pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Northeast Regional Office
CLEAN WATER PROGRAM

NPDES PERMIT FACT SHEET
INDIVIDUAL SEWAGE

Application Type	**Renewal & Transfer**	Application No.	**PA0033430**
Facility Type	**Municipal**	APS ID	**1031964**
Major / Minor	**Major**	Authorization ID	**1342543**

Applicant and Facility Information

Applicant Name	**Roamingwood Joint Client: See below for co-permittees**	Facility Name	**Roamingwood WWTP**
Applicant Address	PO Box 6 (common address) Lake Ariel, PA 18436-0006	Facility Address	4501 Lakeview Drive Route 590 The Hideout Lake Ariel, PA 18436-0006
Applicant Contact	John Lennox (lead contact)	Facility Contact	Jay Nardone
Applicant Phone	(570) 698-6162	Facility Phone	(570) 698-6162 Ext 1020
Client ID	344006: Joint Client 274630: SWCWSA (owner) 76383: RSWA (operator & lead contact)	Site ID	236703
Ch 94 Load Status	Not Overloaded	Municipality	Salem Township
Connection Status	-	County	Wayne
Date Application Received	June 28, 2018 (see below)	EPA Waived?	No
Date Application Accepted	June 28, 2018	If No, Reason	Major Facility
Purpose of Application	NPDES Permit Renewal and transfer to Joint Client (co-permittees).		

Summary of Review

This NPDES Permit Renewal/Transfer Application is for the 1.755 MGD WWTP discharge of treated sewage and IW WWTP stormwater to Ariel Creek (HQ-CWF; Stream Code# 5553). Annual Average Daily Flows: 0.200 MGD (2020), 0.200 MGD (2019), 0.578 MGD (2018), 0.441 MGD (2017), with 0.850 MGD highest monthly flow (2017), and 3.173 MGD peak instantaneous flow in April 2017. **NOTE**: This permit term is incorporating tiered permit limits (0 – 0.490 MGD; ≥0.490 MGD – <1.755 MGD; 1.755 MGD) for CBOD5 and Ammonia-N as discussed below.

Background:

- **Permit Transfer**: This NPDES Permit Renewal and Transfer Application will transfer the NPDES Permit to a new Joint Client (Co-permittees). South Wayne County Water & Sewer Authority (SWCWSA, previous permittee) and Roamingwood Sewer & Water Association (RSWA, operating the facility) are the co-permittees:
  - SWCWSA is DCED Authority ID# 640248.
  - RSWA was an "agent" operating the facility for the SWCWSA. Now RSWA is the lead co-permittee as facility operator. RSWA is a registered entity with the PA Department of State.
  - The original NPDES Permit renewal application (APS# 698814, Auth# 1220206; Account# 661782) was marked as "entered in error" after application was changed to renewal/transfer to co-permittees (under the joint permittee) at the end of the initial completeness review (June 28, 2018). Original completeness letter and first technical deficiency letter generated under this APS number (due to initial difficulties in creating joint client in E-facts at the time).

Approve	Deny	Signatures	Date
X		James D. Berger (signed) James D. Berger, P.E. / Environmental Engineer	May 17, 2022
X		Amy M. Bellanca (signed) Amy M. Bellanca, P.E. / Environmental Engineer Manager	6-1-22

