Pennsylvania Department of Environmental Protection

Northcentral Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0232351**
Facility Type	**Industrial**	APS ID	**1096171**
Major / Minor	**Minor**	Authorization ID	**1453668**

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

Applicant and Facility Information

Applicant Name	**Eureka Resources LLC**	Facility Name	**Standing Stone Treatment Facility**
Applicant Address	4564 Pine Street	Facility Address	34640 Route 6
	Williamsport, PA 17701-6200		Wysox, PA 18854-8022
Applicant Contact	Daniel Ertel	Facility Contact	Bob Cooney
Applicant Phone	(570) 651-9972	Facility Phone	(570) 651-9972
Client ID	271995	Site ID	762885
SIC Code	1389	Municipality	Standing Stone Township
SIC Description	Mining - Oil and Gas Field Services, NEC	County	Bradford
Date Application Received	August 28, 2023	EPA Waived?	No
Date Application Accepted	September 13, 2023	If No, Reason	Receives O&G Wastewater

Purpose of Application: Renewal of an existing NPDES permit for the discharge of treated industrial waste and stormwater.

Summary of Review

Eureka Resources LLC ("Eureka") has applied for a renewal of the existing NPDES permit (PA0232351) that authorizes the discharge of treated industrial waste and stormwater from the facility to the Susquehanna River and Kings Creek, respectively. The present permit expires September 30, 2018.

Eureka owns and operates an oil and gas liquid waste treatment facility in Standing Stone Township, Bradford County. Per the facility's PPC Plan, the facility specializes in the treatment of wastewater generated during the development and operation of oil and gas wells and transmission facilities, including wells producing gas from unconventional formations such as the Marcellus and Utica Shales. The wastewaters treated at the facility including; top hole water, spent drilling fluids and muds, and flowback and produced water generated during the development of gas transmission facilities. Typically, the wastewater is hauled to the facility by shale gas drillers and consists of water mixed with other components, including drilling and hydrofracturing chemicals, sand proppant residual, drilling residuals, and naturally-occurring contaminants/materials that become integrated with drilling fluids and hydrofracturing water recovered from oil and gas operations.

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.

Approve	Deny	Signatures	Date
X		Derek S. Garner / Project Manager	June 10, 2025
X		Nicholas W. Hartranft, P.E. / Environmental Engineer Manager	June 13, 2025

Facility Summary

The existing industrial wastewater treatment plant operates under approval from WQM Permit No. 0813201, issued January 7, 2014. Treatment of oil and gas wastewater at the facility currently consists of:

- Primary clarification
- Chemical addition
  - pH adjustment, coagulation, flocculation
- Secondary clarification
- Equalization
- Crystallization
  - Mechanical vapor recompressor (MVR)
- Biological treatment
  - Membrane biological reactor (MBR)
- Ion exchange
- Reverse osmosis

The effluent is ultimately discharged via Outfall 002 to the Susquehanna River.

Outfall 001 is an emergency stormwater outfall for the facility's stormwater retention basin. There is no record of a discharge ever occurring from Outfall 001. If a discharge ever did occur the stormwater would enter King Creek.

Discharge, Receiving Waters and Water Supply Information

Outfall No.	**001**	Design Flow (MGD)	n/a
Latitude	41º 44' 48.90"	Longitude	-76º 19' 57.16"
Quad Name	Wyalusing	Quad Code	0535
Wastewater Description:	Stormwater		

Receiving Waters	King Creek	Stream Code	22365
NHD Com ID	66400519	RMI	0.7
Drainage Area	n/a	Yield (cfs/mi^2)	n/a
Q_{7-10} Flow (cfs)	n/a	Q_{7-10} Basis	n/a
Elevation (ft)	n/a	Slope (ft/ft)	n/a
Watershed No.	4-D	Chapter 93 Class.	WWF, MF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Attaining Use(s)		
Cause(s) of Impairment	n/a		
Source(s) of Impairment	n/a		
TMDL Status	n/a	Name	n/a

Outfall No.	**002**	Design Flow (MGD)	0.169
Latitude	41º 44' 30.44"	Longitude	-76º 19' 43.30"
Quad Name	Wyalusing	Quad Code	0535
Wastewater Description:	Oil and Gas Wastewater		
Receiving Waters	Susquehanna River	Stream Code	6685
NHD Com ID	66400715	RMI	263.25
Drainage Area (mi^2)	8,226	Yield (cfs/mi^2)	0.08
Q_{7-10} Flow (cfs)	658	Q_{7-10} Basis	Streamgage No. 01531500
Elevation (ft)	659	Slope (ft/ft)	0.095
Watershed No.	4-D	Chapter 93 Class.	WWF, MF
Existing Use	n/a	Existing Use Qualifier	n/a
Exceptions to Use	n/a	Exceptions to Criteria	n/a
Assessment Status	Impaired		
Cause(s) of Impairment	Mercury, polychlorinated biphenyls (PCBs)		
Source(s) of Impairment	Unknown Sources		
TMDL Status	Final 3/12/1999	Name	Susquehanna River PCB

Nearest Downstream Public Water Supply Intake	Danville Municipal Authority		
PWS Waters	Susquehanna River	Flow at Intake (cfs)	1,130
PWS RMI	135.66	Distance from Outfall (mi)	127.59

Q7-10 Development

The Q7-10 was developed by first finding the nearest stream gage in the Susquehanna River, which in this case was determined to be upstream of the discharge at Towanda, Bradford County. The drainage area and Q7-10 at the gage

was taken from USGS's *Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania*. A low-flow yield (LFY) was calculated by creating a ratio of flow to drainage area (cubic feet per square mile). Next, a Basin Characteristics Report at the site of the discharge in USGS's StreamStats was generated. Applying the LFY to the report's drainage area yields a Q7-10 at Outfall 002 of 658.05 cfs.

Q7-10 calculations are attached as Appendix A.

Compliance History

The facility was most recently inspected by DEP on December 20, 2024. The inspection report noted that the facility is not currently accepting or treating wastewater and has not discharged since July 2024. No violations were identified during the inspection.

Eureka Resources, LLC and DEP entered into a Consent Order and Agreement ("COA") on January 29th, 2025. The COA addresses numerous violations associated with the Waste Management, Environmental Cleanup and Brownfields, and Clean Water Programs.

The following effluent-related violations occurred during the existing permit's term:

Monitoring Period Begin Date	Monitoring Period End Date	Submission Date	Noncompliance Type Description	Noncompliance Category	Parameter	Sample Value	Violation Condition	Permit Value	Units	SBC
11/1/2018	11/30/2018	12/17/2018	Violation of permit condition	Effluent	pH	5.4	<	6	S.U.	IMAX
7/1/2019	7/31/2019	8/30/2019	Late DMR Submission	Other Violations						
1/1/2021	1/31/2021	3/1/2021	Violation of permit condition	Effluent	pH	9.48	>	9	S.U.	IMAX
3/1/2021	3/31/2021	4/30/2021	Late DMR Submission	Other Violations						
12/1/2022	12/31/2022	1/30/2023	Late DMR Submission	Other Violations						
7/1/2023	7/31/2023	8/29/2023	Late DMR Submission	Other Violations						
12/1/2023	12/31/2023	2/6/2024	Late DMR Submission	Other Violations						
3/1/2024	3/31/2024	7/2/2024	Late DMR Submission	Other Violations						
4/1/2024	4/30/2024	7/2/2024	Late DMR Submission	Other Violations						
5/1/2024	5/31/2024	7/2/2024	Late DMR Submission	Other Violations						
6/1/2024	6/30/2024	11/6/2024	Late DMR Submission	Other Violations						
7/1/2024	7/31/2024	11/6/2024	Late DMR Submission	Other Violations						
11/1/2024	11/30/2024	1/2/2025	Late DMR Submission	Other Violations						
3/1/2025	3/31/2025	5/2/2025	Late DMR Submission	Other Violations						

The compliance review yielded the following open violations:

