WQBEL Basis	Comments
	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units			

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
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Barium	11,916	µg/L	Discharge Conc ≤ 10% WQBEL

Attachment 5 - TRC Modeling for IW

TRC EVALUATION				
Input appropriate values in A3:A9 and D3:D9				
0.03478	= Q stream (cfs)		0.5	= CV Daily
0.00567	= Q discharge (MGD)		0.5	= CV Hourly
30	= no. samples		1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream		1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge		15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value		720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		0	= Decay Coefficient (K)
Source	Reference	AFC Calculations		Reference
TRC	1.3.2.iii	WLA_afc = 1.284		1.3.2.iii
PENTOXSD TRG	5.1a	LTAMULT_afc = 0.373		5.1c
PENTOXSD TRG	5.1b	LTA_afc = 0.478		5.1d
				WLA_cfc = 1.244
				LTAMULT_cfc = 0.581
				LTA_cfc = 0.723
Source	Effluent Limit Calculations			
PENTOXSD TRG	5.1f	AML_MULT = 1.231		
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500		BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.635		
WLA_afc	$(.019/e^{-k \cdot AFC_tc}) + [(AFC_Yc \cdot Qs \cdot .019 / Qd \cdot e^{-k \cdot AFC_tc})] \dots$ $\dots + Xd + (AFC_Yc \cdot Qs \cdot Xs / Qd) \cdot (1 - FOS / 100)$			
LTAMULT_afc	$EXP((0.5 \cdot LN(cvh^2 + 1)) - 2.326 \cdot LN(cvh^2 + 1)^{0.5})$			
LTA_afc	$wla_afc \cdot LTAMULT_afc$			
WLA_cfc	$(.011/e^{-k \cdot CFC_tc}) + [(CFC_Yc \cdot Qs \cdot .011 / Qd \cdot e^{-k \cdot CFC_tc})] \dots$ $\dots + Xd + (CFC_Yc \cdot Qs \cdot Xs / Qd) \cdot (1 - FOS / 100)$			
LTAMULT_cfc	$EXP((0.5 \cdot LN(cvd^2 / no_samples + 1)) - 2.326 \cdot LN(cvd^2 / no_samples + 1)^{0.5})$			
LTA_cfc	$wla_cfc \cdot LTAMULT_cfc$			
AML_MULT	$EXP(2.326 \cdot LN((cvd^2 / no_samples + 1)^{0.5}) - 0.5 \cdot LN(cvd^2 / no_samples + 1))$			
AVG MON LIMIT	$MIN(BAT_BPJ, MIN(LTA_afc, LTA_cfc) \cdot AML_MULT)$			
INST MAX LIMIT	$1.5 \cdot ((av_mon_limit / AML_MULT) / LTAMULT_afc)$			