pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Southwest Regional Office
CLEAN WATER PROGRAM

Application Type	**Renewal**	Application No.	**PA0219134**
Facility Type	**Industrial**	APS ID	**1033991**
Major / Minor	**Major**	Authorization ID	**1346079**

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

Applicant and Facility Information

Applicant Name	**Springdale Energy LLC**	Facility Name	**Springdale Generating Facility**
Applicant Address	PO Box 166	Facility Address	198 Butler Street
	Springdale, PA 15144-0166		Springdale, PA 15144-1702
Applicant Contact	Anthony Miles	Facility Contact	Eric Kuper
Applicant Phone	(803) 206-1863	Facility Phone	(724) 274-3628
Client ID	335922	Site ID	550126
SIC Code	4911	Municipality	Springdale Township
SIC Description	Trans. & Utilities - Electric Services	County	Allegheny
Date Application Received	March 8, 2021	EPA Waived?	No
Date Application Accepted	April 2, 2021	If No, Reason	Major Facility

Purpose of Application: NPDES permit renewal

Summary of Review

The Department received a renewal NPDES permit application from EA Engineering, Science, and Technology, Inc., PBC (EA) on behalf of Springdale Energy LLC for the renewal of its NPDES permit for the Springdale Generating Facility on March 8, 2021. The site has an SIC code 4911, Electric Services. The facility is an electric generating facility consisting of two 44 MW simple cycle combustion turbines (units 1 &2), two 175 MW natural gas-fired combustion turbines with heat recovery steam generators (units 3 & 4) and one 186 MW axial flow steam turbine (unit 55). The facility also has associated buildings, tanks, and cooling towers. The facility consist of five natural gas-fired electric generation units (units 1,2,3,4, and 5). The facility is comprised of two independent halves. Units 1 and 2 are standalone simple cycle Peaker units, which run less frequently than the rest of the facility. Units 3, 4, and 5 are combined cycle units, and operate nearly continuously.

The facility currently discharges industrial wastewater through four internal monitoring points (IMPS 101, 201, 301, and 401) which combine into one outfall, Outfall 001. The facility also discharges uncontaminated stormwater via Outfall 002. Both outfalls discharge to the Allegheny River, designated in 25 PA Chode 93 as a Warm Water Fishery. IMP 101 discharges cooling tower blowdown from Units 3, 4, and 5. IMP 201 discharges low volume wastes from Units 3, 4, and 5. IMP 301 discharges cooling tower blowdown and boiler blowdown from Units 1 and 2. IMP 401 discharges low volume wastes from Units 1 and 2 and some stormwater. The stormwater contributions to Outfall 001 via IMP 401 flow through an oil/water separator (OWS) and are combined with flow from other sources in the wastewater sump. The OWS only discharges to the sump, and the wastewater sump only discharges to IMP 401 when float switches indicate the tanks are full. Therefore, stormwater may not reach IMP 401/Outfall 001 until several hours or days after precipitation events. The stormwater sample results submitted with the application for IMP 401 and Outfall 002 are below the no exposure values; therefore, these outfalls can be considered uncontained stormwater outfalls and will not receive monitoring requirements in part A of the permit. However, the outfalls are still subject to the stormwater part C conditions.

Approve	Deny	Signatures	Date
X		Adam Olesnanik / Environmental Engineering Specialist	August 12, 2021
X		Michael E. Fifth, P.E. / Environmental Engineer Manager	August 19, 2021

Summary of Review

All processes at the facility have remained largely unchanged for over five years. Based on discharge data from the site Springdale Energy is requesting the elimination of the compliance monitoring for zinc, chromium, and copper in the renewal permit. The Department's response to the elimination of these parameters will be discussed in the Development of Effluent Limitations section of this Fact Sheet for each sampling point. Springdale Energy is also requesting the sample frequency be reduced. When permittees request the reduction of sample frequencies, the Department utilizes EPA's guidance document, "*Interim Guidance for Performance-Based Reductions of NPDES Permit Monitoring Frequencies*" (April 1996), along with Departmental discretion, to evaluate if the monitoring frequency can be reduced. The Department looks at four different factors, Facility Enforcement History, Parameter-by-Parameter compliance, Parameter-by-Parameter Performance History, and Residency Criteria for Continued Participation. Facility Enforcement History considers the enforcement action history at the facility, if there has been any enforcement actions, sample frequency reductions cannot be granted. Parameter-by-Parameter compliance considers the effluent limitation compliance history for the permit; if there has been any exceedances of the limitation for a parameter, the sample frequency cannot be reduced for that parameter. Parameter-by-Parameter Performance History considers how the discharge samples relate to the effluent limitation and determines if and how much the sample frequency can be reduced. For this case, if the long-term average is less than 49% of the limitation, the once per week sample frequency can be reduced to twice per month. Residency Criteria for Continued Participation take into consideration whether the sample frequency has been reduced in the past and if the permittee can still maintain compliance. If there have been exceedances of the limitations or if permittee is out of compliance with the permit, the Department may increase the sample frequency. These concerns will be addressed in the Development of Effluent Limitations section of this Fact Sheet for each sampling point. Springdale Energy is also requesting that the IMPs be eliminated, and all monitoring be conducted at Outfall 001. Due to Federal regulatory requirements, this request cannot be granted, and the IMPs will remain in the permit. The purpose of the IMPs is to monitor all of the waste streams separately. The Federal ELGs require that the waste streams meet the technology based effluent limitations prior to comingling with other waste where dilution of the waste streams can occur.

Clean Water Act § 316(b) – Cooling Water Intake Structures

On August 15, 2014, EPA promulgated Clean Water Act Section 316(b) regulations applicable to cooling water intake structures. The regulations established best technology available ("BTA") standards to reduce impingement mortality and entrainment of all life stages of fish and shellfish at existing power generating and manufacturing facilities. The Final Rule took effect on October 14, 2014. Regulations implementing the 2014 Final Rule (and the previously promulgated Phase I Rule) are provided in 40 CFR Part 125, Subparts I and J for new facilities and existing facilities, respectively. Associated NPDES permit application requirements for facilities with cooling water intake structures are provided in 40 CFR Part 122, Subpart B – Permit Application and Special NPDES Program Requirements (§ 122.21(r)).

The Springdale Generating Facility is an "existing facility" as defined in 40 CFR § 125.92(k). As an existing facility, the site is subject to 40 CFR Part 125, Subpart J – Requirements Applicable to Cooling Water Intake Structures for Existing Facilities Under Section 316(b) of the Clean Water Act (§§ 125.90 – 125.99) if the facility meets the rule's applicability criteria. Pursuant to the applicability criteria given by § 125.91(a), the ATI Vandergrift Facility is subject to the requirements of §§ 125.94 – 125.99 if:

(1) The facility is a point source;

(2) The facility uses or proposes to use one or more cooling water intake structures with a cumulative design intake flow (DIF) of greater than 2 million gallons per day (mgd) to withdraw water from waters of the United States; and

(3) Twenty-five percent or more of the water the facility withdraws on an actual intake flow basis is used exclusively for cooling purposes.

The Springdale Generating Facility is a point source as defined in 40 CFR § 122.2. The site uses a cooling water intake structure with a Design Intake Flow greater than 2 MGD (7.3 MGD). And the site uses more than 25% of the water it withdraws for cooling purposes. Therefore, the site is subject to the requirements of §§ 125.94 – 125.99.

The facility has a cooling water intake structure which supplies water from the Allegheny River to the cooling towers for the combined cycle Units 3, 4, and 5. The CWIS is located on the right descending bank of the lower Allegheny River, just upstream of Lock and Dam #3. There is a sheet piling skimmer wall traversing the entrance to the intake that extends several feet below the water's surface. The top of this wall extends approximately 4 inches above the water's surface at low river level. The CWIS is flush with the shoreline. There are two pumps which are protected by a bar grate that traps large debris.

Summary of Review

There is a set of seven vertically mounted fixed screens behind the bar grate, five of which are open, with the two bottom-most screens permanently blocked by stop logs. The pumps withdraw water from behind the screen system through a set of two vertical pipes that are equipped with a strainer system and located approximately 8 feet below low river water level.

The CWIS provides make-up water from the Allegheny River to a bank of six mechanical draft closed-cycle recirculating cooling towers. The CWIS does not have traveling screens but does have a set of fixed ½ inch square mesh screens that protect the two intake pumps. The water withdrawn through the CWIS system goes through a clarifier then into a raw water tank. The tank supplies make-up water to the cooling towers. All water is then used as a non-contact cooling source for plant equipment. The water is re-circulated until conductivity reaches above 2100 Mmhos, about four cycles of concentration, before being blown down to maintain proper tower operating limits. Make-up water is withdrawn only to replenish evaporative and blowdown losses. The system operation remains constant throughout the year. About 99% of the intake flow is used for non-contact cooling.

The CWIS design intake flow is 7.3 MGD, but typically operates at less than 50% capacity. The averaged intake from 2017-2019 was 2.35 MGD. There is no consistent seasonal variability, although reduced operation has occurred during some winter/spring months, The CWIS is in operation 24/7 when there are one or more units in operation.

The facility is equipped with recirculating mechanical draft cooling towers that recycle make-up water withdrawn from the Allegheny River for up to 4-5 cycles of concentration before blowdown occurs. Therefore, the cooling water intake flow is minimized to only that which is needed to offset evaporative losses, drift, and blowdown. Using the recirculating wet cooling towers at the facility reduces the amount of cooling water required by the facility by approximately 97 percent over that of a similarly sized open-cycle cooling plant. While the maximum design flow for the cooling tower make-up (7.3 MGD) is over the 2 MGD threshold in the rule, actual intake flows have been significantly lower, with an average monthly flow of 2.28 MGD. The CWIS consists of bar racks to prevent large debris from entering, while a set of fixed ½ inch square mesh screens protect against the entry of smaller material. While these screens are not in strict conformance to the geometry defined by the Rule, the facility's low intake velocity is protective of impingeable organisms. Calculated intake velocity at the CWIS using the greatest withdrawal rate from 2017-2019 is 0.14 feet per second assuming 100 percent screen cleanliness. Even if sediment and or debris build-up reduced open area by 50 percent, the actual intake velocity would still be below the threshold protective impingeable velocity, 0.5 fps. The volume of water withdrawn through the CWIS is unlikely to cause adverse environmental impacts because the intake is estimated to be from 0.01 to 0.09 percent of the river flow.

The facility has chosen to comply with the impingement mortally standards by employing a closed-cycle recirculating system and having the through-screen design and actual velocities being below 0.5 feet per second.

The Department forwarded the cooling water intake structure and 316(b) sections of the application to the U.S. Fish and Wildlife service, the NOAA Fisheries, Greater Atlantic Region and the Pennsylvania Fish and Boat Commission (PFBC) for a chance to review and submit comments. The Department received three comments from PFBC on the cooling water intake structure data that was submitted with the application, the comments are summarized below and also included in Attachment E of this Fact Sheet.

PFBC's first comment:

The PFBC appreciates the compliance summary provided by the applicant and the measures taken to adhere to state and federal recommendation to minimized impingement and entrainment at the cooling water intake structure. The adherence to flow velocities below the suggested 0.5 feet per second is one of the critical components to assuring maximum protection of aquatic organisms.

PFBC's second comment:

The second component to minimizing impacts to aquatic organisms is adherence to the screen size recommendations. PFBC is concerned regarding the mesh screen size used at the Springdale CWIS which is almost double (0.5 inches) compared to those recommended by state and federal guidance (3/16" or 0.19"). As the applicant notes, small organisms are still capable of becoming entrained in the CWIS which is likely to result in stress or mortality to those individuals. Despite the low volume pumped into the CWIS relative to the size of the river itself, these organisms are likely to be eggs, larvae, and young-of-year and could thus have a disproportionate effect on population dynamics of the species that become entrained. Many of these effects would not be realized until year later, particularly given the lack of regular and adequate ecological monitoring at this site.

Summary of Review

PFBC's third comment:

Previous PFBC surveys indicate that there are numerous sport fish species present include but not limited to Smallmouth Bass, Spotted Vass, Rock Bass, Walleye, Sauger, and Channel Catfish. In addition to supporting recreation angling opportunities, these and other fish species serve as hosts for developing freshwater mussels that use fish for dispersal into historically occupied habitats. Given the substantial aquatic resources present in this basin, PFBC recommend adhering to both the velocity and screen size specifications to be protective as possible.