Summary of Review

- **Tiered Monthly Average Flows Permit Limits for Ammonia-N and CBOD5 (0 – 0.490 MGD; >0.490 MGD – <1.755 MGD; ≥ 1.755 MGD)**: Site-specific circumstances have led to the incorporation of tiered Part A permit limits in this NPDES Permit Term (with Part C trigger condition for new tier limits). Considerations included:
  - The original 1.755 MGD NPDES Permit-basis flow (and SEJ) included a very large safety factor due to historic I&I flows that were present in the 1980s and continuing until complete sewer replacement. The historic high I&I problems were partly due to failing gravity mains/sewer mains in the same construction trench (allowing direct inflow). The permittees have replaced the entirety of the failing sewer system with a Low Pressure Sewer (LPS) System in the last five (5) years, eliminating I&I to a degree that the facility could derate to <0.5 MGD NPDES Permit basis flows. Properly operated/maintained LPS Systems have little to no I&I. The replacement water mains are separated from the LPS System trenches.
    - Since 2019, the reported Annual Average Daily Flows/Monthly Average Flows have been reduced to the 0.200 – 0.300 MGD range. The service area flows are also impacted recreational/seasonal usage (with highest flows and loadings in spring - summer months per EDMR and Chapter 94 Reports).
    - The facility is unlikely to discharge the second tier flows (>0.490 MGD) unless Planning approves new development in the area (above and beyond the already approved number of residential lots). No such expansion of the service area was indicated in the received Chapter 94 Annual Municipal Wasteload Reports.
    - The nature of an LPS System (pressurized) with normal O&M would prevent I&I issues from prematurely triggering higher tier requirements by heavy rain events.
  - Revised Ammonia-N water quality criteria (Chapter 93) and updated water quality modeling have shown more stringent permit limits are necessary to protect the waters of the Commonwealth in this High Quality Watershed (subject to Antidegradation protection) at >0.490 MGD flows. The original SEJ coverage only allows for decrease of water quality in the High Quality stream to the minimum statewide water quality standards (including the new Ammonia-N water quality standards). A sensitivity analysis showed that existing permit limits would be protective up to a 0.490 MGD monthly average discharge, with more stringent limits triggered at greater discharge flows. The same modeling, incorporating conservative assumptions such as the USGS PA Streamstats-derived low flows, showed more stringent CBOD5 limits would also be needed at the higher tiers. See below for water quality modeling-related information.
  - The facility also has the option of evaluating whether reducing the NPDES Permit-Basis flow from 1.755 MGD to a lower Tier value would allow elimination or modification of the proposed Toxic WQBELs under NPDES Permit Part C (WQBELs for Toxic Pollutants) Schedule of Compliance.
  - See rest of Fact Sheet for related information.

Sludge use and disposal description and location(s): Liquid Sludge disposed at Wyoming Valley Sewer Authority and Greater Hazleton Sewer Authority. In 2021,425,776 gallons of sludge wasted; 642,500 gallons of sludge removed (2.50% solids, 66.981 dry tons). They produced 38.843 dry tons in 2020. After sludge dewatering system installation (WQM permitted), they expect to landfill site-generated sludge.

Part C Special Conditions:

- Part C.I.A through C: Stormwater prohibition; Necessary property rights; and Residuals Management
- **Part C.I.D: New Chlorine Minimization (addressing future UV disinfection system usage also)**
- **Part C.I.E: New Quarterly WET Testing for 1st year of permit term): This is required because the application did not include previous NPDES Permit Part C.I.F (chronic WET Tests) per 40 CFR 122.21(j)(5) which required either 4 quarterly WET Tests or 4 annual tests throughout the permit term). The reduced flows render most previous WET tests unrepresentative with the updated Reasonable Potential Analysis now indicating multiple toxic pollutants with potential synergistic/cumulative impacts.**
- Part C.I.F (Existing Total Phosphorus Reporting): Existing condition retained to clarify how to calculate and report the Total Maximum Daily Load for phosphorus, to demonstrate compliance with the Lake Wallenpaupack TMDL waste load allocation.
- Part C.I.G: Existing changes in stream/waste-stream condition
- **Part C.I.H: New Condition. Due non-implementation of the originally approved ABAT Bardenpho Treatment Process (assorted out-of-service process units previously unneeded due to previous I&I dilution and now due to reduced influent flows), the new condition requires implementation of the complete permitted Bardenpho process upon ninety (90) days of Department written notice (unless the Department has**

Summary of Review

<u>explicitly approved an alternate Treatment process in writing via an issued Part II Water Quality Management Permit)</u>.

- **If the facility cannot comply, they have the option of pursuing a Part II WQM Permit Application for a rerating (due to reduced flows)/ABACT (Antideg) treatment process. In that event, the Department might require a new treatment process to meet more stringent Ammonia-N ABACT limits and more stringent CBOD5 limits due to advances in Treatment process technology since 1988, plus updated water quality modeling showing negative impacts at 1.755 MGD NPDES Permit-basis flow.**
- **The NPDES Permit Part B.I.G (Bypassing conditions and Part A.I.4 Additional Requirements Item for bypass sampling) would apply in event that the Bardenpho process cannot be implemented upon DEP request.**