Facility	Inspection Program	Program Specific ID	Inspection ID	Violation ID	Violation Date	Violation Code	Region
Eureka Resources LLC/Standing Stone PLT	Air Quality	08-00050	3922360	8230311	2/14/2025	127.703 (1)	NCRO
Eureka Resources/Williamsport PLT	Air Quality	41-00079	3922359	8230342	2/14/2025	127.703 (1)	NCRO
Eureka Resources, LLC - Williamsport Treatment PLT	Residual Waste	724810	3957055	8229849	4/14/2025	6018.610-9 (2)	NCRO
Oil & Gas WWTF	Residual Waste	749536	3957062	8228697	4/14/2025	6018.610-2 (3)	NCRO
Eureka Resources Standing Stone PLT	Residual Waste	753859	3937102	8224751	3/13/2025	6018.610-1 (4)	NCRO
Eureka Resources Standing Stone PLT	Residual Waste	753859	3954775	8228236	4/9/2025	6018.610-1 (4)	NCRO
Eureka Resources Standing Stone PLT	Residual Waste	753859	3954775	8229845	4/9/2025	6018.610-2 (3)	NCRO
Eureka Resources Standing Stone PLT	Residual Waste	753859	3954775	8229847	4/9/2025	6018.610-9 (2)	NCRO
Eureka Resources LLC	WPC NPDES	PA0232351	3897672	8213155	1/8/2025	92A.62 (5)	NCRO

Facility	Inspection Program	Program Specific ID	Inspection ID	Violation ID	Violation Date	Violation Code	Region
Eureka Resources Susquehanna Facility	WPC NPDES	PA0276405	3739047	8181643	4/3/2024	92A.62 (5)	NERO
Eureka Resources Susquehanna Facility	WPC NPDES	PA0276405	3951704	8227695	4/2/2025	92A.62 (5)	NERO
Eureka Resources Susquehanna Facility	WPC E&S Control	PAD580010	3983093	8234602	5/8/2025	92A.62 (5)	NERO

(1) Failure to submit operating permit fees.
(2) Person or municipality has violated Act 97, Department regulation, order, or term of permit.
(3) Person or municipality operates a facility without a permit.
(4) Person or municipality dumps solid waste unlawfully.
(5) Failure to pay annual fee for individual NPDES permit.

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** n/a
Latitude 41º 44' 48.90" **Longitude** -76º 19' 57.16"
Wastewater Description: Stormwater

As mentioned above, Outfall 001 is an emergency stormwater outfall for the facility's stormwater retention basin. There is no record of a discharge ever occurring from this outfall.

Technology-Based Limitations

There are no technology-based limitations applicable to stormwater associated centralized waste treatment facilities.

Water Quality-Based Limitations

DEP does not have an established procedure for modeling stormwater discharges. Accordingly, no water quality-based limitations are proposed.

Best Professional Judgment (BPJ)

Historically, Eureka has applied for, and been granted, a no exposure certification for on-site stormwater. However, recent inspections by DEP have noted that industrial activity and materials are being exposed to stormwater, including:

- Sand and salt piles stored outside and uncovered.
- Temporary tanks, utilized for concentrated brine, with inadequate containment exposed to outside elements.
- Pallets of returned bagged salt with deteriorating plastic tarping exposed to elements – white staining was visible on pavement surrounded the pallets.
- A severely corroded, partially covered roll-off kept within a few feet of a storm water catch basin. Staining on the pavement indicating discharges from the roll-off have entered the catch basin.

Based on these findings, DEP no longer believes a no exposure certification is appropriate for the site. Accordingly, DEP is proposing to establish monitoring requirements for pollutants associated with onsite activities.

Pollutant	Monitoring Requirements			Basis
	Minimum Measurement Frequency	Sample Type	Benchmark Values	
Total Nitrogen (mg/L)	1 / 6 months	Calculation	XXX	PAG-03, Appendices J & K
Total Phosphorus (mg/L)	1 / 6 months	Grab	XXX	PAG-03, Appendices J & K
pH (S.U.)	1 / 6 months	Grab	9.0	PAG-03, Appendices J & K
Total Suspended Solids (mg/L)	1 / 6 months	Grab	100	PAG-03, Appendices J & K
Oil and Grease (mg/L)	1 / 6 months	Grab	30	PAG-03, Appendix J
Chemical Oxygen Demand (COD) (mg/L)	1 / 6 months	Grab	120	PAG-03, Appendix J
Total Dissolved Solids (mg/L)	1 / 6 months	Grab	XXX	PAG-03, Appendix K
Chloride (mg/L)	1 / 6 months	Grab	2,000	PAG-03, Appendix K

DEP believes that pollutants from Appendices J and K from the general stormwater permit (PAG-03) are applicable to this discharge. Specifically, Appendix J applies to general industrial activities and Appendix K applies to industrial activities associated with salt storage.

Outfall No.	002	**Design Flow (MGD)**	0.169
Latitude	41º 44' 30.00"	**Longitude**	-76º 19' 49.00"

Wastewater Description: Oil and Gas Wastewater

Technology-Based Limitations (TBELs)

In the *Development Document for Proposed Effluent Limitations Guidelines and Standards for the Centralized Waste Treatment Industry* (EPA 821-R-98-020, December 1998), EPA defines Centralized Waste Treatment (CWT) facilities as, "any facility that treats any hazardous or nonhazardous industrial waste received from off-site by tanker truck, trailer/roll-off bins, drums, barge or other forms of shipment." Since the facility receives hauled in wastewater from the oil and gas industry, it is appropriate to classify the facility under this designation. EPA has established effluent limit guidelines (ELGs) for CWT facilities at 40 CFR § 437, and breaks down the limitations by four treatment and recovery subparts; Metals, Oils, Organics, and Multiple Wastestreams. In order to determine which subcategory is applicable to Eureka's Standing Stone Township facility, the flowchart on page 14-6 of the above-cited Development Document and the application's intake sampling results were used. This analysis ultimately determined that the facility should be classified under the Organics Treatment and Recovery subpart (40 CFR 437, Subpart C). This approach remains unchanged from the permit's first issuance in 2013.

40 CFR § 437.34 identifies the New Source Performance Standards (NSPS) for 40 CFR Part 437, Subpart C – Organics Treatment and Recovery ELGs. However, § 437.34 states, "Standards for BOD_5, pH, TSS, copper, zinc, acetone, acetophenone, 2-butanone, o-cresol, p-cresol, phenol, pyridine, and 2,4,6-trichlorophenol are the same as the corresponding limitation specified in § 437.31." Consequently, best practicable control technology (BPT) limitations specified in § 437.31 have been proposed to remain in the permit, subject to water quality analysis and BPJ.

In addition to the abovementioned federal regulations, state regulations at 25 Pa. Code Chapter 95 establish technology-based limitations for all industrial wastes. Section 95.2 sets forth limitations for pH, Oil and Grease, and Dissolved Iron; all of which can be applied to all types of industrial wastewater. Section 95.10 sets forth treatment standards for new and expanding mass loadings of Total Dissolved Solids (TDS). A facility is "new" if the discharge did not exist prior to August 21, 2010. Since this is a new discharge of oil and gas wastewater, the treatment standards for TDS, Chlorides, Barium, and Strontium must remain in the permit. The establishment of the § 95.10 treatment standards is also recommended by the *Policy and Procedure for NPDES Permitting of TDS Discharges (385-2100-002, 11/12/11)*, which classifies this facility as Non-Exempt (Natural Gas).

The intake sampling performed for the 2013 NPDES application, taken from truck load samples, identified high ammonia-n concentrations; 244 mg/l maximum daily and 134 mg/l average. Due to the high concentrations of influent ammonia-n that were anticipated, and concerns regarding nitrogen as it relates to the Chesapeake Bay TMDL, DEP established a TBEL in the first issuance of the permit reflecting the MBR treatment technology used by Eureka at the Standing Stone facility. Operational data identified in Table 8-30 of Metcalf & Eddy (4th Edition) indicates that MBRs are capable of obtaining ammonia-n concentrations of less than 1 mg/l.[1] However, this data is reflective of sanitary wastewater which typically has a much lower influent concentration of ammonia-n. Therefore, a ratio using data from Table 8-30 and reported influent concentrations was set up to calculate a site-specific TBEL as follows:

(1 mg/l / 25 mg/l) = (x / 244 mg/l)
$x \cong 10$ mg/l

Demonstrated above, the ratio yields a result of approximately 10 mg/l. DEP believes this BPJ limit is still appropriate. Accordingly, pursuant to the Clean Water Act (CWA) § 402(a)(1)(b) and 40 CFR § 122.44(a)(1) and 125.3, which authorizes the Department to develop case-by-case TBELS, an average monthly limitation of 10 mg/l for ammonia-n will remain, subject to a water-quality analysis.