The Department's Response to PFBC's Comments:

The Department understands PFBC's concern with the mesh screen size; however, mesh size is not a BAT requirement for cooling water intake structures. Springdale is meeting the BAT requirements of §§ 125.94. Additionally, if Springdale has 0.5-inch openings (12.7 mm) and would have to go down to 0.19-inch (4.83 mm) openings, that would require an increase of 2.6 times the area of screen facing the water source (12.7 mm / 4.83 mm) to maintain the same flow rate Springdale has now. Springdale may not be easily upgraded to have that much more screen area, which would be the same reason EPA did not identify fine mesh as BTA for the industry (even if fine mesh might be reasonable for some facilities).

<u>Public Participation</u>

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 (IMP 101, 201, 301, and 401)	Design Flow (MGD)	0.856
Latitude	40º 32' 47"	Longitude	-79º 45' 58"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Cooling Tower Blowdown, Heat Recovery Steam Generator Condensate Blowdown, Low Volume Wastes, and Stormwater		
Receiving Waters	Allegheny River (WWF)	Stream Code	42122
NHD Com ID	123972854	RMI	17.5
Drainage Area	11,500 mi^2	Yield (cfs/mi^2)	0.208
Q_{7-10} Flow (cfs)	2,390	Q_{7-10} Basis	US Army Corp of Engineers
Elevation (ft)	745	Slope (ft/ft)	0.001
Watershed No.	18-A	Chapter 93 Class.	WWF
Existing Use		Existing Use Qualifier	
Exceptions to Use		Exceptions to Criteria	
Assessment Status	Attaining Use(s)		
Nearest Downstream Public Water Supply Intake	Oakmont Water Authority		
PWS Waters	Allegheny River	Flow at Intake (cfs)	2,390
PWS RMI	13.5	Distance from Outfall (mi)	4.0

Discharge, Receiving Waters and Water Supply Information

Outfall No.	002	Design Flow (MGD)	0
Latitude	40º 32' 43"	Longitude	-79º 45' 58"
Quad Name	New Kensington West	Quad Code	1407
Wastewater Description:	Stormwater		
Receiving Waters	Allegheny River (WWF)	Stream Code	42122
NHD Com ID	123972854	RMI	17.4
Watershed No.	18-A	Chapter 93 Class.	WWF

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 0.856
Latitude 40º 32' 47" **Longitude** -79º 45' 58"
Wastewater Description: Combined IW and SW from IMPs 101, 201, 301, and 401

Technology-Based Limitations

Federal Effluent Limitations Guidelines (ELGs)

The process wastewater related to 40 CFR 423 Steam Electric Generating Category that discharge via Outfall 001 is monitored at internal monitoring points. The ELGs applicable to this process discharge will be imposed at the IMPs.

Regulatory Effluent Standards and Monitoring Requirements

25 PA Code Chapter 92 requires pH requirements to be a minimum of 6.0 and a maximum of 9.0 S.U. for all industrial waste process and non-process discharges.

Flow Reporting requirements are in accordance with the 25 PA Code Chapter 92 regulations.

Temperature limits will be imposed per the Department's "*Implementation Guidance for Temperature Criteria*." As a policy, DEP normally imposes a maximum temperature limit of 110°F on discharges that contain residual heat. The limit is intended as a safety measure to protect sampling personnel or anyone who may come into contact with the heated discharge where it enters the receiving water.

Pennsylvania regulations at 25 Pa. Code § 92a.48(b) require the imposition of technology-based TRC limits for facilities that use chlorination and that are not already subject to TRC limits based on applicable federal ELGs or a facility-specific BPJ evaluation which is displayed in Table 1 below.

25 PA Code Chapter 95.10 requires Total Dissolved Solids (TDS) monitoring at a minimum if the TDS concentration in the discharge exceeds 1,000 mg/L. Per the application, the maximum discharge concentration of TDS was reported as 2,480 mg/L, therefore TDS monitoring will be imposed.

Table 1: Regulatory Effluent Standards and Monitoring Requirements

Parameter	Monthly Average	Daily Maximum	Instantaneous Maximum	Units
Flow	Monitor and Report		-	MGD
Temperature	-	-	110	°F
TRC	0.5		1.6	mg/L
TDS	Monitor and Report			mg/L
pH	Between 6.0 and 9.0			S.U.

Water Quality-Based Limitations

Toxics Management Spread Sheet

The Department of Environmental Protection (DEP) has developed the DEP Toxics Management Spreadsheet ("TMS") to facilitate calculations necessary for completing a reasonable potential (RP) analysis and determining water quality-based effluent limitations for discharges of toxic pollutants. The Toxics Management Spreadsheet is a macro-enabled Excel binary file that combines the functions of the PENTOXSD model and the Toxics Screening Analysis spreadsheet to evaluate the reasonable potential for discharges to cause excursions above water quality standards and to determine WQBELs. The Toxics Management Spread Sheet is a single discharge, mass-balance water quality calculation spread sheet that includes consideration for mixing, first-order decay and other factors to determine recommended WQBELs for toxic substances and several non-toxic substances. Required input data including stream code, river mile index, elevation, drainage area, discharge name, NPDES permit number, discharge flow rate and the discharge concentrations for parameters in the permit application or in DMRs, which are entered into the spread sheet to establish site-specific discharge conditions. Other data such as low flow yield, reach dimensions and partial mix factors may also be entered to further characterize the conditions of the discharge and receiving water. Discharge concentrations for the parameters are chosen to represent the "worst case" quality of the discharge (i.e., maximum reported discharge concentrations). The spread sheet then evaluates each parameter by computing a Waste Load Allocation for each applicable criterion, determining a recommended maximum WQBEL and comparing that recommended WQBEL with the input discharge concentration to determine which is more stringent. Based on this evaluation, the Toxics Management Spread sheet recommends average monthly and maximum daily WQBELs.

Reasonable Potential Analysis and WQBEL Development for Outfall 001

Discharges from Outfall 001 are evaluated based on concentrations reported on the application and on DMRs; data from those sources are entered into the Toxics Management Spread Sheet. The maximum reported value of the parameters from the application form or from previous DMRs is used as the input concentration in the Toxics Management Spread Sheet. All toxic pollutants whose maximum concentrations, as reported in the permit application or on DMRs, are greater than the most stringent applicable water quality criterion are considered to be pollutants of concern. [This includes pollutants reported as "Not Detectable" or as "<MDL" where the method detection limit for the analytical method used by the applicant is greater than the most stringent water quality criterion]. The Toxics Management Spread Sheet is run with the discharge and receiving stream characteristics shown in Table 2. For IW discharges, the design flow used in modeling is the average flow during production or operation taken from the permit application. Pollutants for which water quality standards have not been promulgated (e.g., TSS, oil and grease) are excluded from the analysis. All the parameters are evaluated using the model to determine the water quality-based effluent limits applicable to the discharge and the receiving stream. The spreadsheet then compares the reported discharge concentrations to the calculated water quality-based effluent limitations to determine if a reasonable potential exists to exceed the calculated WQBELs. Effluent limitations are established in the draft permit where a pollutant's maximum reported discharge concentration equals or exceeds 50% of the WQBEL. For non-conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 25% - 50% of the WQBEL. For conservative pollutants, monitoring requirements are established where the maximum reported concentration is between 10% - 50% of the WQBEL. The information described above including the maximum reported discharge concentrations, the most stringent water quality criteria, the pollutant-of-concern (reasonable potential) determinations, the calculated WQBELs, and the WQBEL/monitoring recommendations are displayed in the Toxics Management Spread Sheet in Attachment B of this Fact Sheet. Based on the results from Toxics Management Spread Sheet no water quality-based effluent limitations or monitoring requirements are prescribed for the discharges from Outfall 001.

Table 2: TMS Inputs for Outfall 001

Parameter	Value
River Mile Index	17.5
Discharge Flow (MGD)	0.536
Basin/Stream Characteristics	
Parameter	**Value**
Area in Square Miles	11,500
Q_{7-10} (cfs)	2,390
Low-flow yield (cfs/mi^2)	0.208
Elevation (ft)	745
Slope	0.001

Total Residual Chlorine

To determine if WQBELs are required for discharges containing total residual chlorine (TRC), a discharge evaluation is performed using a DEP program called TRC_CALC created with Microsoft Excel for Windows. TRC_CALC calculates TRC Waste Load Allocations (WLAs) through the application of a mass balance model which considers TRC losses due to stream and discharge chlorine demands and first-order chlorine decay. Input values for the program include flow rates and chlorine demands for the receiving stream and the discharge, the number of samples taken per month, coefficients of TRC variability, partial mix factors, and an optional factor of safety. The mass balance model calculates WLAs for acute and chronic criteria that are then converted to long term averages using calculated multipliers. The multipliers are functions of the number of samples taken per month and the TRC variability coefficients (normally kept at default values unless site specific information is available). The most stringent limitation between the acute and chronic long-term averages is converted to an average monthly limit for comparison to the BAT average monthly limit of 0.5 mg/l from 25 Pa. Code § 92a.48(b)(2). The more stringent of these average monthly TRC limitations is imposed in the permit. The results of the modeling, included in Attachment C, indicate that WQBELs are not required for TRC at Outfall 001.

Thermal WQBELs for Heated Discharges

Thermal WQBELs are evaluated using a DEP program called "Thermal Discharge Limit Calculation Spreadsheet" created with Microsoft Excel for Windows. The program calculates temperature WLAs through the application of a heat transfer equation, which takes two forms in the program depending on the source of the facility's cooling water. In Case 1, intake water to a facility is from the receiving stream. In Case 2, intake water is from a source other than the receiving stream (e.g., municipal water supply). The determination of which case applies to a given discharge is determined by the input data which include the receiving stream flow rate (Q_{7-10} or the minimum regulated flow for large rivers), the stream intake flow rate, external source intake flow rates, consumptive flow rates and site-specific ambient stream temperatures. Case 1 limits are generally expressed as heat rejection rates while Case 2 limits are usually expressed as temperatures.

Since the temperature criteria from 25 Pa. Code Chapter 93.7(a) are expressed on monthly and semi-monthly bases for three different aquatic life-uses—cold water fishes, warm water fishes and trout stocking—the program generates monthly and semi-monthly limits for each use. DEP selects the output that corresponds to the aquatic life-use of the receiving stream and consequently which limits apply to the discharge. Temperature WLAs are bounded by an upper limit of 110°F for the safety of sampling personnel and anyone who may come into contact with the heated discharge where it enters the receiving water. If no WLAs below 110°F are calculated, an instantaneous maximum limit of 110°F is recommended by the program.

Discharges from Outfall 001 are classified under Case 1 because water is obtained via an intake structure owned by the permittee on the Allegheny River. The results of the thermal analysis, included in Attachment D, indicate that WQBELs for temperature are not required at Outfall 001. Therefore, because no WLAs below 110°F were calculated, an instantaneous maximum limit of 110°F will be imposed.

Anti-backsliding:

Previous effluent limits and monitoring requirements can be used pursuant to EPA’s anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 3.

Table 3: Existing Effluent Limitation for Outfall 001

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measure
Temperature (°F)	XXX	XXX	XXX	XXX	XXX	110	1/Week	I-S
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	1/Week	Grab
Total Dissolved Solids	Monitor	Monitor	XXX	Monitor	Monitor	XXX	1/Week	24-hr Composite
Total Copper	XXX	XXX	XXX	Monitor	Monitor	XXX	1/Week	24-hr Composite
Sulfate	Monitor	Monitor	XXX	Monitor	Monitor	XXX	1/Week	24-hr Composite
Chloride	Monitor	Monitor	XXX	Monitor	Monitor	XXX	1/Week	24-hr Composite
Bromide	Monitor	Monitor	XXX	Monitor	Monitor	XXX	1/Week	24-hr Composite
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/Week	24-hr Composite

Proposed Effluent Limitations

The proposed effluent limitations and monitoring requirements for Outfall 001 are shown below in Table 4. The limits are the most stringent values from the above limitation analysis. Request the removal of copper or reduced sample frequency. Total Copper was previous monitor due to Water Quality Based concerns and was a pollutant of concern. Based on new information, Total Copper is no longer a pollutant of concern and will be removed from the draft permit. TDS and will still be imposed in the draft permit because TDS is still a pollutant of concern with sample results being greater than 1,000 mg/L. Springdale Energy has requested a reduction in the sample frequency at all of its sampling points. As discussed above, using the Department’s discretion and the EPA’s guidance, the Department has determined that some of the parameter sampling frequencies can be reduced. Using the long-term average TRC concentration calculated from the DMRs, the TRC monitoring frequency can be reduced to twice per month. Additionally, because TDS, Sulfate, Chloride, and Bromide only have monitoring requirements, the Department will reduce their sample frequency to 2/month. Additionally, based on the Department’s discretion, and low variability of the discharge, the temperature and pH monitoring frequencies will also be reduced to Twice per month.