- **<u>Part C.I.I</u>: New Tiered Limits condition to allow for transition between tiered flows in terms of EDMR monitoring and reporting: "The facility will notify the Department of a monthly effluent discharge exceeding the higher tier level in writing. The high tier limits will apply during the next calendar reporting month".**
- **<u>Part C</u>.I.: New Responsible Operator due to facility not operating as originally designed (Bardenpho process).**
- **<u>Part C.II</u>: New standard Solids Conditions.**
- **<u>Part C.III</u>: New WQBELs for Toxics Conditions (per Reasonable Potential Analysis). The permittee can also address some toxics with monitoring requirements (only) at the same time. Also, the chlorine residuals can be addressed after conversion to UV disinfection (when enough sampling data is available to demonstrate absence of chlorine residuals at DEP Target QLs).**
- <u>Part C.IV</u>: **Up-to-date** standard WET Test Conditions (no permit limits)
- <u>Part C.V</u>: **Up-to-date** standard Stormwater conditions
- **<u>Part C.VI</u>: New WQBELs below Quantitation Limits conditions for toxic pollutants whose DEP Target QLs are higher than the calculated WQBEL permit limit for compliance reporting (after new limits become effective). <u>NOTE</u>: In practical terms, any site-specific data evaluation might have to meet DEP TQLs to generate meaningful data. Insensitive Non-detect concentrations would bias any attempt to calculate a valid Long Term Average Monthly Effluent Concentration (LTAMEC).**

<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	Design Flow (MGD)	1.755 (001) Zero (SW 002, 003, 004)
Latitude	41º 25' 15.01" (001) 41º 25' 15.01" (002) 41º 25' 10.96" (003) 41º 25' 15.01" (004)	Longitude	-75º 20' 40.96" (001) -75º 20' 40.96" (002) -75º 20' 39.03" (003) -75º 20' 40.96" (004)
Quad Name	Lakeville	Quad Code	0743 (3-22.1)
Wastewater Description:	Sewage Effluent (001) Stormwater associated with industrial activities (002, 003, and 004)		
Receiving Waters	Ariel Creek (HQ-CWF)	Stream Code	5553
NHD Com ID	25930372	RMI	3.5 (per DRBC Docket)
Drainage Area	10.2 square miles	Yield (cfs/mi^2)	0.0220
Q_{7-10} Flow (cfs)	0.225 (~0.1425 MGD)	Q_{7-10} Basis	USGS PA Streamstats (Q7-10/drainage area)
Elevation (ft)	1306 Feet (per Application)	Slope (ft/ft)	-
Watershed No.	1-C	Chapter 93 Class.	HQ-CWF
Existing Use	-	Existing Use Qualifier	-
Exceptions to Use	-	Exceptions to Criteria	-
Assessment Status	Impaired		
Cause(s) of Impairment	ORGANIC ENRICHMENT		
Source(s) of Impairment	DAM OR IMPOUNDMENT		
TMDL Status	Existing (Nutrients; Mercury) TMDL Implemented and remaining in effect; Unknown Status (Organic Enrichment).	Name	Lake Wallenpaupack TMDL (nutrients (phosphorus) and mercury); TBD for Organic Enrichment
Background/Ambient Data: See table below		Data Source: See table below.	
Nearest Downstream Public Water Supply Intake	Easton #101943-001		
PWS Waters	Delaware River	Flow at Intake (cfs)	-
PWS RMI	-	Distance from Outfall (mi)	~136

Changes Since Last Permit Issuance:

- **Effluent Changes**: Complete replacement of failing gravity sewer system and failing water mains by Low Pressure Sewer (LPS) System has substantially reduced discharge flow volumes (historical major I&I dilution eliminated) but did not reduce mass loadings. Previous Chapter 94 Reports had estimated the historical I&I dilution on the order of 70% of the discharge.
- **Previous Siltation Issues**: Previous Fact Sheet-identified Siltation cause for Impairment is no longer identified as a cause of impairment and no TMDL scheduled.

Other Comments:

- **Watershed**:
  - Lake Roamingwood is directly upstream of Outfall #001. Roamingwood Lake Dam No. 64-196 controls discharge to Ariel Creek. No minimum dam release requirement in Dam permit.
  - Ariel Creek flows into downstream lake/impoundment (Lake Genero) before flowing into Lake Wallenpaupack. E-maps topography shows water on both sides of Route 509, but the National

Geographic Layer and USGS Streamstats showed no water body and Lake Genero was south of the Route 509.