The proposed TBELs, subject to water-quality analysis, are as follows:

[1] Stephenson, T., J. Simon, B. Jefferson, and K. Brindle (2000) *Membrane Bioreactors for Wastewater Treatment*, IWA Publishing, London.

Parameter	Limit (mg/l)	SBC	Federal Regulation	State Regulation
BOD5	53	Average Monthly	437.34	-
	163	Maximum Daily	437.34	-
pH	6.0	Minimum	437.34	95.2(1)
	9.0	IMAX	437.34	95.2(1)
Total Suspended Solids	61.3	Average Monthly	437.34	-
	216	Maximum Daily	437.34	-
Copper	0.757	Average Monthly	437.34	-
	0.865	Maximum Daily	437.34	-
Zinc	0.420	Average Monthly	437.34	-
	0.497	Maximum Daily	437.34	-
Acetone	7.97	Average Monthly	437.34	-
	30.2	Maximum Daily	437.34	-
Acetophenone	0.0562	Average Monthly	437.34	-
	0.114	Maximum Daily	437.34	-
2-Butanone	1.85	Average Monthly	437.34	-
	4.81	Maximum Daily	437.34	-
o-Cresol	0.561	Average Monthly	437.34	-
	1.92	Maximum Daily	437.34	-
p-Cresol	0.205	Average Monthly	437.34	-
	0.698	Maximum Daily	437.34	-
Phenol	1.08	Average Monthly	437.34	-
	3.65	Maximum Daily	437.34	-
Pyridine	0.182	Average Monthly	437.34	-
	0.370	Maximum Daily	437.34	-
2,4,6-Tricholrophenol	0.106	Average Monthly	437.34	-
	0.155	Maximum Daily	437.34	-
Total Dissolved Solids	500	Average Monthly	-	95.10(b)(3)(iii)
Total Chlorides	250	Average Monthly	-	95.10(b)(3)(iv)
Total Barium	10	Average Monthly	-	95.10(b)(3)(v)
Total Strontium	10	Average Monthly	-	95.10(b)(3)(vi)
Ammonia-N	10	Average Monthly	Best Professional Judgment	

Water Quality-Based Limitations

DEP is unaware of any substantial changes to the anticipated influent waste stream received by Eureka or the receiving surface water. Accordingly, the existing water quality analysis is still reflective of the existing conditions. The below determination remains largely unchanged from the previous permit renewal:

DEP modeled in-stream conditions to determine if WQBELs are appropriate. Models were created using WQM 7.0 v1.0b for CBOD5, ammonia-N and dissolved oxygen and PENTOXSD v2.0d for toxics.

WQM 7.0 v1.0b is a multiple discharge model that assumes instantaneous mixing with the receiving surface water upon discharge. The reach chosen to model the in-stream characteristics of the Susquehanna River is appropriate as a recovery in dissolved oxygen levels is demonstrated. The input value for CBOD5 is based upon 40 CFR § 437.34, which recommends a maximum daily BOD limitation of 163 mg/l. Using the maximum daily value provides the most conservative approach to modeling. Assuming all BOD is carbonaceous is a conservative approach and is appropriate for modeling purposes. Additionally, using the least stringent technology-based limitation poses a conservative “worst case” scenario. The deoxygenation rate was increased by a factor of 0.6 to account for the large BOD input value, which is outlined in the *Technical Reference Guide (TRG) PENTOXSD for Windows PA Single Discharge Wasteload Allocation Program for Toxics Version 2.0 (391-2000-011, 5/22/04)*. The ammonia-n input value of 10 mg/l is based upon the TBEL justified above. The model does not recommend water-quality based effluent limitations with regards to CBOD5, ammonia-N or dissolved oxygen.

Unlike WQM 7.0 v1.0b, PENTOXSD v2.0d is a single discharge model that does not assume instantaneous mixing with the receiving surface water upon discharge, but instead, assigns a partial mixing factor based upon surface water and discharge characteristics. Background concentration data for the Susquehanna River was obtained from the Department’s Water Quality Network (WQN) gage system at Towanda, Bradford County.

Model inputs for the discharge from Outfall 002 were based off three "categories". The first input category used TBELs from the federal and state regulations. If no TBEL was identified the second input category used was any data submitted on the facility's discharge monitoring reports. If no TBELs or historic data existed for a parameter then the maximum daily values reported in the pollutant groups from the application. The input values were then entered into the Toxics Screening Analysis Spreadsheet v2.5, which compares the input value to the most stringent criterion established in 25 Pa. Code Chapter 93 for each parameter and determines if it is a parameter of concern, meaning the discharge concentration is higher than Chapter 93 criteria. All parameters of concern were entered into PENTOXSD v2.0d, which recommends a WQBEL. The recommended WQBEL is then placed into the Toxics Screening Analysis Spreadsheet v2.5, which recommends monitoring requirements, effluent limits, or no action based on the following logic:

- Establish where the maximum reported concentration equals or exceeds 50% of the WQBEL.
- For non-conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 25% - 50% of the WQBEL.
- For conservative pollutants, establish monitoring requirements where the maximum reported concentration is between 10% - 50% of the WQBEL.

The Toxics Screening Analysis spreadsheet recommends monitoring for total copper; however, based on historic DMR sample results it does not appear that there is a reasonable potential for total copper to exceed the WQBEL. Accordingly, no WQBELs are necessary.

Best Professional Judgment

To help further characterize the wastewater, DEP has proposed to establish quarterly sampling for four PFAS parameters; PFOA, PFOS, HFPO-DA, and PFBS. Language will be included in the permit so that the permittee may discontinue monitoring for PFOA, PFOS, HFPO-DA, and PFBS if the results in four consecutive monitoring periods indicate non-detect results at or below Quantitation Limits of 4.0 ng/L for PFOA, 3.7 ng/L for PFOS, 3.5 ng/L for PFBS and 6.4 ng/L for HFPO-DA. When monitoring is discontinued, the permittee must enter a No Discharge Indicator (NODI) Code of "GG" on the discharge monitoring reports.

Chesapeake Bay

Per Phase 3 of the Pennsylvania's Chesapeake Bay Watershed Implementation Plan (WIP), the facility is a non-significant industrial wastewater discharge. Monitoring for the nitrogen series and phosphorus were established in the 2013 issuance of the permit to help characterize the effluent. Based on the sample results, Eureka removes approximately 99% of the nitrogen and phosphorus from the wastewater when comparing influent and effluent concentrations. The WIP indicates that nutrient monitoring is only necessary for non-significant industrial wastewater facilities when there is the potential to introduce a net nitrogen or phosphorus increase. Accordingly, monitoring for the nitrogen series and phosphorus was removed from the permit at the previous renewal. A summary of the percent reduction is below. Raw data is attached.

Parameter	Conc. Units	Influent Conc.	Avg. Effluent Conc.	% Reduction
Ammonia-Nitrogen	mg/L	311	3.11	99.00%
NO_2-NO_3 as N	mg/L	2000	1.46	99.93%
TKN	mg/L	263	1.22	99.54%
TN *	mg/L	2263	2.53	99.89%
TP	mg/L	12.5	0.06	99.55%

* Influent sample not required for application. Calculated as sum of NO_2-NO_3 as N + TKN

Anti-Backsliding

No limits or monitoring requirements were made less stringent. Anti-backsliding should not impact the permit.