Table 4: Existing Effluent Limitation for Outfall 001

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	Continuous	Measure
Temperature (°F)	XXX	XXX	XXX	XXX	XXX	110	2/Month	I-S
Total Residual Chlorine	XXX	XXX	XXX	0.5	XXX	1.6	2/Month	Grab
Total Dissolved Solids	Monitor	Monitor	XXX	Monitor	Monitor	XXX	2/Month	24-hr Composite
Sulfate	Monitor	Monitor	XXX	Monitor	Monitor	XXX	2/Month	24-hr Composite
Chloride	Monitor	Monitor	XXX	Monitor	Monitor	XXX	2/Month	24-hr Composite
Bromide	Monitor	Monitor	XXX	Monitor	Monitor	XXX	2/Month	24-hr Composite
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	2/Month	24-hr Composite

Development of Effluent Limitations

IMP No.	101	**Design Flow (MGD)**	0.754
Latitude	40º 32' 46"	**Longitude**	-79º 46' 03"
Wastewater Description:	Units 3, 4, and 5 Cooling Tower Blowdown and Heat Recovery Steam Generator Condensate Blowdown		

Technology-Based Limitations

Regulatory Effluent Standards and Monitoring Requirements

25 PA Code Chapter 92 requires pH requirements to be a minimum of 6.0 and a maximum of 9.0 S.U. for all industrial waste process and non-process discharges.

Flow Reporting requirements is in accordance with the 25 PA Code Chapter 92 regulations.

Federal Effluent Limitation Guidelines (ELGs)

Discharges from IMP 101 are subject to the steam electric ELG 40 CFR 423. Because this is an existing source it is subject to the ELG's Best Practicable Technology ("BPT") effluent limitations in 40 CFR 423.12(b)(1,7 and 8), Best Available Technology ("BAT") effluent limitations in 40 CFR 423.13 (d)(1-3) and Best Conventional Pollutant Control Technology ("BCT") effluent limitations in 40 CFR 423.14 for cooling tower blowdown. Applicable effluent limitations are shown in Table 5.

Table 5: Federal Effluent Limitation Guidelines

Parameters	Concentration (mg/L)			
	Minimum	Average Monthly	Daily Maximum	Instant. Maximum
Free Available Chlorine	XXX	0.2	XXX	0.5
Total Chromium	XXX	0.2	0.2	XXX
Total Zinc	XXX	1.0	1.0	XXX
pH (S.U.)	6.0	XXX	9.0	XXX

In addition to the ELG's numerical limits, other conditions specified are included in Part C. Specifically they require that, "There shall be no discharge of polychlorinated biphenyl compounds" (40 CFR 423.12(b)(2)), "Neither free available nor total residual chlorine may be discharged from any unit for more than two hours in any one day" (40 CFR 423.12 (b)(8)), and "The 126 priority pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except chromium and zinc (40 CFR 423.13(d)(1))."

Springdale Energy is requesting the removal of the zinc and chromium effluent limitations. After evaluation of EPA's Final Rulemaking on the matter, the Department finds merit in Springdale's request. Volume 47, No. 224 of the Federal Register's Rules and Regulations as published on November 19, 1982 includes the Federal Effluent Limitation Guidelines for chromium and zinc. EPA's proposed rulemaking prohibited *"any discharge of cooling tower maintenance chemicals containing the 129 priority pollutants"* (defined earlier in the notice); including chromium and zinc. Many commenters indicated that there were (at that time) no acceptable substitutes for the use of chromium-based or zinc-based cooling tower maintenance chemicals. The EPA agreed with this position due in part to site specific conditions, including cooling water intake quality and the use of construction materials (i.e. for cooling water piping) that are susceptible to fouling corrosion. In addition, it was agreed that potential substitutes could be more toxic than the substances they were intended to replace. Therefore, the Federal Register states; *"the final BAT, NSPS and pretreatment standards allow for the discharge of chromium and zinc in cooling tower blowdown. The limitations are the same as those adopted in 1974 for BAT and are based upon pH adjustment, chemical precipitation, and sedimentation or filtration to remove precipitated metals".*

EPA's original intent was to restrict the discharge of all 129 Priority Toxic Pollutants (including chromium and zinc), a goal that Springdale has achieved. The company does not utilize chromium or zinc additives in its cooling water. Accordingly, total chromium and total zinc effluent limitations have been removed from the Final Permit. The Department will however maintain a "Monitor and Report" requirement for these pollutants for at least one permit cycle to confirm their absence. In addition, a Part C Condition has been added to the Draft Permit restricting the use of chromium and zinc chemical additives without first obtaining written approval from the Department.

Water Quality-Based Limitations

Due to the nature of the discharge, water quality limitations are evaluated at Outfall 001.

Anti-backsliding:

Previous effluent limits and monitoring requirements can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 6.

Table 6: Existing Effluent Limitation for IMP 101

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Measure
Free Available Chlorine	XXX	XXX	XXX	0.2	XXX	0.5	1/Week	Grab
Total Chromium	XXX	XXX	XXX	0.2	0.2	XXX	1/Week	Grab
Total Zinc	XXX	XXX	XXX	1.0	1.0	XXX	1/Week	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/Week	Grab

Proposed Effluent Limitations

The proposed effluent limitations and monitoring requirements for IMP 101 are shown below in Table 7. The limits are the most stringent values from the above limitation analysis. The permittee has request removal of zinc and chromium or at least to reduce sample frequency. The limitations for zinc and chromium been replace with monitor and report requirements. Additionally, a part C condition has been added that prevents the use of chemical additives that contain chromium and/or zinc. Springdale Energy has requested a reduction in the sample frequency at all of its sampling points. As discussed above, using the Departments discretion and the EPA's guidance, the Department has determined that some of the parameters sample frequency can be reduced. Using the long-term average concentrations calculated from the DMRs, the sample frequency for all of the parameters can be reduced to twice per month.

Table 7: Proposed Effluent Limitation for IMP 101

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Free Available Chlorine	XXX	XXX	XXX	0.2	XXX	0.5	2/Month	Grab
Total Chromium	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Zinc	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Development of Effluent Limitations

IMP No. 201 **Design Flow (MGD)** 0.179
Latitude 40º 32' 44" **Longitude** -79º 46' 01"
Wastewater Description: Units 3, 4, and 5 low volume wastewater including equipment skid wash water/floor drains, chiller blowdown, and river water treatment reject water

Technology-Based Limitations

Regulatory Effluent Standards and Monitoring Requirements

25 PA Code Chapter 92 requires pH requirements to be a minimum of 6.0 and a maximum of 9.0 S.U. for all industrial waste process and non-process discharges.

Flow Reporting requirements is in accordance with the 25 PA Code Chapter 92 regulations.

Federal Effluent Limitation Guidelines (ELGs)

Steam Electric Generation 40 CFR 423

Discharges from IMP 201 are subject to the steam electric ELG 40 CFR 423. Because this is an existing source it is subject the ELG's Best Practicable Technology ("BPT") effluent limitations in 40 CFR 423.12(b)(1-3) for low volume wastes. Applicable effluent limitations are shown in Table 8, below.

Table 8: Federal Effluent Limitation Guidelines

Parameters	Concentration (mg/L)			
	Minimum	Average Monthly	Daily Maximum	Instant. Maximum
Total Suspended Solids	XXX	30	100	XXX
Oil and Grease	XXX	15	20	XXX
pH (S.U.)	6.0	XXX	9.0	XXX

In addition to the ELG's numerical limits, Part C will also require that, "There shall be no discharge of polychlorinated biphenyl compounds" (40 CFR 423.12(b)(2)).

Water Quality-Based Limitations

Due to the nature of the discharge, water quality limitations are evaluated at Outfall 001.

Anti-backsliding:

Previous effluent limits and monitoring requirements can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 9.

Table 9: Existing Effluent Limitation for IMP 201

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Measure
Total Suspended Solids	XXX	XXX	XXX	30.0	100.0	XXX	1/Week	Grab
Oil and Grease	XXX	XXX	XXX	15.0	20.0	XXX	1/Week	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/Week	Grab

Proposed Effluent Limitations

The proposed effluent limitations and monitoring requirements for IMP 201 are shown below in Table 10. The limits are the most stringent values from the above limitation analysis. Springdale Energy has requested a reduction in the sample frequency at all of its sampling points. As discussed above, using the Departments discretion and the EPA's guidance, the Department has determined that some of the parameters sample frequency can be reduced. Using the long-term average concentrations calculated from the DMRs, the sample frequency for all of the parameters can be reduced to twice per month.

Table 10: Proposed Effluent Limitation for IMP 201

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Total Suspended Solids	XXX	XXX	XXX	30.0	100.0	XXX	2/Month	Grab
Oil and Grease	XXX	XXX	XXX	15.0	20.0	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Development of Effluent Limitations

IMP No. 301 **Design Flow (MGD)** 0.048
Latitude 40º 32' 48" **Longitude** -79º 46' 06"
Wastewater Description: Unit 1 and 2, and Natural Gas Compressor cooling tower blowdown

Technology-Based Limitations

Regulatory Effluent Standards and Monitoring Requirements

25 PA Code Chapter 92 requires pH requirements to be a minimum of 6.0 and a maximum of 9.0 S.U. for all industrial waste process and non-process discharges.

Flow Reporting requirements is in accordance with the 25 PA Code Chapter 92 regulations.

Water Quality-Based Limitations

Due to the nature of the discharge, water quality limitations are evaluated at Outfall 001.

Anti-backsliding:

Previous effluent limits and monitoring requirements can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 11. The effluent limits for Free Available Chlorine, Total Chromium, and Total Zinc in the previous permit were imposed based on the requirements of 40 CFR 423 using BPJ. The limits were applied based on BPJ because the facility is meeting the effluent limitations, demonstrating that the technology employed is sufficient to achieve the effluent limitations, and the discharge is very similar even though steam is not used in the power generation process. In addition to the ELG's numerical limits, other conditions specified are included in Part C. Specifically they require that, "There shall be no discharge of polychlorinated biphenyl compounds" (40 CFR 423.12(b)(2)), "Neither free available nor total residual chlorine may be discharged from any unit for more than two hours in any one day" (40 CFR 423.12 (b)(8)), and "The 126 priority pollutants (Appendix A) contained in chemicals added for cooling tower maintenance, except chromium and zinc (40 CFR 423.13(d)(1))."

Table 11: Existing Effluent Limitation for IMP 301

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Measure
Free Available Chlorine	XXX	XXX	XXX	0.2	XXX	0.5	1/Week	Grab
Total Chromium	XXX	XXX	XXX	0.2	0.2	XXX	1/Week	Grab
Total Zinc	XXX	XXX	XXX	1.0	1.0	XXX	1/Week	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/Week	Grab

Proposed Effluent Limitations

The proposed effluent limitations and monitoring requirements for IMP 301 are shown below in Table 12. The limits are the most stringent values from the above limitation analysis. As discussed above for IMP 101, the same explanation for the removal of the chromium and zinc limitations applies for IMP 301; therefore, the limitations for zinc and chromium have been replaced with monitor and report requirements. Additionally, a Part C condition has been added that prevents the use of chemical additives that contain chromium and/or zinc. Springdale Energy has requested a reduction in the sample frequency at all of its sampling points. As discussed above, using the Department's discretion and the EPA's guidance, the Department has determined that some of the parameters' sample frequency can be reduced. Based on the long-term average concentrations calculated from the DMRs, the sample frequency for all of the parameters can be reduced to twice per month.

Table 12: Proposed Effluent Limitation for IMP 301

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	2/Month	Measure
Free Available Chlorine	XXX	XXX	XXX	0.2	XXX	0.5	2/Month	Grab
Total Chromium	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
Total Zinc	XXX	XXX	XXX	Report	Report	XXX	2/Month	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	2/Month	Grab

Development of Effluent Limitations

IMP No.	401	**Design Flow (MGD)**	0.008
Latitude	40º 32' 43"	**Longitude**	-79º 46' 06"
Wastewater Description:	Unit 1 and 2 low volume wastewater and stormwater including secondary containment drainage, equipment skid wash water, RO Reject Water and stormwater		

Technology-Based Limitations

Regulatory Effluent Standards and Monitoring Requirements

25 PA Code Chapter 92 requires pH requirements to be a minimum of 6.0 and a maximum of 9.0 S.U. for all industrial waste process and non-process discharges.