- North of Route 509: UNT No. 5557 to Ariel Creek joins Ariel Creek. This area (north of Route 509) might be a "swampy" area or water-filled ara depending upon rainfall. E-maps identified it as an NHD water body:
  - GNIS: No name or GNIS number
  - ComID: 25929616
  - Reachcode: 02040103003317
  - Area SQ KM: 0.013
- South of Route 509 (Lake Genero):
  - Lake Genero
  - GNIS ID: 01198790
  - ComID: 25929628
  - Reachcode: 02040103001040
  - Area SQ KM: 0.033

- **Heavily Effluent-Dominated Stream at 1.755 MGD NPDES Permit-basis flows:** This is an effluent dominated stream where the 1.755 MGD (2.715 CFS) NPDES Permit-basis discharge dominates the Q7-10 (0.225 CFS) low flow by a factor of 12:1.
- **Stream Q7-10 (calculated 0.0220 CFS/square mile LFY)**: This NPDES Permit renewal is using the USGS PA Streamstats-calculated value. The previous NPDES Permit Renewal water quality modeling assumed a higher LFY at upper range of PAStreamstats 52% error range based upon an assumption of no known impacts (partly based on obsolete water quality modeling and with a known upstream lake/dam source of impairment). However, known stream impairments include "organic enrichment" (carbonaceous materials) with stream sampling data now showing an increase in stream CBOD5 caused by the WWTP. Updated water quality modeling now shows that there would be negative impacts. (See Effluent Limits section). Therefore, there is no longer technical justification for using a non-conservative LFY. **NOTE**: There is no benefit to any permittee if it has to upgrade a facility to meet new non-conservative limits and continuing stream impacts then require additional upgrading costs.
- **Potential Stream Impairment Causes:**
  - **Siltation:** The previous NPDES Permit Renewal Fact Sheet indicated siltation issues and that a pending Siltation TMDL was expected at the time. Subsequently, the proposed siltation TMDL was dropped, and siltation is not identified as a cause for stream impairment at present. STPs are not expected to be a cause of siltation.
  - **Total Phosphorous/nutrients**: The implemented Lake Wallenpaupack Watershed TMDL and existing Waste Load Allocation-based phosphorus permit limits addressed nutrient issues. The Total Phosphorus control was the TMDL method of controlling overall nutrient impacts. **NOTE**: The DEP Biologist noted downstream Lake Genero does not have a 14-day retention time, and therefore was not evaluated for nutrient impacts.
  - **Organic Enrichment (with CBOD5 being the Carbonaceous Biochemical Oxygen Demand, 5-day test):**
    - **Known Lake/Dam Source:** The DEP Biologist indicated that the upstream lake/dam (immediately upstream of the WWTP outfall) is a known source for this stream impairment. The Lake/Dam has already impacted the macroinvertebrate populations. The Lake/dam contributes to organic enrichment because of Temperature and DO differences of the lake plus plankton/algae growth is spilled into the downstream reach of stream. This can alter the food supply and DO from what would normally be found in such a stream, depending on the depth of dam release. **Such ongoing impairment can mask other causes of impairment (i.e. toxics and/or other sources of organic enrichment, i.e. WWTP effluent CBOD5 concentrations).**
    - **WWTP Source (with SEJ Coverage):** Updated water quality modeling recommended more stringent CBOD5 limits at 1.755 MGD NPDES Permit-basis discharge and lower tier (1.000 MGD). There is a WWTP contribution per sampling data (below), but no numeric CBOD5 water quality standard exists and macroinvertebrates are already impacted.
      - The DEP Biologist indicated any WWTP contribution to organic enrichment is difficult to identify/distinguish due to WWTP location immediately below known lake/dam source (discussed above). Macroinvertebrates cannot be used as an indicator due to prior dam impact. There is no organic CBOD5 WQS to directly enforce. Therefore, it might be

impossible for the WWTP to show that it is <u>not</u> a contributing source of organic enrichment.