Existing Effluent Limitations and Monitoring Requirements

The existing effluent limitations and monitoring requirements are as follows:

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
Biochemical Oxygen Demand (BOD5)	Report	Report	XXX	53.0	163.0	200	1/week	24-Hr Composite
Total Suspended Solids	Report	Report	XXX	61.3	216.0	270	1/week	24-Hr Composite
Total Dissolved Solids	Report	Report	XXX	500.0	1000.0	1250	1/week	24-Hr Composite
Ammonia-Nitrogen	Report	Report	XXX	10.0	20.0	25	1/week	24-Hr Composite
Barium, Total	Report	Report	XXX	10.0	20.0	25	1/week	24-Hr Composite
Copper, Total	Report	Report	XXX	0.757	0.865	1.89	1/week	24-Hr Composite
Strontium, Total	Report	Report	XXX	10.0	20.0	25	1/week	24-Hr Composite
Zinc, Total	Report	Report	XXX	0.420	0.497	1.05	1/week	24-Hr Composite
o-Cresol	Report	Report	XXX	0.561	1.92	2.4	1/week	24-Hr Composite
2,4,6-Trichlorophenol	Report	Report	XXX	0.106	0.155	0.26	1/week	24-Hr Composite
Phenol	Report	Report	XXX	1.08	3.65	4.56	1/week	24-Hr Composite
Acetone	Report	Report	XXX	7.97	30.2	37.75	1/week	24-Hr Composite
Acetophenone	Report	Report	XXX	0.0562	0.114	0.14	1/week	24-Hr Composite
Chloride	Report	Report	XXX	250.0	500.0	625	1/week	24-Hr Composite

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
2-Butanone	Report	Report	XXX	1.85	4.81	6.01	1/week	24-Hr Composite
p-Cresol	Report	Report	XXX	0.205	0.698	0.87	1/week	24-Hr Composite
Pyridine	Report	Report	XXX	0.182	0.370	0.455	1/week	24-Hr Composite

Compliance Sampling Location: Outfall 002

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.

Outfall 001, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Average Weekly	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
pH (S.U.)	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
COD	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
TSS	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Dissolved Solids	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Oil and Grease	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Total Nitrogen	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Calculation
Total Phosphorus	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab
Chloride	XXX	XXX	XXX	XXX	Report	XXX	1/6 months	Grab

Compliance Sampling Location: Outfall 001

Outfall 002, Effective Period: Permit Effective Date through Permit Expiration Date.

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Metered
pH (S.U.)	XXX	XXX	6.0 Inst Min	XXX	XXX	9.0	1/day	Grab
BOD5	Report	Report	XXX	53.0	163.0	200	1/week	24-Hr Composite
TSS	Report	Report	XXX	61.3	216.0	270	1/week	24-Hr Composite
Total Dissolved Solids	Report	Report	XXX	500.0	1000.0	1250	1/week	24-Hr Composite
Ammonia	Report	Report	XXX	10.0	20.0	25	1/week	24-Hr Composite
Total Barium	Report	Report	XXX	10.0	20.0	25	1/week	24-Hr Composite
Total Copper	Report	Report	XXX	0.757	0.865	1.89	1/week	24-Hr Composite
Total Strontium	Report	Report	XXX	10.0	20.0	25	1/week	24-Hr Composite
Total Zinc	Report	Report	XXX	0.420	0.497	1.05	1/week	24-Hr Composite
o-Cresol	Report	Report	XXX	0.561	1.92	2.4	1/week	24-Hr Composite
2,4,6-Trichlorophenol	Report	Report	XXX	0.106	0.155	0.26	1/week	24-Hr Composite
Phenol	Report	Report	XXX	1.08	3.65	4.56	1/week	24-Hr Composite
Acetone	Report	Report	XXX	7.97	30.2	37.75	1/week	24-Hr Composite
Acetophenone	Report	Report	XXX	0.0562	0.114	0.14	1/week	24-Hr Composite
Chloride	Report	Report	XXX	250.0	500.0	625	1/week	24-Hr Composite
2-Butanone	Report	Report	XXX	1.85	4.81	6.01	1/week	24-Hr Composite

Outfall 002, Continued (from Permit Effective Date through Permit Expiration Date)

Parameter	Effluent Limitations						Monitoring Requirements	
	Mass Units (lbs/day)		Concentrations (mg/L)				Minimum Measurement Frequency	Required Sample Type
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum		
p-Cresol	Report	Report	XXX	0.205	0.698	0.87	1/week	24-Hr Composite
Pyridine	Report	Report	XXX	0.182	0.370	0.455	1/week	24-Hr Composite
PFOA (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
PFOS (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
PFBS (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab
HFPO-DA (ng/L)	XXX	XXX	XXX	XXX	XXX	Report	1/year	Grab

Compliance Sampling Location: Outfall 001

USGS
science for a changing world

Prepared in cooperation with the Pennsylvania Department of Environmental Protection

Selected Streamflow Statistics for Streamgage Locations in and near Pennsylvania

Open-File Report 2011-1070

U.S. Department of the Interior
U.S. Geological Survey

Table 1. List of U.S. Geological Survey streamgage locations in and near Pennsylvania with updated streamflow statistics.-Continued

[Latitude and Longitude in decimal degrees; mP, square miles]

Streamgage number	Streamgage name	Latitude	Longitude	Drainage area (mi')	Regulated[1]
01508803	West Branch Tiouglmioga River at Homer, N.Y.	42.638	-76.176	71.5	N
01509000	Tioughnioga River at Cortlai1d, N.Y.	42.603	-76.159	292	N
01510000	Otselic River at Cillcinnatus, N.Y.	42.541	-75.900	147	N
01512500	Chenango River near Chenango Forks, N.Y.	42.218	-75.848	1,483	**N**
01515000	Susquehanna River near Waverly, N.Y.	41.985	-76.501	4,773	**N**
01516350	Tioga River near Mansfield, Pa.	41.797	-77.080	153	N
01516500	Corey Creek near Mainesburg, Pa.	41.791	-77.015	12.2	N
01518000	Tioga River al Tioga, Pa.	41.908	-77.129	282	y
01518700	Tioga River at Tioga Junction, Pa.	41.953	-77.115	446	y
01518862	Cov,,anesque River at Westfield, Pa.	41.923	-77.532	90.6	N
01520000	Cowanesque River near Lawrenceville, Pa.	41.997	-77.140	298	**y**
01520500	Tioga River at Lindley, N.Y.	42.029	-77.132	771	**y**
01521500	Canisteo River at Arkp011, N.Y.	42.396	-77.711	30.6	y
01523500	Canticadea Creek near Hornell, N,Y.	42.335	-77.683	57,9	**y**
01524500	CaniSteo Ri&#65533;er below-Canacadea·creek at Hornell, N.Y.	42.314	-77.651	**158**	**y**
01526500	Tioga River near Erwins, N.Y.	42.121	-77.129	1,377	y
01527000	Cohocton River at Cohocton, N.Y.	42.500	-77.500	52.2	N
01527500	Cohocton River at Avoca, N.Y.	42.398	-77.417	152	N
01528000	Fivemile Creek neat Kanona, N.Y.	42.388	-77.358	66.8	**N**
01529000	Mud Creek near Savona, N.Y.	42.308	-77.197	76.6	y
01529500	Coh0cton River near Campbell, N.Y.	42253	-77.217	470	N
01529950	Chemung River at Corning, N.Y.	42.146	-77.057	2,006	**y**
01530332	Chemung River at Elmira, N.Y.	42.086	-76.801	2,162	**y**
01530500	NewtoWn Creek at Elmira, N.Y.	42.105	.-76.798	77.5	**y**
01531000	Chemung River at Chemung, N.Y.	42.002	-76.635	2,506	**y**
01531500	StJsquehanna River at To\.vanda, Pa,	41.765	-76.441	7,797	y
01532000	Towanda Creek near Monrocton, Pa.	41.707	-76.485	215	N
01532850	MB Wyalusing Creek near Birchardville, Pa.	41.863	-76.007	5.67	N
01533400	St1squehanna River at Meshoppen, Pa,	41.607	-76.050	8,720	y
01533500	North Branch Mehoopany Creek neat Lovclton, Pa.	41.531	-76.156	35.2	N
01533950	SB Tunk:hamio_ck Creek near Montdalc, Pa.	41.575	°75.642	12.6	**N**
01534000	Tunkhannock Creek neilr Tunkhannock, Pa.	41.558	-75.895	383	**N**
01534300	Lac&#65533;awau·ua River near Forcsl City, Pa.	41.680	.75.472	38.8	**y**
01534500	Lackawanna River·at Archbald, Pa.	41.505	-75.542	108	**y**
01536000	Lackawamla_River at Old Forge, Pa,	41.359	-75.744	332	**y**
01536500	Susquehanna River at Wilkes-Barre, Pa.	41.251	-75.881	9,960	y
01537000	Toby Creek at Luzerne, Pa.	41.281	-75.896	32.4	**y**
01537500	Solomon Creek at Wilkes-Barre, Pa.	41.228	-75.904	15.7	N
01538000	Wapwa!lopen Creek near Wapwallopen. Pa.	41.059	-76.094	43.8	N
01539000	Fishing Creek near Bloomsburg, Pa.	41.078	-76.431	274	N
01539500	Little' Fishing Creek at.Eyers Grove, Pa.	41.080	-76511	56.5	**N**
01540200	Trexler Run near Ringtown, Pa.	40.853	-76.280	1.77	N
01540500	Susquehanna River at Danville_, Pa,	40.958	-76.619	11,220	**y**
0/541000	Wesl Branch Susquehanna River at Bower, Pa.	40.897	-78.677	315	**N**
01541200	West Branch Susquehanna River near Curwensville, Pa.	40.961	-78.519	367	**y**