Flow Reporting requirements is in accordance with the 25 PA Code Chapter 92 regulations.

Water Quality-Based Limitations

Due to the nature of the discharge, water quality limitations are evaluated at Outfall 001.

Anti-backsliding:

Previous effluent limits and monitoring requirements can be used pursuant to EPA's anti-backsliding regulation, 40 CFR 122.44(l) and are displayed below in Table 13. The effluent limits for Total Suspended Solids and Oil and Grease in the previous permit were imposed based on the requirements of 40 CFR 423 using BPJ. The limits were applied based on BPJ because the facility is meeting the effluent limitations, demonstrating that the technology employed is sufficient to achieve the effluent limitations, and the discharge is very similar even though steam is not used in the power generation process. Please note that because this is not a categorical discharge, but the effluent limits are being applied as BPJ it is acceptable for stormwater to comingle with the process wastewater prior to monitoring at IMP 401. In addition to the ELG's numerical limits, Part C will also require that, "There shall be no discharge of polychlorinated biphenyl compounds" (40 CFR 423.12(b)(2)).

Table 13: Existing Effluent Limitation for IMP 401

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Measure
Total Suspended Solids	XXX	XXX	XXX	30.0	100.0	XXX	1/Week	Grab
Oil and Grease	XXX	XXX	XXX	15.0	20.0	XXX	1/Week	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	9.0	XXX	1/Week	Grab

Proposed Effluent Limitations

The proposed effluent limitations and monitoring requirements for IMP 401 are shown below in Table 14. The limits are the most stringent values from the above limitation analysis. Springdale Energy has requested a reduction in the sample frequency at all of its sampling points. As discussed above, using the Department's discretion and the EPA's guidance, the Department has determined that sample frequency reduction cannot be granted. There have been two exceedances of both the oil and grease and TSS monthly average limit within the past two years, therefore, the monitoring frequency cannot be reduced.

Table 14: Proposed Effluent Limitation for IMP 401

Parameters	Mass (lb/day)		Concentration (mg/L)				Monitoring Requirements	
	Average Monthly	Daily Maximum	Minimum	Average Monthly	Daily Maximum	Instant. Maximum	Frequency	Sample Type
Flow (MGD)	Report	Report	XXX	XXX	XXX	XXX	1/week	Measure
Total Suspended Solids	XXX	XXX	XXX	30.0	100.0	XXX	1/Week	Grab
Oil and Grease	XXX	XXX	XXX	15.0	20.0	XXX	1/Week	Grab
pH (S.U.)	XXX	XXX	6.0	XXX	XXX	9.0	1/Week	Grab

Development of Effluent Limitations

Outfall No. 002 **Design Flow (MGD)** 0
Latitude 40º 32' 43" **Longitude** -79º 45' 58"
Wastewater Description: Uncontaminated Stormwater

This outfall is considered an uncontaminated stormwater outfall that meets the no exposure requirements; therefore, no limitations or monitoring will be imposed at this outfall. Part C Stormwater conditions still apply to this outfall.

Tools and References Used to Develop Permit	
☐	WQM for Windows Model (see Attachment)
☒	Toxics Management Spreadsheet (see Attachment)
☐	TRC Model Spreadsheet (see Attachment)
☒	Temperature Model Spreadsheet (see Attachment)
☐	Water Quality Toxics Management Strategy, 361-0100-003, 4/06.
☒	Technical Guidance for the Development and Specification of Effluent Limitations, 362-0400-001, 10/97.
☐	Policy for Permitting Surface Water Diversions, 362-2000-003, 3/98.
☒	Policy for Conducting Technical Reviews of Minor NPDES Renewal Applications, 362-2000-008, 11/96.
☒	Technology-Based Control Requirements for Water Treatment Plant Wastes, 362-2183-003, 10/97.
☒	Technical Guidance for Development of NPDES Permit Requirements Steam Electric Industry, 362-2183-004, 12/97.
☐	Pennsylvania CSO Policy, 385-2000-011, 9/08.
☐	Water Quality Antidegradation Implementation Guidance, 391-0300-002, 11/03.
☒	Implementation Guidance Evaluation & Process Thermal Discharge (316(a)) Federal Water Pollution Act, 391-2000-002, 4/97.
☒	Determining Water Quality-Based Effluent Limits, 391-2000-003, 12/97.
☐	Implementation Guidance Design Conditions, 391-2000-006, 9/97.
☐	Technical Reference Guide (TRG) WQM 7.0 for Windows, Wasteload Allocation Program for Dissolved Oxygen and Ammonia Nitrogen, Version 1.0, 391-2000-007, 6/2004.
☐	Interim Method for the Sampling and Analysis of Osmotic Pressure on Streams, Brines, and Industrial Discharges, 391-2000-008, 10/1997.
☐	Implementation Guidance for Section 95.6 Management of Point Source Phosphorus Discharges to Lakes, Ponds, and Impoundments, 391-2000-010, 3/99.
☐	Technical Reference Guide (TRG) PENTOXSD for Windows, PA Single Discharge Wasteload Allocation Program for Toxics, Version 2.0, 391-2000-011, 5/2004.
☐	Implementation Guidance for Section 93.7 Ammonia Criteria, 391-2000-013, 11/97.
☐	Policy and Procedure for Evaluating Wastewater Discharges to Intermittent and Ephemeral Streams, Drainage Channels and Swales, and Storm Sewers, 391-2000-014, 4/2008.
☐	Implementation Guidance Total Residual Chlorine (TRC) Regulation, 391-2000-015, 11/1994.
☒	Implementation Guidance for Temperature Criteria, 391-2000-017, 4/09.
☐	Implementation Guidance for Section 95.9 Phosphorus Discharges to Free Flowing Streams, 391-2000-018, 10/97.
☐	Implementation Guidance for Application of Section 93.5(e) for Potable Water Supply Protection Total Dissolved Solids, Nitrite-Nitrate, Non-Priority Pollutant Phenolics and Fluorides, 391-2000-019, 10/97.
☐	Field Data Collection and Evaluation Protocol for Determining Stream and Point Source Discharge Design Hardness, 391-2000-021, 3/99.
☐	Implementation Guidance for the Determination and Use of Background/Ambient Water Quality in the Determination of Wasteload Allocations and NPDES Effluent Limitations for Toxic Substances, 391-2000-022, 3/1999.
☐	Design Stream Flows, 391-2000-023, 9/98.
☐	Field Data Collection and Evaluation Protocol for Deriving Daily and Hourly Discharge Coefficients of Variation (CV) and Other Discharge Characteristics, 391-2000-024, 10/98.
☐	Evaluations of Phosphorus Discharges to Lakes, Ponds and Impoundments, 391-3200-013, 6/97.
☐	Pennsylvania's Chesapeake Bay Tributary Strategy Implementation Plan for NPDES Permitting, 4/07.
☐	SOP:
☐	Other:

Attachments

Attachment A: StreamStats Report

Attachment B: Outfall 001 Toxics Management Spreadsheet

Attachment C: Outfall 001 TRC Evaluation

Attachment D: Site Thermal Discharge Evaluation

Attachment E: PFBC's comments on Springdale's CWIS and 316(b) coordination

Attachment A:

StreamStats Report

StreamStats Report

Region ID: PA
Workspace ID: PA20210507132337358000
Clicked Point (Latitude, Longitude): 40.54638, -79.76385
Time: 2021-05-07 09:24:01 -0400

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	11500	square miles
ELEV	Mean Basin Elevation	1599	feet
PRECIP	Mean Annual Precipitation	44	inches

Attachment B:

Outfall 002 Toxics Management Spreadsheet

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Toxics Management Spreadsheet
Version 1.3, March 2021

Discharge Information

Instructions | Discharge | Stream

Facility: **Springdale Generating Facility** NPDES Permit No.: **PA0219134** Outfall No.: **001**

Evaluation Type: **Major Sewage / Industrial Waste** Wastewater Description: **Cooling Tower Blowdown, Low Volume Wa**

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
0.536	418	7.22						

					0 if left blank		0.5 if left blank		0 if left blank			1 if left blank	
	Discharge Pollutant	Units		Max Discharge Conc	Trib Conc	Stream Conc	Daily CV	Hourly CV	Stream CV	Fate Coeff	FOS	Criteria Mod	Chem Transl
Group 1	Total Dissolved Solids (PWS)	mg/L		2480									
	Chloride (PWS)	mg/L		285									
	Bromide	mg/L		0.1									
	Sulfate (PWS)	mg/L		847									
	Fluoride (PWS)	mg/L		0.63									
Group 2	Total Aluminum	µg/L		3790									
	Total Antimony	µg/L		2.6									
	Total Arsenic	µg/L		4									
	Total Barium	µg/L		218									
	Total Beryllium	µg/L	<	0.05									
	Total Boron	µg/L		190									
	Total Cadmium	µg/L		0.08									
	Total Chromium (III)	µg/L		1									
	Hexavalent Chromium	µg/L	<	5									
	Total Cobalt	µg/L		0.6									
	Total Copper	µg/L		30									
	Free Cyanide	µg/L											
	Total Cyanide	µg/L		5									
	Dissolved Iron	µg/L		60									
	Total Iron	µg/L		690									
	Total Lead	µg/L		0.5									
	Total Manganese	µg/L		86									
	Total Mercury	µg/L		0.3									
	Total Nickel	µg/L		5									
	Total Phenols (Phenolics) (PWS)	µg/L		0.306									
	Total Selenium	µg/L	<	5									
	Total Silver	µg/L	<	0.05									
	Total Thallium	µg/L	<	2									
	Total Zinc	µg/L		11									
	Total Molybdenum	µg/L		13									
	Acrolein	µg/L	<	2									
	Acrylamide	µg/L	<										
	Acrylonitrile	µg/L	<	5									
	Benzene	µg/L	<	0.5									
	Bromoform	µg/L		2.8									

Group 3	Carbon Tetrachloride	µg/L	<	0.5
	Chlorobenzene	µg/L	<	0.5
	Chlorodibromomethane	µg/L		4.6
	Chloroethane	µg/L	<	0.5
	2-Chloroethyl Vinyl Ether	µg/L	<	5
	Chloroform	µg/L	<	2
	Dichlorobromomethane	µg/L		3.4
	1,1-Dichloroethane	µg/L	<	0.5
	1,2-Dichloroethane	µg/L	<	0.5
	1,1-Dichloroethylene	µg/L	<	0.5
	1,2-Dichloropropane	µg/L	<	0.5
	1,3-Dichloropropylene	µg/L		0.12
	1,4-Dioxane	µg/L	<	10
	Ethylbenzene	µg/L	<	0.5
	Methyl Bromide	µg/L	<	0.5
	Methyl Chloride	µg/L	<	0.5
	Methylene Chloride	µg/L	<	0.5
	1,1,2,2-Tetrachloroethane	µg/L	<	0.5
	Tetrachloroethylene	µg/L	<	0.5
	Toluene	µg/L	<	0.5
	1,2-trans-Dichloroethylene	µg/L	<	0.5
	1,1,1-Trichloroethane	µg/L	<	0.5
	1,1,2-Trichloroethane	µg/L	<	0.5
	Trichloroethylene	µg/L	<	0.5
	Vinyl Chloride	µg/L	<	0.5
Group 4	2-Chlorophenol	µg/L	<	10
	2,4-Dichlorophenol	µg/L	<	10
	2,4-Dimethylphenol	µg/L	<	10
	4,6-Dinitro-o-Cresol	µg/L	<	10
	2,4-Dinitrophenol	µg/L	<	10
	2-Nitrophenol	µg/L	<	10
	4-Nitrophenol	µg/L	<	10
	p-Chloro-m-Cresol	µg/L	<	10
	Pentachlorophenol	µg/L	<	10
	Phenol	µg/L	<	10
	2,4,6-Trichlorophenol	µg/L		0.306
Group 5	Acenaphthene	µg/L	<	2.5
	Acenaphthylene	µg/L	<	2.5
	Anthracene	µg/L	<	2.5
	Benzidine	µg/L	<	50
	Benzo(a)Anthracene	µg/L	<	2.5
	Benzo(a)Pyrene	µg/L	<	2.5
	3,4-Benzofluoranthene	µg/L	<	2.5
	Benzo(ghi)Perylene	µg/L	<	2.5
	Benzo(k)Fluoranthene	µg/L	<	2.5
	Bis(2-Chloroethoxy)Methane	µg/L	<	5
	Bis(2-Chloroethyl)Ether	µg/L	<	5
	Bis(2-Chloroisopropyl)Ether	µg/L	<	5
	Bis(2-Ethylhexyl)Phthalate	µg/L	<	5
	4-Bromophenyl Phenyl Ether	µg/L	<	5
	Butyl Benzyl Phthalate	µg/L	<	5
	2-Chloronaphthalene	µg/L	<	5
	4-Chlorophenyl Phenyl Ether	µg/L	<	5
	Chrysene	µg/L	<	2.5
	Dibenzo(a,h)Anthrancene	µg/L	<	2.5
	1,2-Dichlorobenzene	µg/L	<	0.5
	1,3-Dichlorobenzene	µg/L	<	0.5
	1,4-Dichlorobenzene	µg/L	<	0.5
	3,3-Dichlorobenzidine	µg/L	<	0.5
	Diethyl Phthalate	µg/L		0.255
	Dimethyl Phthalate	µg/L		0.163
	Di-n-Butyl Phthalate	µg/L	<	4.82
	2,4-Dinitrotoluene	µg/L	<	5