- The facility has historically discharged I&I-diluted effluent (estimated 70% dilution in one Chapter 94 Report) that resulted in diluted discharges and now (after I&I removal) with substantially reduced volumes. In practical terms, the stream is now receiving higher concentrations (same mass loadings) due to lack of I&I dilution. See EDMR data and Effluent Limits Sections for further discussion.
- SEJ coverage (existing DO, CBOD5, Ammonia-N, and Nitrate-Nitrite-N ABAT limits) applies to this facility. However, SEJ only allows for the reduction of HQ water quality to meet the statewide Chapter 93 WQS, but does not allowing for actual stream impairment. See Effluent Limits Section for SEJ details.

  - **<u>Ammonia-N</u>:** No existing WWTP impact per limited (older) upstream/downstream sampling data (below), but higher relative concentrations are now expected due to I&I elimination, with revised Ammonia-N criteria also applicable. The new tiered limits will protect the stream.
  - **<u>Toxics</u>:** Known causes of impairment can mask other causes, such as toxic pollutants. Copper was addressed in the previous NPDES Permit Term. See Reasonable Potential Analysis addressing toxic pollutants. New permit limits, monitoring and Part C.IV (WQBELs for Toxics) will prevent impact on the receiving stream. This is a 12:1 effluent-dominated stream at 1.755 MGD NPDES Permit-Basis Flows at 0.022 CFS/square mile LFY.

- **<u>Ambient/Background Data</u>**: Please note that since this 2017 sampling event, subsequent I&I reduction would result in more concentrated effluent discharges (same loadings without previous I&I dilution effects) to the effluent-dominated stream, i.e. greater impact expected. The current 2019/2020 0.200 MGD ADF discharge is greater than the Q7-10 flow 0.225 CFS (~0.1425 MGD).
  - **<u>Upstream Sampling Data</u>**:

Constituent	Value	Source
pH (SU)	**7.68**	5/18/2017 Sample ID: 2135918 Sequence Number: 552, located ~0.1 miles upstream (Ariel Creek) of Outfall No. 001 (E-facts Lat and Long).
Temperature (°C)	18.3	See above.
Hardness (mg/L)	**37**	See above. **<u>NOTE</u>**: 43.0 mg/l per renewal application from average of <u>unapproved</u> 2016/2017 WER study (not included in renewal application and not confirmed to follow DEP technical guidance methodology).
CBOD5 (mg/l)	**0.50**	**See above**
DO (mg/l)	8.58	See above
Nitrite-N (mg/l)	**<0.04**	**See above**
Nitrate-N (mg/l)	**<0.04**	**See above**
Ammonia-N (mg/l)	**<0.02**	**See above**
Total Nitrogen (mg/l)	0.29	See above
Total Phosphorus (mg/)	0.018	See above
TSS (mg/l)	<5	See above
TDS (mg/l)	106	See above
Copper (ug/l)	<4	See above
Aluminum (ug/l)	11.900	See above
Total Iron (ug/l)	74.000	See above
Manganese (ug/l)	116.000	See above
Lead (ug/l)	<1.0	See above
Zinc (ug/l)	<5.0	See above
Thallium (ug/l)	<2	See above

  - **<u>Downstream Sampling Point Data on Ariel Creek</u>**: I&I removal was not completed until 2019 (i.e. 2017 data would not reflect current stream conditions due to higher concentrations in WWTP discharge relative to stream flow in absence of I&I contributions):

Constituent	Value	Source
pH (SU)	7.84	5/18/2017 Sample ID: 2135915 Sequence Number: 551, located ~0.19 miles downstream (Ariel Creek) of Outfall No. 001 (E-facts Lat and Long).
Temperature (°C)	18.1	See above
Hardness (mg/L)	40	See above
CBOD5 (mg/l)	**0.90**	**See above (evidence of organic enrichment)**
DO (mg/l)	9.33	See above
Nitrite-N (mg/l)	<0.04	See above
Nitrate-N (mg/l)	**0.34**	**See above (evidence of enrichment)**
Ammonia-N (mg/l)	<0.02	See above
Total Nitrogen (mg/l)	0.63	See above
Total Phosphorus (mg/l)	0.027	See above
TSS (mg/l)	<5	See above
TDS (mg/l)	112	See above
Copper (ug/l)	<4	See above
Aluminum (ug/l)	21.000	See above
Total Iron (ug/l)	88.000	See above
Manganese (ug/l)	113.000	See above
Lead (ug/l)	<1.0	See above
Zinc (ug/l)	<5.0	See above
Thallium (ug/l)	<2	See above