Table 2. Selected low-flow statistics for streamgage locations in and near Pennsylvania.-Continued

{!P/s; cubic feet per second;-, statistic not computed;<, less than]

Streamgage number	Period of record used in analysis[1]	Number of years used in analysis	1-day. 10-year (ft'/s)	7-day, 10-year (ft'/s)	7-day, 2-year (ft'/s)	30-day, 10-year (ft'ls)	30-day, 2-year (ft'/s)	90-day, 10-year (ft'/s)
01530500	1940---2008	69	5.0	6.1	11.0	7.6	13	9.0
0153I000	'1981-2008	28	138	147	237	169	296	203
01;31000	'1905-1979	68	86.3	97.0	175	116	219	**161**
01531500	'1981-2008	28	550	592	1,030	733	1,340	952
01531500	'1915-1979	65	539	571	990	675	1,230	928
01532000	1915-2008	94	2.2	2.8	9.7	4.6	14.4	9.4
01532850	1967-)979	13	**.1**	.2	.4	.3	**.8**	.7
01533400	'1981-2008	28	602	648	1,1I 0	790	1,430	1,060
01533500	1942-1958	17	.4	,6	**1.5**	**,8**	2,0	1,7
01533950	1962-1978	17	.2	.3	1.0	.6	1.4	1.0
01534000	1915-2008	94	15.2	**17.3**	35.9	24.2	51.0	38.7
01534300	1960---2008	49	1.1	1.7	5.1	2.8	7.6	4.8
01534500	'1961-2008	48	16.7	18.8	29.2	21.9	**35.8**	27.6
01534500	'1941-1959	19	18.8	**23,0**	33.3	25.6	39.2	34.9
01536000	'1961-2008	48	28.7	32.7	51.7	40.8	68.1	54.3
01536000	• '1940---1959	20	77.8	93.9	119	105	138	124
01536500	**²1981-2008**	28	828	872	1,450	1,030	1,830	1,350
01536500	**'1901-1979**	79	778	**811**	1,350	927	1,640	1,260
01537000	1943-1993	**51**	1.3	2.0	4,9	3.1	6.4	4.7
0.1537500	1941-1990	50	,2	,3	1.9	.5	3.1	1.6
01538000	1921-2008	88	3.1	3.6	7.1	5.0	9.3	7.5
01539000	1940---2008	69	15.4	16.8	36.8	21.1	51. I	36.8
01539500	1942-1958	17	.1	**.3**	1.4	1,0	3.3	2.3
01540200	1965-1981	17	0	0	.3	.1	.3	.I
01540500	'1981-2008	28	1,080	1,120	1,870	1.320	2,330	1,690
01540500	'1906-1979	74	927	978	1,660	1,160	2,050	1,590
01541000	**1915-2008**	94_	25.3	27.9	50,7	35,3	66.6	49,6
01541200	'1967-20.08	40	34,6	45,2	66.0	63.1	l00	92.4
01541200	'.1957-1965	9	22,9	24.7	44.7	27,7	58.2	36.4
01541303	1980---20.08	29	53.4	**58,5**	94.0	74.4	123	102
01541308	1969-1979	II	**1.3**	1.3	**1.9**	1.6	2.4	2.1
01541500	'I 962-2008	47	39.0	41,9	66.5	51.9	86.3	70.6
01541500	'1915-1960	46	14.9	21.3	41,9	28.5	55.0	42.9
01542000	1942-1993	52	8.1	9.1	14.8	11.3	17.8	14.6
01542500	'1967-2008	33	216	**235**	326	285	**435**	402
01542500	**'l941◆1965**	20		131	**189**	152	243	221
01.542810.	1966-2008	43	.1	**.1**	.3	,2	.5	.3
01543900	1915-2008	94	2.9	4.2	16.0	9,6	27.4	19.2
01543500 •	1940---2008	69	10.7	14,5	44,9	26.6	74.9	50,5
01544000	**'1957~200.8**	52	3.3	6,9	19.0	11.2	31.1	19,0
01544500	1942-2008	67	4.2	4.9	12.5	7.5	17.4	11.7
01545000	'1964-2008	45	6.8	8.2	21.2	12.0	32.7	20.7
01545500	'1963-2008	46	217	238	446	306	629	428
01545500	'1909-1961	53	125	141	278	190	**387**	296
01545600	1966-2008	43	1.2	1.5	4.4	2.4	**6.7**	4.2

Low-Flow (Q_{7-10}) Calculation

Facility: **Eureka Resources, LLC - Standing Stone**
NPDES Permit No. **PA0232351**

Gage Information		Outfall Information	
Drainage Area:	**7790** mi²	Drainage Area:	**8225.61** mi²
01.10:	**592** cfs	01.10:	**625** cfs
LFY:	**0.08** cfsm		

Downstream Locations

RMI:	**262.2**	RMI:	**138**
Drainage Area:	**8242** mi²	Drainage Area:	**11229.3** mi²
01.,o:	**626** cfs	01.10:	**853** cfs
RMI:		RMI:	
Drainage Area:	_____ mi2	Drainage Area:	_____ mi²
01.,o:	___ cfs	01.10:	cfs
RMI:	_____	RMI:	
Drainage Area:	_____ mi²	Drainage Area:	_____ mi2
01.10:	___ cfs	01.10:	cfs
RMI:		RMI:	
Drainage Area:	_____ mi²	Drainage Area:	_____ mi2
01.10:	___ cfs	01.10:	cfs

PENTOXSD

Modeling Input Data

Stream Code	RMI	Elevation (ft)	Drainage Area	Slope	PWS With (mgd)	Apply FC
6_6_8_5-26-3-.2-5	----	65-9.00	[illegible]		0.00	☑

Stream Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Reh Width	Reh Depth	Reh Velocity	Reh Trav Time	Iributa[Y Hard	pH	Stream Hard	pH	Analysis Hard	pH
	(efsm)	(efs)	(efs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q7-10	0.08	0	.O	0	0	0	0	0	77.75	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
Eureka Resource	PA0232351	0.169	0.169	0.169	0	0	0	0	0	0.336	7

Parameter Data

Parameter Name	Disc Cone (µg/L)	Trib Cone (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Cone (µg/L)	Stream CV	Fate Coef	FOS	Grit Mod	Max Disc Cone (µg/L)
ANTIMONY	50	0	0.5	0.5	0	0	0	0		0
ARSENIC	50	0	0.5	0.5	0	0	0	0		0
CADMIUM	3	0	0.5	0.5	0	0	0	0		0
COPPER	865	0	0.5	0.5	3.28	0.913	0	0		0
LEAD	.50	0	0.5	0.5	1.66	1.38	0	0		0
MERCURY	2	0	0.5	0.5	0	0	0	0		0
PHENOLICS (PWS)	10	0	1.09	0.5	0	0	0	0		0
SELENIUM	50	0	0.5	0.5	0.673	0.59	0	0		0
SILVER	10	0	0.5	0.5	0	0	0	0		0
THALLIUM	50	0	0.5	0.5	0	0	0	0		0
ZINC	497	0	0.5	0.5	18.65	0.8	0	0		0

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWSWith (mgd)	Apply FC
6685	262.20	658.90	8242.00	0.09500	0.00	