	2,6-Dinitrotoluene	µg/L	<	5
	Di-n-Octyl Phthalate	µg/L	<	5
	1,2-Diphenylhydrazine	µg/L	<	10
	Fluoranthene	µg/L	<	2.5
	Fluorene	µg/L	<	2.5
	Hexachlorobenzene	µg/L	<	5
	Hexachlorobutadiene	µg/L	<	0.5
	Hexachlorocyclopentadiene	µg/L	<	5
	Hexachloroethane	µg/L	<	5
	Indeno(1,2,3-cd)Pyrene	µg/L	<	2.5
	Isophorone	µg/L		0.228
	Naphthalene	µg/L	<	0.5
	Nitrobenzene	µg/L	<	5
	n-Nitrosodimethylamine	µg/L	<	5
	n-Nitrosodi-n-Propylamine	µg/L	<	5
	n-Nitrosodiphenylamine	µg/L	<	5
	Phenanthrene	µg/L	<	2.5
	Pyrene	µg/L		0.214
	1,2,4-Trichlorobenzene	µg/L	<	0.5
Group 6	Aldrin	µg/L	<	
	alpha-BHC	µg/L	<	
	beta-BHC	µg/L	<	
	gamma-BHC	µg/L	<	
	delta BHC	µg/L	<	
	Chlordane	µg/L	<	
	4,4-DDT	µg/L	<	
	4,4-DDE	µg/L	<	
	4,4-DDD	µg/L	<	
	Dieldrin	µg/L	<	
	alpha-Endosulfan	µg/L	<	
	beta-Endosulfan	µg/L	<	
	Endosulfan Sulfate	µg/L	<	
	Endrin	µg/L	<	
	Endrin Aldehyde	µg/L	<	
	Heptachlor	µg/L	<	
	Heptachlor Epoxide	µg/L	<	
	PCB-1016	µg/L	<	
	PCB-1221	µg/L	<	
	PCB-1232	µg/L	<	
	PCB-1242	µg/L	<	
	PCB-1248	µg/L	<	
	PCB-1254	µg/L	<	
	PCB-1260	µg/L	<	
	PCBs, Total	µg/L	<	
	Toxaphene	µg/L	<	
	2,3,7,8-TCDD	ng/L	<	
Group 7	Gross Alpha	pCi/L		
	Total Beta	pCi/L	<	
	Radium 226/228	pCi/L	<	
	Total Strontium	µg/L	<	
	Total Uranium	µg/L	<	
	Osmotic Pressure	mOs/kg		

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Toxics Manag
Versi

Stream / Surface Water Information

Springdale Generating Facility, NPDES Permit No. PA021913

Instructions | Discharge | Stream

Receiving Surface Water Name: **Allegheny River**

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	042122	17.5	745	11500	0.001		Yes
End of Reach 1	042122	16.5	735	11501	0.001		Yes

$Q_{7\text{-}10}$

Location	RMI	LFY (cfs/mi^2)*	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Hard
			Stream	Tributary						Hardness	pH	Hardness*	pH*	Hard
Point of Discharge	17.5	0.1	2390			1300	15					100	7	
End of Reach 1	16.5	0.1	2390			900	15							

Q_h

Location	RMI	LFY (cfs/mi^2)	Flow (cfs)		W/D Ratio	Width (ft)	Depth (ft)	Velocity (fps)	Travel Time (days)	Tributary		Stream		Hard
			Stream	Tributary						Hardness	pH	Hardness	pH	Hard
Point of Discharge	17.5													
End of Reach 1	16.5													

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Toxics Management Spreadsheet
Version 1.3, March 2021

Model Results

Springdale Generating Facility, NPDES Permit No. PA0219134, Outfall 001

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

Hydrodynamics

$Q_{7\text{-}10}$

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
17.5	2,390		2,390	0.829	0.001	15.	1300.	86.667	0.123	0.498	126
16.5	2,390		2,390								

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
17.5	6663.59		6663.59	0.829	0.001	23.55	1300.	55.202	0.218	0.281	640
16.5	6663.595		6663.59								

Wasteload Allocations

AFC CCT (min): 15 PMF: 0.109 Analysis Hardness (mg/l): 101.01 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	750	750	236,614	
Total Antimony	0	0		0	1,100	1,100	347,034	
Total Arsenic	0	0		0	340	340	107,265	Chem Translator of 1 applied
Total Barium	0	0		0	21,000	21,000	6,625,192	
Total Boron	0	0		0	8,100	8,100	2,555,431	
Total Cadmium	0	0		0	2.033	2.16	680	Chem Translator of 0.944 applied
Total Chromium (III)	0	0		0	574.463	1,818	573,527	Chem Translator of 0.316 applied
Hexavalent Chromium	0	0		0	16	16.3	5,140	Chem Translator of 0.982 applied
Total Cobalt	0	0		0	95	95.0	29,971	
Total Copper	0	0		0	13.567	14.1	4,458	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	

Model Results 5/10/2021

Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	65.290	82.7	26,089	Chem Translator of 0.79 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	1.400	1.65	520	Chem Translator of 0.85 applied
Total Nickel	0	0		0	472.226	473	149,279	Chem Translator of 0.998 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	Chem Translator of 0.922 applied
Total Silver	0	0		0	3.273	3.85	1,215	Chem Translator of 0.85 applied
Total Thallium	0	0		0	65	65.0	20,507	
Total Zinc	0	0		0	118.180	121	38,123	Chem Translator of 0.978 applied
Acrolein	0	0		0	3	3.0	946	
Acrylonitrile	0	0		0	650	650	205,065	
Benzene	0	0		0	640	640	201,911	
Bromoform	0	0		0	1,800	1,800	567,874	
Carbon Tetrachloride	0	0		0	2,800	2,800	883,359	
Chlorobenzene	0	0		0	1,200	1,200	378,582	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	18,000	18,000	5,678,736	
Chloroform	0	0		0	1,900	1,900	599,422	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	15,000	15,000	4,732,280	
1,1-Dichloroethylene	0	0		0	7,500	7,500	2,366,140	
1,2-Dichloropropane	0	0		0	11,000	11,000	3,470,338	
1,3-Dichloropropylene	0	0		0	310	310	97,800	
Ethylbenzene	0	0		0	2,900	2,900	914,907	
Methyl Bromide	0	0		0	550	550	173,517	
Methyl Chloride	0	0		0	28,000	28,000	8,833,589	
Methylene Chloride	0	0		0	12,000	12,000	3,785,824	
1,1,2,2-Tetrachloroethane	0	0		0	1,000	1,000	315,485	
Tetrachloroethylene	0	0		0	700	700	220,840	
Toluene	0	0		0	1,700	1,700	536,325	
1,2-trans-Dichloroethylene	0	0		0	6,800	6,800	2,145,300	
1,1,1-Trichloroethane	0	0		0	3,000	3,000	946,456	
1,1,2-Trichloroethane	0	0		0	3,400	3,400	1,072,650	
Trichloroethylene	0	0		0	2,300	2,300	725,616	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	560	560	176,672	
2,4-Dichlorophenol	0	0		0	1,700	1,700	536,325	
2,4-Dimethylphenol	0	0		0	660	660	208,220	
4,6-Dinitro-o-Cresol	0	0		0	80	80.0	25,239	
2,4-Dinitrophenol	0	0		0	660	660	208,220	
2-Nitrophenol	0	0		0	8,000	8,000	2,523,883	
4-Nitrophenol	0	0		0	2,300	2,300	725,616	
p-Chloro-m-Cresol	0	0		0	160	160	50,478	
Pentachlorophenol	0	0		0	8.728	8.73	2,754	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	460	460	145,123	
Acenaphthene	0	0		0	83	83.0	26,185	
Anthracene	0	0		0	N/A	N/A	N/A	

Model Results 5/10/2021

Benzidine	0	0		0	300	300	94,646	
Benzo(a)Anthracene	0	0		0	0.5	0.5	158	
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A	
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A	
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A	
Bis(2-Chloroethyl)Ether	0	0		0	30,000	30,000	9,464,559	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	
Bis(2-Ethylhexyl)Phthalate	0	0		0	4,500	4,500	1,419,684	
4-Bromophenyl Phenyl Ether	0	0		0	270	270	85,181	
Butyl Benzyl Phthalate	0	0		0	140	140	44,168	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	N/A	N/A	N/A	
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A	
1,2-Dichlorobenzene	0	0		0	820	820	258,698	
1,3-Dichlorobenzene	0	0		0	350	350	110,420	
1,4-Dichlorobenzene	0	0		0	730	730	230,304	
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A	
Diethyl Phthalate	0	0		0	4,000	4,000	1,261,941	
Dimethyl Phthalate	0	0		0	2,500	2,500	788,713	
Di-n-Butyl Phthalate	0	0		0	110	110	34,703	
2,4-Dinitrotoluene	0	0		0	1,600	1,600	504,777	
2,6-Dinitrotoluene	0	0		0	990	990	312,330	
1,2-Diphenylhydrazine	0	0		0	15	15.0	4,732	
Fluoranthene	0	0		0	200	200	63,097	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	10	10.0	3,155	
Hexachlorocyclopentadiene	0	0		0	5	5.0	1,577	
Hexachloroethane	0	0		0	60	60.0	18,929	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	10,000	10,000	3,154,853	
Naphthalene	0	0		0	140	140	44,168	
Nitrobenzene	0	0		0	4,000	4,000	1,261,941	
n-Nitrosodimethylamine	0	0		0	17,000	17,000	5,363,250	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	300	300	94,646	
Phenanthrene	0	0		0	5	5.0	1,577	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	130	130	41,013	

☑ *CFC* CCT (min): 720 PMF: 0.756 Analysis Hardness (mg/l): 100.15 Analysis pH: 7.00

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	N/A	N/A	N/A	
Chloride (PWS)	0	0		0	N/A	N/A	N/A	
Sulfate (PWS)	0	0		0	N/A	N/A	N/A	
Fluoride (PWS)	0	0		0	N/A	N/A	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	