Treatment Facility Summary

Treatment Facility Name: Roamingwood Wastewater Treatment Plant (WWTP)

WQM Permit No.	Issuance Date	Subject
6488401	4/29/1988	WWTP Expansion to 1.755 MGD including two 1-million gallon capacity Equalization Tanks. Treatment System description: An influent chamber with bar screen and Parshall flume with ultrasonic metering device; two 1-Million Gallon EQ tanks; one 3-way flow splitter box (0.88 MGD to each of the dual treatment trains); dual Bardenpho treatment units with excess flows returning to EQ tank. **Each Bardenpho unit includes one primary settling tank, dual fermentation tanks, one primary anoxic unit, one carrousel aeration unit, one post-anoxic unit, one re-aeration unit, secondary clarifier, dual filtration units consisting of flash-mix tank, flocculator, plate settler, and multimedia filter**. The effluent will then be chlorinated to discharge at new outfall. The two existing 0.04 MGD and 0.205 MGD extended aeration tanks converted to sludge holding and handling facilities.
6411401	5/11/2012	Stage 1 Low Pressure Sewer Replacement Project: to replace about 19 miles of the existing gravity sewer systems (including worst identified I&I areas), i.e. about ½ of collection system. (16 abandoned Pump Stations# E, F, G, H, 1, 2, 7, 11, 12, 13, 14, 16, 17, 18, 19, & 20). **Completed per NPDES Renewal Application.**
6413401	3/4/2013	Automation improvements at the Headworks of the Roamingwood WWTP / South Wayne Co. Water & Sewer Authority; consisting of replacing the existing manually cleaned barscreen with an automated mechanical screen.
6414401	3/25/2015	Stage 2 LPS Project: Included the replacement of a portion of the existing gravity wastewater collection system in The Hideout residential community with a low pressure sewer system. The project is known as Stage 2 and includes 54,700 L.F. of low pressure sewer pipe, individual lot grinder pumps, air release valves and cleanout structures. Three existing pump stations, Stations 9, 10 and N, eliminated. **Completed per NPDES Permit Renewal Application**.
6418401	9/24/2018	Stage 3 LPS Project: Approximately 56,000 linear feet of LPS mains (ranging in size from 2" to 12") will convey wastewater to the treatment plant. Installation of 1.5" service laterals, household grinder pumps and other associated appurtenances are included in the project. Seven concrete-encased stream crossings are required to complete the project. Replacement of the existing water distribution system is also included in the project. Both sewer and water mains will be in a stepped trench with 4' of horizontal separation and 18" of vertical separation (LPS below water mains). **Completed per NPDES Permit Renewal Application**.
6420402	**12/2/2020**	WWTP Upgrades (no increase in capacity) including: - Addition of an influent pump station and flow diversion box to convey influent directly to the biological treatment unit and bypass the former equalization tanks. Each of the

		three submersible VFD-controlled pumps can convey up to 720 gpm and are controlled through level transducers. - Conversion of existing equalization tank #1 to an emergency overflow tank to capture high influent flows with a 500 gpm sump capable of draining the tank. - Conversion of existing equalization tank #2 to a backwash and emergency storage tank. Backwash produced by cleaning the tertiary filters will continue to flow to the tank. - Replacement of blowers for the backwash and emergency storage tank, the aerated solids holding tanks and the post-aeration tank. - Piping modification to the biological treatment unit allowing internal recycle to be pumped to each train's second anoxic basin. - Various safety and performance improvements to the secondary clarifiers. - Replacement of anthracite, sand and gravel media for the tertiary filters in-kind. - **Addition of an ultraviolet radiation disinfection system and removal of the existing chlorination system. Back-up chlorination/dechlorination feed equipment with sodium hypochlorite and sodium bisulfate storage will be installed in separate structures**. - Addition of a screw press and associated appurtenances. - Addition of a pH adjustment tank for copper removal. Supernatant from the aerated solids holding tank and filtrate from portions of the screw press will be directed to the tank for soda ash mixing prior to discharge to the influent pump station. - Replacement of two existing aerated solids tanks in-kind. - Improvements and replacements of several process pumps.