Stream Data

	LFY (efsm)	Trib Flow (els)	Stream Flow (els)	WO Ratio	Reh Width (ft)	Reh Depth (ft)	Reh Velocity (fps)	Reh Trav Time (days)	Tributary Hard (mg/L)	Tributary pH	Stream Hard (mg/L)	Stream pH	Analysis Hard (mg/L)	Analysis pH
Q7-10	0.08	0	0	0	0	0	0	0	77.75	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow (mgd)	Permitted Disc Flow (mgd)	Design Disc Flow (mgd)	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard (mg/L)	Disc pH
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Cone (µg/L)	Trib Cone (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Cone (µg/L)	Stream CV	Fate Coef	FOS	Grit Mod	Max Disc Cone (µg/L)
ANTIMONY	0	0	0.5	0.5	0	0	0	0		0
ARSENIC	0	0	0.5	0.5	0	0	0	0		0
CADMIUM	0	0	0.5	0.5	0	0	0	0		0
COPPER	0	0	0.5	0.5	0	0	0	0		0
LEAD	0	0	0.5	0.5	0	0	0	0		0
MERCURY	0	0	0.5	0.5	0	0	0	0		0
PHENOLICS (PWS)	0	0	0.5	0.5	0	0	0	0		0
SELENIUM	0	0	0.5	0.5	0	0	0	0		0
SILVER	0	0	0.5	0.5	0	0	0	0		0
THALLIUM	0	0	0.5	0.5	0	0	0	0		0
ZINC	0	0	0.5	0.5	0	0	0	0		0

Stream Code	RMI	Elevation (ft)	Drainage Area (sq mi)	Slope	PWSWith (mgd)		Apply FC
6685	138.00	439.00	11229.28	0.00000		4.00	◆

Stl'eam Data

	LFY	Trib Flow	Stream Flow	WD Ratio	Reh Width	Reh Depth	Reh Velocity	Reh Trav Time	Tributa[Y Hard	Tributa[Y pH	Stream Hard	Stream pH	Analysis Hard	Analysis pH
	(efsm)	(efs)	(efs)		(ft)	(ft)	(fps)	(days)	(mg/L)		(mg/L)		(mg/L)	
Q?-10	0.08	0	0	0	0	0	0	0	100	7	0	0	0	0
Qh		0	0	0	0	0	0	0	100	7	0	0	0	0

Discharge Data

Name	Permit Number	Existing Disc Flow	Permitted Disc Flow	Design Disc Flow	Reserve Factor	AFC PMF	CFC PMF	THH PMF	CRL PMF	Disc Hard	Disc pH
		(mgd)	(mgd)	(mgd)						(mg/L)	
		0	0	0	0	0	0	0	0	100	7

Parameter Data

Parameter Name	Disc Cone (µg/L)	Trib Cone (µg/L)	Disc Daily CV	Disc Hourly CV	Steam Cone (µg/L)	Stream CV	Fate Coef	FOS	Grit Mod	Max Disc Cone (µg/L)
ANTIMONY	0	0	0.5	0.5	0	0	0	0		0
ARSENIC	0	0	0.5	0.5	0	0	0	0		0
CADMIUM	0	0	0.5	0.5	0	0	0	0		0
COPPER	0	0	0.5	0.5	0	0	0	0		0
LEAD	0	0	0.5	0.5	0	0	0	0		0
MERCURY	0	0	0.5	0.5	0	0	0	0		0
PHENOLIC$ (PWS)	0	0	0.5	0.5	0	0	0	0		0
SELENIUM	0	0	0.5	0.5	0	0	0	0		0
SILVER	0	0	0.5	0.5	0	0	0	0		0
THALLIUM	0	0	0.5	0.5	0	0	0	0		0
ZINC	0	0	0.5	0.5	0	0	0	0		0

PENTOXSD Analysis Results

Hydrodynamics

SWP Basin	Stream Code:	Stream Name:
07K	6685	SUSQUEHANNA RIVER

RMI	Stream Flow (cfs)	PWS With (cfs)	Net Stream Flow (cfs)	Disc Analysis Flow (cfs)	Reach Slope	Depth (ft)	Width (ft)	WD Ratio	Velocity (fps)	Reach Trav Time (days)	CMT (min)
Q7-1O Hydrodynamics											
263.250	658.05	0	658.05	0.26144	0.095	4.0171	118.57	29.518	1.3821	0.0464	7.759
262.200	659.36	0	659.36	NA	0.095	4.0187	118.64	29.523	1.3829	5.4885	NA
138.000	898.34	6.188	892.15	NA	0	0	0	0	0	0	NA
Qh Hydrodynamics											
263.250	2158.5	0	2158.5	0.26144	0.095	6.7740	118.57	17.504	2.6876	0.0239	3.545
262.200	2162.2	0	2162.2	NA	0.095	6.7769	118.64	17.507	2.6892	2.8224	NA
138.000	2833.3	6.188	2827.1	NA	0	0	0	0	0	0	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number
263.25	Eureka Resource	PA0232351

AFC

Q7-10: CCT(min) 7.759 PMF Analysis pH 7 Analysis Hardness 77.719

Parameter	Stream Cone (µg/L)	Stream CV	Trib Cone (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
CADMIUM	0	0	0	0	1.576	1.651	4157.129
	Dissolved WQC, Chemical translator of 0.955 applied.						
COPPER	3.28	0.913	0	0	10.598	11.04	6822.059
	Dissolved WQC. Chemical translator of 0.96 applied.						
SILVER	0	0	0	0	2.085	2.453	6176.781
	Dissolved WQC. Chemical translator of 0.85 applied.						
ZINC	18.65	0.8	0	0	94.646	96.775	130576.1
	Dissolved WQC. Chemical translator of 0.978 applied.						
PHENOLICS (PWS)	0	0	0	0	NA	NA	NA
MERCURY	0	0	0	0	1.4	1.647	4147.274
	Dissolved WQC. Chemical translator of 0.85 applied.						
ANTIMONY	0	0	0	0	1100	1100	2760000
ARSENIC	0	0	0	0	340	340	856115.8
	Dissolved WQC. Chemical translator of 1 applied.						
LEAD	1.66	1.38	0	0	49.03	59.234	137451.9
	Dissolved WOE. Chemical translator of 0.828 applied.						
SELENIUM	0.673	0.59	0	0	NA	NA	NA
THALLIUM	0	0	0	0	65	65	163669.2

CFC

Q7-10: CCT (min) 7.759 **PMF** Analysis pH 7 Analysis Hardness 77.719

Parameter	Stream Cone. (µg/L)	Stream CV	Trib Cone. (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
CADMIUM	0	0	0	0	0.206	0.225	565.341
	Dissolved WOE. Chemical translator of 0.92 applied.						
COPPER	3.28	0.913	0	0	7.22	7.521	3643.885
	Dissolved WOE. Chemical translator of 0.96 applied.						
SILVER	0	0	0	0	NA	NA	NA
ZINC	18.65	0.8	0	0	95.42	96.775	161761.6
	Dissolved WOC. Chemical translator of 0.986 applied.						
PHENOLICS (PWS)	0	0	0	0	**NA**	NA	NA
MERCURY	0	0	0	0	0.77	0.906	2281
	Dissolved WOE. Chemical translator of 0.85 applied.						