Model Results 5/10/2021

Total Antimony	0	0		0	220	220	479,560	
Total Arsenic	0	0		0	150	150	326,973	Chem Translator of 1 applied
Total Barium	0	0		0	4,100	4,100	8,937,255	
Total Boron	0	0		0	1,600	1,600	3,487,709	
Total Cadmium	0	0		0	0.246	0.27	591	Chem Translator of 0.909 applied
Total Chromium (III)	0	0		0	74.203	86.3	188,080	Chem Translator of 0.86 applied
Hexavalent Chromium	0	0		0	10	10.4	22,659	Chem Translator of 0.962 applied
Total Cobalt	0	0		0	19	19.0	41,417	
Total Copper	0	0		0	8.967	9.34	20,361	Chem Translator of 0.96 applied
Dissolved Iron	0	0		0	N/A	N/A	N/A	
Total Iron	0	0		0	1,500	1,500	4,324,986	WQC = 30 day average; PMF = 1
Total Lead	0	0		0	2.521	3.19	6,948	Chem Translator of 0.791 applied
Total Manganese	0	0		0	N/A	N/A	N/A	
Total Mercury	0	0		0	0.770	0.91	1,975	Chem Translator of 0.85 applied
Total Nickel	0	0		0	52.071	52.2	113,846	Chem Translator of 0.997 applied
Total Phenols (Phenolics) (PWS)	0	0		0	N/A	N/A	N/A	
Total Selenium	0	0		0	4.600	4.99	10,875	Chem Translator of 0.922 applied
Total Silver	0	0		0	N/A	N/A	N/A	Chem Translator of 1 applied
Total Thallium	0	0		0	13	13.0	28,338	
Total Zinc	0	0		0	118.285	120	261,501	Chem Translator of 0.986 applied
Acrolein	0	0		0	3	3.0	6,539	
Acrylonitrile	0	0		0	130	130	283,376	
Benzene	0	0		0	130	130	283,376	
Bromoform	0	0		0	370	370	806,533	
Carbon Tetrachloride	0	0		0	560	560	1,220,698	
Chlorobenzene	0	0		0	240	240	523,156	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	3,500	3,500	7,629,364	
Chloroform	0	0		0	390	390	850,129	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	3,100	3,100	6,757,436	
1,1-Dichloroethylene	0	0		0	1,500	1,500	3,269,727	
1,2-Dichloropropane	0	0		0	2,200	2,200	4,795,600	
1,3-Dichloropropylene	0	0		0	61	61.0	132,969	
Ethylbenzene	0	0		0	580	580	1,264,295	
Methyl Bromide	0	0		0	110	110	239,780	
Methyl Chloride	0	0		0	5,500	5,500	11,989,000	
Methylene Chloride	0	0		0	2,400	2,400	5,231,564	
1,1,2,2-Tetrachloroethane	0	0		0	210	210	457,762	
Tetrachloroethylene	0	0		0	140	140	305,175	
Toluene	0	0		0	330	330	719,340	
1,2-trans-Dichloroethylene	0	0		0	1,400	1,400	3,051,745	
1,1,1-Trichloroethane	0	0		0	610	610	1,329,689	
1,1,2-Trichloroethane	0	0		0	680	680	1,482,276	
Trichloroethylene	0	0		0	450	450	980,918	
Vinyl Chloride	0	0		0	N/A	N/A	N/A	
2-Chlorophenol	0	0		0	110	110	239,780	

Model Results 5/10/2021

2,4-Dichlorophenol	0	0		0	340	340	741,138
2,4-Dimethylphenol	0	0		0	130	130	283,376
4,6-Dinitro-o-Cresol	0	0		0	16	16.0	34,877
2,4-Dinitrophenol	0	0		0	130	130	283,376
2-Nitrophenol	0	0		0	1,600	1,600	3,487,709
4-Nitrophenol	0	0		0	470	470	1,024,515
p-Chloro-m-Cresol	0	0		0	500	500	1,089,909
Pentachlorophenol	0	0		0	6.696	6.7	14,597
Phenol	0	0		0	N/A	N/A	N/A
2,4,6-Trichlorophenol	0	0		0	91	91.0	198,363
Acenaphthene	0	0		0	17	17.0	37,057
Anthracene	0	0		0	N/A	N/A	N/A
Benzidine	0	0		0	59	59.0	128,609
Benzo(a)Anthracene	0	0		0	0.1	0.1	218
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A
Bis(2-Chloroethyl)Ether	0	0		0	6,000	6,000	13,078,909
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Ethylhexyl)Phthalate	0	0		0	910	910	1,983,635
4-Bromophenyl Phenyl Ether	0	0		0	54	54.0	117,710
Butyl Benzyl Phthalate	0	0		0	35	35.0	76,294
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	160	160	348,771
1,3-Dichlorobenzene	0	0		0	69	69.0	150,407
1,4-Dichlorobenzene	0	0		0	150	150	326,973
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	800	800	1,743,855
Dimethyl Phthalate	0	0		0	500	500	1,089,909
Di-n-Butyl Phthalate	0	0		0	21	21.0	45,776
2,4-Dinitrotoluene	0	0		0	320	320	697,542
2,6-Dinitrotoluene	0	0		0	200	200	435,964
1,2-Diphenylhydrazine	0	0		0	3	3.0	6,539
Fluoranthene	0	0		0	40	40.0	87,193
Fluorene	0	0		0	N/A	N/A	N/A
Hexachlorobenzene	0	0		0	N/A	N/A	N/A
Hexachlorobutadiene	0	0		0	2	2.0	4,360
Hexachlorocyclopentadiene	0	0		0	1	1.0	2,180
Hexachloroethane	0	0		0	12	12.0	26,158
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A
Isophorone	0	0		0	2,100	2,100	4,577,618
Naphthalene	0	0		0	43	43.0	93,732
Nitrobenzene	0	0		0	810	810	1,765,653
n-Nitrosodimethylamine	0	0		0	3,400	3,400	7,411,382
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A

Model Results 5/10/2021

n-Nitrosodiphenylamine	0	0		0	59	59.0	128,609	
Phenanthrene	0	0		0	1	1.0	2,180	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	26	26.0	56,675	

☑ ***THH*** CCT (min): 720 PMF: 0.756 Analysis Hardness (mg/l): N/A Analysis pH: N/A

Pollutants	Stream Conc (µg/L)	Stream CV	Trib Conc (µg/L)	Fate Coef	WQC (µg/L)	WQ Obj (µg/L)	WLA (µg/L)	Comments
Total Dissolved Solids (PWS)	0	0		0	500,000	500,000	N/A	
Chloride (PWS)	0	0		0	250,000	250,000	N/A	
Sulfate (PWS)	0	0		0	250,000	250,000	N/A	
Fluoride (PWS)	0	0		0	2,000	2,000	N/A	
Total Aluminum	0	0		0	N/A	N/A	N/A	
Total Antimony	0	0		0	5.6	5.6	12,207	
Total Arsenic	0	0		0	10	10.0	21,798	
Total Barium	0	0		0	2,400	2,400	5,231,564	
Total Boron	0	0		0	3,100	3,100	6,757,436	
Total Cadmium	0	0		0	N/A	N/A	N/A	
Total Chromium (III)	0	0		0	N/A	N/A	N/A	
Hexavalent Chromium	0	0		0	N/A	N/A	N/A	
Total Cobalt	0	0		0	N/A	N/A	N/A	
Total Copper	0	0		0	N/A	N/A	N/A	
Dissolved Iron	0	0		0	300	300	653,945	
Total Iron	0	0		0	N/A	N/A	N/A	
Total Lead	0	0		0	N/A	N/A	N/A	
Total Manganese	0	0		0	1,000	1,000	2,179,818	
Total Mercury	0	0		0	0.050	0.05	109	
Total Nickel	0	0		0	610	610	1,329,689	
Total Phenols (Phenolics) (PWS)	0	0		0	5	5.0	N/A	
Total Selenium	0	0		0	N/A	N/A	N/A	
Total Silver	0	0		0	N/A	N/A	N/A	
Total Thallium	0	0		0	0.24	0.24	523	
Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	3	3.0	6,539	
Acrylonitrile	0	0		0	N/A	N/A	N/A	
Benzene	0	0		0	N/A	N/A	N/A	
Bromoform	0	0		0	N/A	N/A	N/A	
Carbon Tetrachloride	0	0		0	N/A	N/A	N/A	
Chlorobenzene	0	0		0	100	100.0	217,982	
Chlorodibromomethane	0	0		0	N/A	N/A	N/A	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	N/A	N/A	N/A	
Dichlorobromomethane	0	0		0	N/A	N/A	N/A	
1,2-Dichloroethane	0	0		0	N/A	N/A	N/A	
1,1-Dichloroethylene	0	0		0	33	33.0	71,934	
1,2-Dichloropropane	0	0		0	N/A	N/A	N/A	

1,3-Dichloropropylene	0	0		0	N/A	N/A	N/A
Ethylbenzene	0	0		0	68	68.0	148,228
Methyl Bromide	0	0		0	100	100.0	217,982
Methyl Chloride	0	0		0	N/A	N/A	N/A
Methylene Chloride	0	0		0	N/A	N/A	N/A
1,1,2,2-Tetrachloroethane	0	0		0	N/A	N/A	N/A
Tetrachloroethylene	0	0		0	N/A	N/A	N/A
Toluene	0	0		0	57	57.0	124,250
1,2-trans-Dichloroethylene	0	0		0	100	100.0	217,982
1,1,1-Trichloroethane	0	0		0	10,000	10,000	21,798,182
1,1,2-Trichloroethane	0	0		0	N/A	N/A	N/A
Trichloroethylene	0	0		0	N/A	N/A	N/A
Vinyl Chloride	0	0		0	N/A	N/A	N/A
2-Chlorophenol	0	0		0	30	30.0	65,395
2,4-Dichlorophenol	0	0		0	10	10.0	21,798
2,4-Dimethylphenol	0	0		0	100	100.0	217,982
4,6-Dinitro-o-Cresol	0	0		0	2	2.0	4,360
2,4-Dinitrophenol	0	0		0	10	10.0	21,798
2-Nitrophenol	0	0		0	N/A	N/A	N/A
4-Nitrophenol	0	0		0	N/A	N/A	N/A
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A
Pentachlorophenol	0	0		0	N/A	N/A	N/A
Phenol	0	0		0	4,000	4,000	8,719,273
2,4,6-Trichlorophenol	0	0		0	N/A	N/A	N/A
Acenaphthene	0	0		0	70	70.0	152,587
Anthracene	0	0		0	300	300	653,945
Benzidine	0	0		0	N/A	N/A	N/A
Benzo(a)Anthracene	0	0		0	N/A	N/A	N/A
Benzo(a)Pyrene	0	0		0	N/A	N/A	N/A
3,4-Benzofluoranthene	0	0		0	N/A	N/A	N/A
Benzo(k)Fluoranthene	0	0		0	N/A	N/A	N/A
Bis(2-Chloroethyl)Ether	0	0		0	N/A	N/A	N/A
Bis(2-Chloroisopropyl)Ether	0	0		0	200	200	435,964
Bis(2-Ethylhexyl)Phthalate	0	0		0	N/A	N/A	N/A
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A
Butyl Benzyl Phthalate	0	0		0	0.1	0.1	218
2-Chloronaphthalene	0	0		0	800	800	1,743,855
Chrysene	0	0		0	N/A	N/A	N/A
Dibenzo(a,h)Anthrancene	0	0		0	N/A	N/A	N/A
1,2-Dichlorobenzene	0	0		0	1,000	1,000	2,179,818
1,3-Dichlorobenzene	0	0		0	7	7.0	15,259
1,4-Dichlorobenzene	0	0		0	300	300	653,945
3,3-Dichlorobenzidine	0	0		0	N/A	N/A	N/A
Diethyl Phthalate	0	0		0	600	600	1,307,891
Dimethyl Phthalate	0	0		0	2,000	2,000	4,359,636
Di-n-Butyl Phthalate	0	0		0	20	20.0	43,596
2,4-Dinitrotoluene	0	0		0	N/A	N/A	N/A

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2,6-Dinitrotoluene	0	0		0	N/A	N/A	N/A	
1,2-Diphenylhydrazine	0	0		0	N/A	N/A	N/A	
Fluoranthene	0	0		0	20	20.0	43,596	
Fluorene	0	0		0	50	50.0	108,991	
Hexachlorobenzene	0	0		0	N/A	N/A	N/A	
Hexachlorobutadiene	0	0		0	N/A	N/A	N/A	
Hexachlorocyclopentadiene	0	0		0	4	4.0	8,719	
Hexachloroethane	0	0		0	N/A	N/A	N/A	
Indeno(1,2,3-cd)Pyrene	0	0		0	N/A	N/A	N/A	
Isophorone	0	0		0	34	34.0	74,114	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	10	10.0	21,798	
n-Nitrosodimethylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodi-n-Propylamine	0	0		0	N/A	N/A	N/A	
n-Nitrosodiphenylamine	0	0		0	N/A	N/A	N/A	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	20	20.0	43,596	
1,2,4-Trichlorobenzene	0	0		0	0.07	0.07	153	