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number						
263.25	Eureka Resource	**PA0232351**						
	ANTIMONY	0	0	0	0	220	220	553957.3
	ARSENIC	0	0	0	0	150	150	377698.2
		Dissolved WQC. Chemic8l translator of 1 applied.						
	LEAD	1.66	1.38	0	0	1.911	3.743	3.743
		Dissolved WQC. Chemical translator of 0.828 applied. Background Governed.						
	SELENIUM	0.673	0.59	0	0	4.6	4.989	9951.853
		Dissolved WQC. Chemical translator of 0.922 applied.						
	THALLIUM	0	0	0	0	13	13	32733.84

THH

Q7-10: CCT(min) 7.759 **PMF** Analysis pH NA Analysis Hardness NA

Parameter	Stream Cone (µg/L)	Stream CV	Trib Cone (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
CADMIUM	0	0	0	0	NA	NA	**NA**
COPPER	3.28	0.913	0	0	NA	NA	NA
SILVER	0	0	0	0	NA	**NA**	NA
ZINC	18.65	0.8	0	0	NA	NA	NA
PHENOLICS (PWS)	0	0	0	0	5	5	17185.46
	WQC applied at RMI 138 with a design stream flow of 898.3424.						
MERCURY	0	0	0	0	0.05	0.05	125.899
ANTIMONY	0	0	0	0	5.6	5.6	14100.73
ARSENIC	0	0	0	0	10	10	25179.88
LEAD	1.66	1.38	0	0	NA	NA	NA
SELENIUM	0.673	0.59	0	0	NA	NA	NA
THALLIUM	0	0	0	0	0.24	0.24	604.317

CRL

Qh: **CCT (min)** 3.545 **PMF**

Parameter	Stream Cone (µg/L)	Stream CV	Trib Cone (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)
CADMIUM	0	0	0	0	NA	NA	NA

PENTOXSD Analysis Results

Wasteload Allocations

RMI	Name	Permit Number							
263.25	**Eureka Resource**	PA0232351							
	COPPER		3.28	0.913	0	0	NA	NA	NA
	SILVER		0	0	0	0	NA	NA	NA
	ZINC		18.65	0.8	0	0	NA	NA	NA
	PHENOLICS (PWS)		0	0	0	0	NA	NA	NA
	MERCURY		0	0	0	0	NA	NA	NA
	ANTIMONY		0	0	0	0	NA	NA	NA
	ARSENIC		0	0	0	0	NA	NA	NA
	LEAD		1.66	1.38	0	0	NA	NA	NA
	SELENIUM		0.673	0.59	0	0	NA	NA	NA
	THALLIUM		0	0	0	0	NA	NA	NA

PENTOXSD Analysis Results

Recommended Effluent Limitations

SWP Basin	Stream Code:	Stream Name:
07K	6685	SUSQUEHANNA RIVER

RMI	Name	PerlTTit Number	Disc Flow (mgd)
263.25	Eureka Resource	PA0232351	0.1690

Parameter	Effluent Limit (µg/L)	Governing Criterion	Max. Daily Limit (µg/L)	Most Stringent WQBEL (µg/L)	Most Stringent WQBEL Criterion
ANTIMONY	50	INPUT	78.008	14100.73	THH
ARSENIC	50	INPUT	78.008	25179.88	THH
CADMIUM	3	INPUT	4.68	565.341	CFC
COPPER	865	INPUT	1349.539	3643.885	CFC
LEAD	3.743	CFC-BKGR	3.743	88101.14	AFC
MERCURY	2	INPUT	3.12	125.899	THH
PHENOLICS (PWS)	10	INPUT	18.415	17185.46	THH
SELENIUM	50	INPUT	78.008	9951.853	CFC
SILVER	10	INPUT	15.602	3959.067	AFC
THALLIUM	50	INPUT	78.008	604.317	THH
ZINC	497	INPUT	775.4	83693.98	AFC

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
07K	6685	SUSQUEHANNA RIVER	263.250	659.00	8225.61	0.09500	0.00	

Stream Data

Design Cond.	LFY (efsm)	Trib Flow (cfs)	Stream Flow (cfs)	Reh Trav Time (days)	Reh Velocity (fps)	WD Ratio	Reh Width (ft)	Reh Depth (ft)	Tributary Temp ('C)	Tributary pH	Stream Temp ('C)	Stream pH
Q7-10	0.080	0.00	0.00	0.000	0.000	0.0	0.00	0.00	25.00	7.00	20.00	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
Eureka Resource	PA0232351	0.1690	0.1690	0.1690	0.000	20.00	7.00

Parameter Data

Parameter Name	Disc Conc (mg/L)	Trib Conc (mg/L)	Stream Conc (mg/L)	Fate Coef (1/days)
CBOD5	163.00	2.00	0.00	9.78
Dissolved Oxygen	3.00	8.24	0.00	0.00
NH3-N	14.30	0.00	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
07K	6685	SUSQUEHANNA RIVER	**262.200**	658.90	8242.00	0.09500	0.00	

Stream Data

Design Cond.	LFY (cfsm)	Trib Flow (els)	Stream Flow	Reh Trav Time (days)	Reh Velocity (fps)	WO Ratio	Reh Width (ft)	Reh Depth (ft)	Tributary Temp ("C)	Tributary pH	Stream Temp ("C)	Stream pH
Q7-10	0.080	0.00	0.00	0.000	0.000	a.a	0.00	0.00	25.00	7.00	20.00	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	0.00	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 H[?]drod[?]namic Out[?]uts

SWP Basin	Stream Code	Stream Name
07K	**6685**	SUSQUEHANNA RIVER

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												
263.250	658.05	0.00	658.05	.2614	0.09500	4.017	118.57	29.52	1.38	0.046	20.00	7.00
Q1-10 Flow												
263.250	605.40	0.00	605.40	.2614	0.09500	NA	NA	NA	1.32	0.049	20.00	7.00
Q30-10 Flow												
263.250	829.14	0.00	829.14	.2614	0.09500	NA	NA	NA	1.57	0.041	20.00	7.00

WQM 7.0 Modeling Specifications

Parameters	Both	Use Inputted Q1-10 and Q30-10 Flows	☐
WLAMethod	EMPR	**Use Inputted W/O Ratio**	☐
Q1-10/O7-10 Ratio	0.92	**Use Inputted Reach Travel Times**	☐
Q30-10/Q7-10 Ratio	1.26	**Temperature Adjust Kr**	☐
D.O. Saturation			
D.O. Goal	**90.00%**	**Use Balanced Technology**	☐
	5		

WQM 7.0 Wasteload Allocations

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

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
263.250	Eureka Resource	9.67	28.6	9.67	28.6	0	0

NH3-N Chronic Allocations

RMI	Discharge Name	Baseline Criterion (mg/L)	Baseline WLA (m9/L)	Multiple Criterion (mg/L)	Multiple WLA (mg/L)	Critical Reach	Percent Reduction
263.250	Eureka Resource	1.92	14.3	1.92	14.3	0	0

Dissolved Oxygen Allocations

RMI	Discharge Name	C8OD5		NH3◆N		Dissolved Oxygen		Critical Reach	Percent Reduction
		Baseline (mg/L)	Multiple (mg/L)	Baseline (mg/L)	Multiple (m9/L)	Baseline (mg/L)	Multiple (mg/L)		
263.25	Eureka Resource	163	163	14.3	14.3	3	3	0	0

WQM 7.0 D.O.Simulation

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

RMI	Total Discharge Flow (mgd)	Analysis Temperature (°C)	Analysis pH
263.250	0.169	20.000	7.000
Reach Width (ft)	**Reach Depth (ft)**	**Reach WDRatio**	**Reach Velocity (fps)**
118.575	4.017	29.518	1.382
Reach CBOD5 (mg/L)	**Reach Kc (1/days)**	**Reach NH3-N (mg/L)**	**Reach Kn (1/days)**
2.06	0.248	0.01	0.700
Reach DO (mg/L)	**Reach Kr (1/days)**	**Kr Equation**	**Reach DO Goal (mg/L)**
8.241	1.884	O'Connor	5
Reach Travel Time (days)			
0.046			

Subreach Results

TravTime (days)	CBOD5 (mg/L)	NH3-N (mg/L)	D.O. (mg/L)
0.005	2.06	0.01	8.24
0.009	2.06	0.01	8.24
0.014	2.06	0.01	8.24
0.019	2.05	0.01	8.24
0.023	2.05	0.01	8.24
0.028	2.05	0.01	8.24
0.032	2.05	0.01	8.24
0.037	2.05	0.01	8.24
0.042	2.04	0.01	8.24
0.046	2.04	0.01	8.24

WQM 7.0 Effluent Limits

SWP Basin	Stream Code	Stream Name
07K	6685	SUSQUEHANNA RIVER

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)
263.250	**Eureka Resource**	PA0232351	0.169	CBOD5	163		
				NH3-N	14.3	28.6	
				Dissolved Oxygen			3

TOXICS SCREENING ANALYSIS
WATER QUALITY POLLUTANTS OF CONCERN
VERSION 2.5

Facility: Eureka Resources1 LLC NPDES Permit No.: PA0232351 Outfall:

Analysis Hardness (mg/L): __!QQ_ Discharge Flow (MGD): 0.169 Analysis pH (SU) ___ 7_

	Parameter		Maximum Concentration In Applicatlon or DMRs (µg/L)	Most Stringent Criterion (µg/L)	Candidate for PENTOXSD Modeling?	Most Stringent WQBEL (µg/L)	Screening Recommendation
Inorganics	Total Dissolved Solids		500000	500000	Yes	1213440000	No Umits/Monitorina
	Chloride		50000	250000	No		FALSE
	Bromide	<	100	NIA	No {Value < Qll		
	Sulfate	<	1000	250000	No /Value < QL)		FALSE
	Fluoride	<	100	2000	No Na!ue < Ql)		
Metals	Total Aluminum	<	20	750	No		
	Total AnUmonv	<	50	5.6	Yes	14100.73	No limits/Monilorina
	Total Arsenic	<	50	10	Yes	25179.88	No Limits/Monilorina
	Total Barium		400	2400	No		
	Total! Beryllium	<	1	NIA	No (Value < QL)		
	Total Boron		95.5	1600	No		
	Total Cadmium	<	3	0.271 ·	Yes	565.341	No Limlts/MonitorinQ
	Total Chromium	<	10	NIA	No		
	Hexavalent Chromium	<	10	10.4	No		
	Total Cobalt	<	10	19	No		
	Total Coooer		865	9,3	Yes	3643.885	Monitor
	Total Cvanlde	<	5	NIA	NoNalue <QU		
	Total Iron		100	1500	No		
	Dissolved Iron		80	300	No		
	Total Lead	<	50	3.2	Yes	88101.14	No Limils/MonitorinQ
	Tolal Mannanese	<	10	1000	No		
	Total Mercurv	<	2	0.05	Yes	125.899	No limits/MonitorinQ
	Total Molvhdenum	<	10	NIA	No		
	Total Nickel	<	10	52.2	No		
	Total Phenols (Phenolics)	<	10	5	Yes	17185.46	No limitsJMonilorina
	Total Selenium	<	50	5.0	Yes	9951.853	No LImits/MonitOrina
	Total Silver	<	10	3.8	Yes	9951.853	No Limlls/Monilorina
	Total Thallium	<	50	0.24	Yes	604.317	No limits/Monitorino
	Tota! Zinc		497	119.8	Yes	83693.98	No limitsJMonitorlno
Volatile Organics	Acro!ein	<		3			
	Acrvlamide	<		0.07			
	A"n""anllrile	<		0.051			
	Benzene	<		1.2			
	Bromoform	<		4.3			
	Carbon Tetrachloride	<		0.23			
	Chlorobenzene	<		130			
	Chlorodibromomethane	<		0.4			
	Chloroethane	<		NIA			
	2-Chloroethvl Vinvl Ether	<		3500			
	Chloroform	<		5.7			
	Dichlorobromomethane	<		0.55			
	1,1-Dich!oroethane	<		NIA			
	1,2-Dich!oroethane	<		0.38			
	1,1-Dichloroethv[ene	<		33			
	1,2-Dichloroorooane	<		2200			
	1,3-Dichloronroovlene	<		0.34			
	Eth\!benzene	<		530			
	Methvl Bromide	<		47			
	Methyl Chloride	<		5500			
	Methvlene Chloride	<		4.6			
	1,1,2,2-Tetrachloroethane	<		0.17			
	Tetrach!oroethvlene	<		0.69			
	Toluene	<		330			
	1,2-trans-Dich!oroelh\ lene	<		140			
	1,1,1-Trichloroethane	<		610			
	1,1,2-Trichloroethane	<		0.59			
	Trichloroe!hvlene	<		2.5			
	Vinvl Chloride	<		0.025			
Acid Compounds	2-Chloronhenol	<		81			
	2,4-Dich!orophenol	<		77			
	2,4-Dimethvlphenol	<		130			
	4,6-Dlnitro-o-Cresol	<		13			
	2,4-Dinllroohenol	<		69			
	2-Nilroohenol	<		1600			
	4-Nitroohenol	<		470			
	o-Ch!oro-m-Cresol	<		30			
	Pentachloroohenol	<		0.27			
	Phenol		3650	10400	No		
	2,4,6-Tlichlorooheno!	<		1.4			
	Acenaohlhene	<		17			

	Acenaohlhvlene	<		**NIA**			
	Anlhracene	<		8300			
	Benzidine	<		0.000086			
	Benzo<alAnthracene	<		0,0038			
	BenzolalP,,,.ene	<		0.0038			
	3,4-Benzofluoranthene	<		0.0038			
	Benzo(Qhi)Pervlene	<		NIA			
	Benzo(k)Fluoranthene	<		0.0038			
	Bis 2-Chloroethmrv1Melhane	<		NIA			
	Bis 2-ChloroethvllEther	<		0,03			
	Bis 2-Ch!oroisopropvllEther	<		1400			
	Bis 2-ElhlheYVIIPhlhalate	<		1.2			
	4-Bromoohem ı Phenvl Ether	<		54			
	But ı Benzi ı Phthalate	<		35			
	2-Ch1oronaohtha1ene	<		1000			
	4-Chloroohenvl Pheml Ether	<		NIA			
	Chrvsene	<		0,0038			
	Dibenzo<a,h\Anlhrancene	<		0,0038			
	1,2-Dichlorobenzene	<		160			
	1,3-Dichlorobenzene	<		69			
	1,4-Dichlorobenzene	<		150			
	3,3-Dich!orobenzidine	<		0.021			
	Diethv1 Phthalate	<		800			
	Dlmethvl Phthalate	<		500			
	Di-n-Bulvl Phthalate	<		21			
	2,4-Dinitrotoklene	<		0,05			
	2,6-Dinilrotoluene	<		0.05			
	1,4-Dioxane	<		NIA			
	D!-n-OcM Phthalate	<		**NIA**			
	1, 2-Diohenvlhvdrazine	<		0,036			
	Fluoranthene	<		40			
	Fluorene	<		1100			
	Hexach!orobenzene	<		0.00028			
	Hexachlorobutadiene	<		0.44			
	Hexachlorocvclonenladiene	<		1			
	Hexachloroethane	<		1.4			
	lndeno(1,2,3-cd)Pvrene	<		0.0038			
	lsoPhorone	<		35			
	Naohthalene	<		43			
	Nitrobenzene	<		17			
	n-Nitrosodlmethvlamine	<		0.00069			
	n-Nitrosodl-n-Proovlamine	<		0.005			
	n-Nitrosodlohenvramine	<		3.3			
	Phenanlhrene	<		1			
	Pvrene	<		830			
	1,2,4-Trichlorobenzene	<		26			
	Aldrin	<		0.000049			
	alpha-BHC	<		0,0026			
	beta-BHC	<		0.0091			
	aamma-BHC	<		0.098			
	delta BHC	<		**NIA**			
	Chlordane	<		0.0008			
	4,4-DDT	<		0.00022			
	4,4-0DE	<		0.00022			
	4,4-DDD	<		0.00031			
	Oieldrin	<		0.000052			
	a!oha-Endosulfan	<		0,056			
	beta-Endosulfan	<		0.056			
	Endosulfan Sulfate	<		NIA			
	Endrin	<		0.036			
	Endrin Aldehyde	<		0,29			
	Heptachlor	<		0.000079			
	HePtachlor Epoxide	<		0.000039			
	PCB-1242	<		NIA			
	PCB-1254	<		NIA			
	PCB-1221	<		NIA			
	PCB-1232	<		NIA			
	PCB-1248	<		NIA			
	PCB-1260	<		NIA			
	PCB-1016	<		NIA			
	Toxaphene	<		0.0002			
	2,3,7,8-TCDD	<		0.000000005			
	Gross Alpha lnCi/L)	<		NIA			
	Total Beta (pCi/Ll	<		NIA			
	Rad!um 2261228 lnCilL)	<		NIA			
	Total Stront!um	<	290	4000	No		
	Total Uranium	<	0.5	NIA	No /Value < all		
	Osmotic Pressure (mOs/kQ)	<	5	50000	No Ma!ue < QL\