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

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

Model Results 5/10/2021

Total Zinc	0	0		0	N/A	N/A	N/A	
Acrolein	0	0		0	N/A	N/A	N/A	
Acrylonitrile	0	0		0	0.06	0.06	482	
Benzene	0	0		0	0.58	0.58	4,662	
Bromoform	0	0		0	7	7.0	56,261	
Carbon Tetrachloride	0	0		0	0.4	0.4	3,215	
Chlorobenzene	0	0		0	N/A	N/A	N/A	
Chlorodibromomethane	0	0		0	0.8	0.8	6,430	
2-Chloroethyl Vinyl Ether	0	0		0	N/A	N/A	N/A	
Chloroform	0	0		0	5.7	5.7	45,812	
Dichlorobromomethane	0	0		0	0.95	0.95	7,635	
1,2-Dichloroethane	0	0		0	9.9	9.9	79,569	
1,1-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,2-Dichloropropane	0	0		0	0.9	0.9	7,234	
1,3-Dichloropropylene	0	0		0	0.27	0.27	2,170	
Ethylbenzene	0	0		0	N/A	N/A	N/A	
Methyl Bromide	0	0		0	N/A	N/A	N/A	
Methyl Chloride	0	0		0	N/A	N/A	N/A	
Methylene Chloride	0	0		0	20	20.0	160,745	
1,1,2,2-Tetrachloroethane	0	0		0	0.2	0.2	1,607	
Tetrachloroethylene	0	0		0	10	10.0	80,373	
Toluene	0	0		0	N/A	N/A	N/A	
1,2-trans-Dichloroethylene	0	0		0	N/A	N/A	N/A	
1,1,1-Trichloroethane	0	0		0	N/A	N/A	N/A	
1,1,2-Trichloroethane	0	0		0	0.55	0.55	4,420	
Trichloroethylene	0	0		0	0.6	0.6	4,822	
Vinyl Chloride	0	0		0	0.02	0.02	161	
2-Chlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dichlorophenol	0	0		0	N/A	N/A	N/A	
2,4-Dimethylphenol	0	0		0	N/A	N/A	N/A	
4,6-Dinitro-o-Cresol	0	0		0	N/A	N/A	N/A	
2,4-Dinitrophenol	0	0		0	N/A	N/A	N/A	
2-Nitrophenol	0	0		0	N/A	N/A	N/A	
4-Nitrophenol	0	0		0	N/A	N/A	N/A	
p-Chloro-m-Cresol	0	0		0	N/A	N/A	N/A	
Pentachlorophenol	0	0		0	0.030	0.03	241	
Phenol	0	0		0	N/A	N/A	N/A	
2,4,6-Trichlorophenol	0	0		0	1.5	1.5	12,056	
Acenaphthene	0	0		0	N/A	N/A	N/A	
Anthracene	0	0		0	N/A	N/A	N/A	
Benzidine	0	0		0	0.0001	0.0001	0.8	
Benzo(a)Anthracene	0	0		0	0.001	0.001	8.04	
Benzo(a)Pyrene	0	0		0	0.0001	0.0001	0.8	
3,4-Benzofluoranthene	0	0		0	0.001	0.001	8.04	
Benzo(k)Fluoranthene	0	0		0	0.01	0.01	80.4	
Bis(2-Chloroethyl)Ether	0	0		0	0.03	0.03	241	
Bis(2-Chloroisopropyl)Ether	0	0		0	N/A	N/A	N/A	

Model Results 5/10/2021

Bis(2-Ethylhexyl)Phthalate	0	0		0	0.32	0.32	2,572	
4-Bromophenyl Phenyl Ether	0	0		0	N/A	N/A	N/A	
Butyl Benzyl Phthalate	0	0		0	N/A	N/A	N/A	
2-Chloronaphthalene	0	0		0	N/A	N/A	N/A	
Chrysene	0	0		0	0.12	0.12	964	
Dibenzo(a,h)Anthrancene	0	0		0	0.0001	0.0001	0.8	
1,2-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,3-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
1,4-Dichlorobenzene	0	0		0	N/A	N/A	N/A	
3,3-Dichlorobenzidine	0	0		0	0.05	0.05	402	
Diethyl Phthalate	0	0		0	N/A	N/A	N/A	
Dimethyl Phthalate	0	0		0	N/A	N/A	N/A	
Di-n-Butyl Phthalate	0	0		0	N/A	N/A	N/A	
2,4-Dinitrotoluene	0	0		0	0.05	0.05	402	
2,6-Dinitrotoluene	0	0		0	0.05	0.05	402	
1,2-Diphenylhydrazine	0	0		0	0.03	0.03	241	
Fluoranthene	0	0		0	N/A	N/A	N/A	
Fluorene	0	0		0	N/A	N/A	N/A	
Hexachlorobenzene	0	0		0	0.00008	0.00008	0.64	
Hexachlorobutadiene	0	0		0	0.01	0.01	80.4	
Hexachlorocyclopentadiene	0	0		0	N/A	N/A	N/A	
Hexachloroethane	0	0		0	0.1	0.1	804	
Indeno(1,2,3-cd)Pyrene	0	0		0	0.001	0.001	8.04	
Isophorone	0	0		0	N/A	N/A	N/A	
Naphthalene	0	0		0	N/A	N/A	N/A	
Nitrobenzene	0	0		0	N/A	N/A	N/A	
n-Nitrosodimethylamine	0	0		0	0.0007	0.0007	5.63	
n-Nitrosodi-n-Propylamine	0	0		0	0.005	0.005	40.2	
n-Nitrosodiphenylamine	0	0		0	3.3	3.3	26,523	
Phenanthrene	0	0		0	N/A	N/A	N/A	
Pyrene	0	0		0	N/A	N/A	N/A	
1,2,4-Trichlorobenzene	0	0		0	N/A	N/A	N/A	

Recommended WQBELs & Monitoring Requirements

No. Samples/Month: 4

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

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 dete 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

Model Results 5/10/2021

Pollutants	Governing WQBEL	Units	Comments
Total Dissolved Solids (PWS)	N/A	N/A	PWS Not Applicable
Chloride (PWS)	N/A	N/A	PWS Not Applicable
Bromide	N/A	N/A	No WQS
Sulfate (PWS)	N/A	N/A	PWS Not Applicable
Fluoride (PWS)	N/A	N/A	PWS Not Applicable
Total Aluminum	151,660	µg/L	Discharge Conc ≤ 10% WQBEL
Total Antimony	12,207	µg/L	Discharge Conc ≤ 10% WQBEL
Total Arsenic	21,798	µg/L	Discharge Conc ≤ 10% WQBEL
Total Barium	4,246,480	µg/L	Discharge Conc ≤ 10% WQBEL
Total Beryllium	N/A	N/A	No WQS
Total Boron	1,637,928	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cadmium	436	µg/L	Discharge Conc ≤ 10% WQBEL
Total Chromium (III)	188,080	µg/L	Discharge Conc ≤ 10% WQBEL
Hexavalent Chromium	3,295	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cobalt	19,210	µg/L	Discharge Conc ≤ 10% WQBEL
Total Copper	2,858	µg/L	Discharge Conc ≤ 10% WQBEL
Total Cyanide	N/A	N/A	No WQS
Dissolved Iron	653,945	µg/L	Discharge Conc ≤ 10% WQBEL
Total Iron	4,324,986	µg/L	Discharge Conc ≤ 10% WQBEL
Total Lead	6,948	µg/L	Discharge Conc ≤ 10% WQBEL
Total Manganese	2,179,818	µg/L	Discharge Conc ≤ 10% WQBEL
Total Mercury	109	µg/L	Discharge Conc ≤ 10% WQBEL
Total Nickel	95,682	µg/L	Discharge Conc ≤ 10% WQBEL
Total Phenols (Phenolics) (PWS)		µg/L	PWS Not Applicable
Total Selenium	10,875	µg/L	Discharge Conc < TQL
Total Silver	779	µg/L	Discharge Conc < TQL
Total Thallium	523	µg/L	Discharge Conc < TQL
Total Zinc	24,435	µg/L	Discharge Conc ≤ 10% WQBEL
Total Molybdenum	N/A	N/A	No WQS
Acrolein	607	µg/L	Discharge Conc < TQL
Acrylonitrile	482	µg/L	Discharge Conc < TQL
Benzene	4,662	µg/L	Discharge Conc < TQL
Bromoform	56,261	µg/L	Discharge Conc ≤ 25% WQBEL
Carbon Tetrachloride	3,215	µg/L	Discharge Conc < TQL
Chlorobenzene	217,982	µg/L	Discharge Conc < TQL
Chlorodibromomethane	6,430	µg/L	Discharge Conc ≤ 25% WQBEL
Chloroethane	N/A	N/A	No WQS
2-Chloroethyl Vinyl Ether	3,639,840	µg/L	Discharge Conc < TQL
Chloroform	45,812	µg/L	Discharge Conc ≤ 25% WQBEL
Dichlorobromomethane	7,635	µg/L	Discharge Conc ≤ 25% WQBEL
1,1-Dichloroethane	N/A	N/A	No WQS
1,2-Dichloroethane	79,569	µg/L	Discharge Conc < TQL
1,1-Dichloroethylene	71,934	µg/L	Discharge Conc < TQL
1,2-Dichloropropane	7,234	µg/L	Discharge Conc < TQL
1,3-Dichloropropylene	2,170	µg/L	Discharge Conc ≤ 25% WQBEL

Model Results 5/10/2021

1,4-Dioxane	N/A	N/A	No WQS
Ethylbenzene	148,228	µg/L	Discharge Conc < TQL
Methyl Bromide	111,217	µg/L	Discharge Conc < TQL
Methyl Chloride	5,661,974	µg/L	Discharge Conc < TQL
Methylene Chloride	160,745	µg/L	Discharge Conc < TQL
1,1,2,2-Tetrachloroethane	1,607	µg/L	Discharge Conc < TQL
Tetrachloroethylene	80,373	µg/L	Discharge Conc < TQL
Toluene	124,250	µg/L	Discharge Conc < TQL
1,2-trans-Dichloroethylene	217,982	µg/L	Discharge Conc < TQL
1,1,1-Trichloroethane	606,640	µg/L	Discharge Conc < TQL
1,1,2-Trichloroethane	4,420	µg/L	Discharge Conc < TQL
Trichloroethylene	4,822	µg/L	Discharge Conc < TQL
Vinyl Chloride	161	µg/L	Discharge Conc < TQL
2-Chlorophenol	65,395	µg/L	Discharge Conc < TQL
2,4-Dichlorophenol	21,798	µg/L	Discharge Conc < TQL
2,4-Dimethylphenol	133,461	µg/L	Discharge Conc < TQL
4,6-Dinitro-o-Cresol	4,360	µg/L	Discharge Conc < TQL
2,4-Dinitrophenol	21,798	µg/L	Discharge Conc < TQL
2-Nitrophenol	1,617,707	µg/L	Discharge Conc < TQL
4-Nitrophenol	465,091	µg/L	Discharge Conc < TQL
p-Chloro-m-Cresol	32,354	µg/L	Discharge Conc < TQL
Pentachlorophenol	241	µg/L	Discharge Conc < TQL
Phenol	8,719,273	µg/L	Discharge Conc < TQL
2,4,6-Trichlorophenol	12,056	µg/L	Discharge Conc ≤ 25% WQBEL
Acenaphthene	16,784	µg/L	Discharge Conc < TQL
Acenaphthylene	N/A	N/A	No WQS
Anthracene	653,945	µg/L	Discharge Conc < TQL
Benzidine	0.8	µg/L	Discharge Conc < TQL
Benzo(a)Anthracene	8.04	µg/L	Discharge Conc < TQL
Benzo(a)Pyrene	0.8	µg/L	Discharge Conc < TQL
3,4-Benzofluoranthene	8.04	µg/L	Discharge Conc < TQL
Benzo(ghi)Perylene	N/A	N/A	No WQS
Benzo(k)Fluoranthene	80.4	µg/L	Discharge Conc < TQL
Bis(2-Chloroethoxy)Methane	N/A	N/A	No WQS
Bis(2-Chloroethyl)Ether	241	µg/L	Discharge Conc < TQL
Bis(2-Chloroisopropyl)Ether	435,964	µg/L	Discharge Conc < TQL
Bis(2-Ethylhexyl)Phthalate	2,572	µg/L	Discharge Conc < TQL
4-Bromophenyl Phenyl Ether	54,598	µg/L	Discharge Conc < TQL
Butyl Benzyl Phthalate	218	µg/L	Discharge Conc < TQL
2-Chloronaphthalene	1,743,855	µg/L	Discharge Conc < TQL
4-Chlorophenyl Phenyl Ether	N/A	N/A	No WQS
Chrysene	964	µg/L	Discharge Conc < TQL
Dibenzo(a,h)Anthrancene	0.8	µg/L	Discharge Conc < TQL
1,2-Dichlorobenzene	165,815	µg/L	Discharge Conc < TQL
1,3-Dichlorobenzene	15,259	µg/L	Discharge Conc < TQL
1,4-Dichlorobenzene	147,616	µg/L	Discharge Conc < TQL
3,3-Dichlorobenzidine	402	µg/L	Discharge Conc < TQL

Model Results 5/10/2021

Diethyl Phthalate	808,853	µg/L	Discharge Conc ≤ 25% WQBEL
Dimethyl Phthalate	505,533	µg/L	Discharge Conc ≤ 25% WQBEL
Di-n-Butyl Phthalate	22,243	µg/L	Discharge Conc < TQL
2,4-Dinitrotoluene	402	µg/L	Discharge Conc < TQL
2,6-Dinitrotoluene	402	µg/L	Discharge Conc < TQL
Di-n-Octyl Phthalate	N/A	N/A	No WQS
1,2-Diphenylhydrazine	241	µg/L	Discharge Conc < TQL
Fluoranthene	40,443	µg/L	Discharge Conc < TQL
Fluorene	108,991	µg/L	Discharge Conc < TQL
Hexachlorobenzene	0.64	µg/L	Discharge Conc < TQL
Hexachlorobutadiene	80.4	µg/L	Discharge Conc < TQL
Hexachlorocyclopentadiene	1,011	µg/L	Discharge Conc < TQL
Hexachloroethane	804	µg/L	Discharge Conc < TQL
Indeno(1,2,3-cd)Pyrene	8.04	µg/L	Discharge Conc < TQL
Isophorone	74,114	µg/L	Discharge Conc ≤ 25% WQBEL
Naphthalene	28,310	µg/L	Discharge Conc < TQL
Nitrobenzene	21,798	µg/L	Discharge Conc < TQL
n-Nitrosodimethylamine	5.63	µg/L	Discharge Conc < TQL
n-Nitrosodi-n-Propylamine	40.2	µg/L	Discharge Conc < TQL
n-Nitrosodiphenylamine	26,523	µg/L	Discharge Conc < TQL
Phenanthrene	1,011	µg/L	Discharge Conc < TQL
Pyrene	43,596	µg/L	Discharge Conc ≤ 25% WQBEL
1,2,4-Trichlorobenzene	153	µg/L	Discharge Conc < TQL

Attachment C:

Outfall 001 TRC Evaluation

TRC EVALUATION

2390	= Q stream (cfs)	0.5	= CV Daily
0.536	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	0.5	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	0.5	= 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)
	= %Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations	Reference	CFC Calculations
TRC	1.3.2.iii	WLA afc = 459.750	1.3.2.iii	WLA cfc = 448.212
PENTOXSD TRG	5.1a	LTAMULT afc = 0.373	5.1c	LTAMULT cfc = 0.581
PENTOXSD TRG	5.1b	LTA_afc= 171.314	5.1d	LTA_cfc = 260.570

Source		Effluent Limit Calculations	
PENTOXSD TRG	5.1f	AML MULT = 1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) = 0.500	BAT/BPJ
		INST MAX LIMIT (mg/l) = 1.170	

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 D:

Site Thermal Discharge Evaluation

Facility:	**Springdale Generating Facility**						
Permit Number:	PA0219134						
Stream Name:	Allegheny River						
Analyst/Engineer:	A.Olesnanik						
Stream Q7-10 (cfs):	2390						
	Facility Flows[1]					**Stream Flows**	
	Stream (Intake) (MGD)	External (Intake) (MGD)	Consumptive (Loss) (MGD)	Discharge (MGD)		Adj. Q7-10 Stream Flow (cfs)	Downstream[2] Stream Flow (cfs)
Jan 1-31	3.95	0.205	3.619	0.536		7648.0	7642.7
Feb 1-29	3.95	0.223	3.619	0.554		8365.0	8359.7
Mar 1-31	3.95	0.223	3.619	0.554		16730.0	16724.7
Apr 1-15	3.95	0.223	3.619	0.554		22227.0	22221.7
Apr 16-30	3.95	0.223	3.619	0.554		22227.0	22221.7
May 1-15	3.95	0.223	3.619	0.554		12189.0	12183.7
May 16-31	3.95	0.223	3.619	0.554		12189.0	12183.7
Jun 1-15	3.95	0.223	3.619	0.554		7170.0	7164.7
Jun 16-30	3.95	0.223	3.619	0.554		7170.0	7164.7
Jul 1-31	3.95	0.223	3.619	0.554		4063.0	4057.7
Aug 1-15	3.95	0.223	3.619	0.554		3346.0	3340.7
Aug 16-31	3.95	0.223	3.619	0.554		3346.0	3340.7
Sep 1-15	3.95	0.223	3.619	0.554		2629.0	2623.7
Sep 16-30	3.95	0.223	3.619	0.554		2629.0	2623.7
Oct 1-15	3.95	0.223	3.619	0.554		2868.0	2862.7
Oct 16-31	3.95	0.223	3.619	0.554		2868.0	2862.7
Nov 1-15	3.95	0.223	3.619	0.554		3824.0	3818.7
Nov 16-30	3.95	0.223	3.619	0.554		3824.0	3818.7
Dec 1-31	3.95	0.223	3.619	0.554		5736.0	5730.7

[1] Facility flows are not required (and will not affect the permit limits) if all intake flow is from the receiving stream (Case 1), consumptive losses are small, and permit limits will be expressed as Million BTUs/day.

[2] Downstream Stream Flow includes the discharge flow.

Please forward all comments to Tom Starosta at 717-787-4317, tstarosta@state.pa.us.

Version 1.0 -- 08/01/2004 Reference: Implementation Guidance for Temperature Criteria, DEP-ID: 391-2000-017

NOTE: The user can only edit fields that are blue.

NOTE: MGD x 1.547 = cfs.

Facility:	**Springdale Generating Facility**						
Permit Number:	PA0219134						
Stream:	Allegheny River						
	WWF Criteria	**CWF Criteria**	**TSF Criteria**	**316 Criteria**		**Q7-10 Multipliers**	**Q7-10 Multipliers**
	(ºF)	(ºF)	(ºF)	(ºF)		(Used in Analysis)	(Default - Info Only)
Jan 1-31	40	38	40	0		3.2	3.2
Feb 1-29	40	38	40	0		3.5	3.5
Mar 1-31	46	42	46	0		7	7
Apr 1-15	52	48	52	0		9.3	9.3
Apr 16-30	58	52	58	0		9.3	9.3
May 1-15	64	54	64	0		5.1	5.1
May 16-30	72	58	68	0		5.1	5.1
Jun 1-15	80	60	70	0		3	3
Jun 16-30	84	64	72	0		3	3
Jul 1-31	87	66	74	0		1.7	1.7
Aug 1-15	87	66	80	0		1.4	1.4
Aug 16-31	87	66	87	0		1.4	1.4
Sep 1-15	84	64	84	0		1.1	1.1
Sep 16-30	78	60	78	0		1.1	1.1
Oct 1-15	72	54	72	0		1.2	1.2
Oct 16-31	66	50	66	0		1.2	1.2
Nov 1-15	58	46	58	0		1.6	1.6
Nov 16-30	50	42	50	0		1.6	1.6
Dec 1-31	42	40	42	0		2.4	2.4
NOTES:							
WWF= Warm water fishes							
CWF= Cold water fishes							
TSF= Trout stocking							

Facility: **Springdale Generating Facility**
Permit Number: PA0219134
Stream: Allegheny River

	WWF Ambient Stream Temperature (ºF) (Default)	Ambient Stream Temperature (ºF) (Site-specific data)	Target Maximum Stream Temp.[1] (ºF)	WWF Daily WLA[2] (Million BTUs/day)	WWF Daily WLA[3] (ºF)	at Discharge Flow (MGD)
Jan 1-31	35	0	40	N/A -- Case 2	110.0	0.536
Feb 1-29	35	0	40	N/A -- Case 2	110.0	0.554
Mar 1-31	40	0	46	N/A -- Case 2	110.0	0.554
Apr 1-15	47	0	52	N/A -- Case 2	110.0	0.554
Apr 16-30	53	0	58	N/A -- Case 2	110.0	0.554
May 1-15	58	0	64	N/A -- Case 2	110.0	0.554
May 16-30	62	0	72	N/A -- Case 2	110.0	0.554
Jun 1-15	67	0	80	N/A -- Case 2	110.0	0.554
Jun 16-30	71	0	84	N/A -- Case 2	110.0	0.554
Jul 1-31	75	0	87	N/A -- Case 2	110.0	0.554
Aug 1-15	74	0	87	N/A -- Case 2	110.0	0.554
Aug 16-31	74	0	87	N/A -- Case 2	110.0	0.554
Sep 1-15	71	0	84	N/A -- Case 2	110.0	0.554
Sep 16-30	65	0	78	N/A -- Case 2	110.0	0.554
Oct 1-15	60	0	72	N/A -- Case 2	110.0	0.554
Oct 16-31	54	0	66	N/A -- Case 2	110.0	0.554
Nov 1-15	48	0	58	N/A -- Case 2	110.0	0.554
Nov 16-30	42	0	50	N/A -- Case 2	110.0	0.554
Dec 1-31	37	0	42	N/A -- Case 2	110.0	0.554

[1] This is the maximum of the WWF WQ criterion or the ambient temperature. The ambient temperature may be either the design (median) temperature for WWF, or the ambient stream temperature based on site-specific data entered by the user. A minimum of 1ºF above ambient stream temperature is allocated.

[2] The WLA expressed in Million BTUs/day is valid for Case 1 scenarios, and disabled for Case 2 scenarios.

[3] The WLA expressed in ºF is valid only if the limit is tied to a daily discharge flow limit (may be used for Case 1 or Case 2). WLAs greater than 110ºF are displayed as 110ºF.

Attachment E

PFBC comments on Springdale’s CWIS and 316(b) coordination

Pennsylvania Fish & Boat Commission
established 1866

Bureau of Fisheries
Division of Environmental Services
595 E Rolling Ridge Drive
Bellefonte, PA 16823
(814) 330-5111

23 July 2021

Mr. Adam Olesnanik, E.I.T.
Department of Environmental Protection, Clean Water Program
Southwest Regional Office
400 Waterfront Drive
Pittsburgh, PA 15222

RE: Draft Springdale Generating Facility Cooling Water Intake Structure (CWIS)

Dear Mr. Olesnanik:

The Pennsylvania Fish and Boat Commission (PFBC) has reviewed information pertaining to the cooling water intake structure (CWIS) and 316b coordination for the Springdale Generating Facility, located in Springdale Township, Allegheny County, Pennsylvania. The comments below are provided regarding aquatic resource concerns resulting from the activities within the scope of this project.

1. The PFBC appreciates the compliance summary provided by the applicant and the measures taken to adhere to state and federal recommendations to minimize impingement and entrainment (I&E) at the CWIS. The adherence to flow velocities below the suggested 0.5 feet per second is one of the critical components to assuring maximum protection of aquatic organisms.

2. The second component to minimizing impacts to aquatic organisms is adherence to the screen size recommendations. PFBC is concerned regarding the mesh screen size used at the Springdale CWIS which is almost double the size (0.5 inches) compared to those recommended by state and federal guidance (3/16" or 0.19"). As the applicant notes, small organisms are still capable of becoming entrained in the CWIS which is likely to result in stress or mortality to those individuals. Despite the low volume pumped into the CWIS relative to the size of the river itself, these organisms are likely to be eggs, larvae, and young-of-year (i.e. the most sensitive life stages) and could thus have a disproportionate effect on population dynamics of the species that become entrained. Many of these effects would not be realized until years later, particularly given the lack of regular and adequate ecological monitoring at this site.

3. Previous PFBC surveys indicate that there are numerous sport fish species present including but not limited to Smallmouth Bass (*Micropterus dolomieu*), Spotted Bass (*M. punctulatus*), Rock Bass (*Ambloplites rupestris*), Walleye (*Sander vitreus*), Sauger (*S. canadensis*), and Channel Catfish (*Ictalurus punctatus*). In addition to supporting recreational angling opportunities, these and other fish species serve as hosts for developing freshwater mussels that use fish for dispersal into historically occupied habitats. Given the substantial aquatic resources present in this basin, PFBC recommends adhering to both the velocity and screen size specifications to be as protective as possible.

We appreciate your consideration of these comments. If you have questions or would like to discuss these comments further please do not hesitate to contact me via email (hgalbraith@pa.gov) or phone (814-330-5111).

Sincerely,

Heather S. Galbraith
Water Planning Biologist
Pennsylvania Fish and Boat Commission

cc: Ben Lorson, Heather Smiles