Waste Type	Degree of Treatment	Process Type	Disinfection	Avg Annual Flow (MGD)
Sewage	Secondary	Bardenpho permitted but modified process in use (see below)	Chlorine converting to UV with chlorine back-up.	1.755

Hydraulic Capacity (MGD)	Organic Capacity (lbs/day)	Load Status	Biosolids Treatment	Biosolids Use/Disposal
1.755*	1900*	Not Overloaded	Sludge holding tanks at present, aerobic digestion/dewatering planned to allow landfill disposal.	Disposal

*As originally permitted. Actual operating capacity reduced to unquantified level due to out-of-service treatment units/process changes (see below) and one operating train (due to reduced influent flows).

Changes Since Last Permit Issuance:

- System-wide Low Pressure Sewer (LPS) System replacement completed (replacing entire gravity main system including all existing pump/lift stations and separating water mains). Reduction in I&I means more concentrated influent flows received at WWTP.
- See listed Part II WQM Permits above.

Other Comments:

Oversizing Considerations: With the elimination of I&I (reducing plant from original 1.755 MGD design basis flows to <0.300 MGD flows), the facility is potentially subject to oversizing-concerns. The facility operated with inactive treatment units when receiving high I&I flows contributions due to lack of need (because of dilution of influent). Now the removal of I&I has reduced influent flows to <17% of NPDES permit basis flows. The facility has been operating only one treatment train due to reduced influent flows (with some inactive units).

Bardenpho Oxidation Ditch Process (per 1988 WQM Permit Design Engineer Report) to meet SEJ Best Available Technology Requirements: This is a process designed for biological nitrogen and phosphorus removal including five (5) stages: Fermentation Stage; First Anoxic Stage; BOD/Nitrification Stage (Oxidation Ditch) ; Second Anoxic Stage; Reaeration Stage; and then to clarifier. The Bardenpho process was also expected to reduce the amount of chemical additions required. **However, the facility has not been operating the full Bardenpho process (with out-of-service units per below) per Application. In terms of what was approved:**

- Process Influent design basis:
  - 1.7 MGD influent flow
  - 150 mg/l BOD5 influent (weak influent due to historic I&I issues)
  - 190 mg/l TSS
  - 30 mg/l TKN
  - 7 mg/l TP
- Original Design Capacities: Reduced due to out-of-service/bypassed units at present:
  - Organic design capacity: 1,900 lbs BOD5/day
  - Suspended solids design capacity: 2240 lbs/day;
  - Ammonia-N capacity; 190 lbs/day
  - Total Phosphorus design capacity: 21 lbs/day
- WQM permit Design Engineer Report source assumptions included:
  - Population: 5,200 persons going to 11,200 persons at full-build-out.
  - Population Density: 3.5 capita/unit (11,200 persons equivalent to 3,200 units).
  - Per capita flow: 75 GPCD (0.840 MGD at full build-out, discounting I&I contribution)
  - Per capita BOD5 Contribution: 0.17 lbs/day (~1900 lbs BOD5/day at full build-out)

Existing Process: The NPDES Permit Application indicated Existing Treatment Plant is a **staged activated sludge process** consisting of: One (1) mechanical screen, two (2) aerated equalization tanks (1 million gallons each), **two primary clarifiers ("presently not used")**, **four anaerobic "fermentation" basins ("presently not used")**, **two (2) primary anoxic basins ("presently not used")**, two (2) aeration basins (identified as Carousel Oxidation Ditches on Process Diagram), two (2) secondary anoxic basins, two (2) post aeration basins, two (2) secondary clarifiers, four (4) "dual-media" effluent filters, two chlorination tanks, and chemical phosphorus removal (alum added to post-aeration basins with subsequent filtration). Train No. 2 is offline per the 1/31/2022 DEP Inspection Report.

- Sodium bisulfite is used for de-chlorination.
- Liquid aluminum sulfate is used as a settling aid.

- Soda ash is used for pH and alkalinity. 2020 Chapter 94 Report indicates soda ash is used in reaction tank aerated sludge decant to precipitate out copper.
- Soda Bicarbonate used for alkalinity.

- **85% Minimum Monthly Average Reductions (Chapter 92a.47 and Part A.I Additional Requirements**): The applicant has not previously requested any Chapter 92a.47 relief from these requirements due to I&I contributions. Given elimination of I&I by the LPS System replacement, no relief is now possible.
  - Influent Data LTA: 112.50 mg/l CBOD (356 samples) and 18 mg/l TSS (single sample)
  - Effluent Data LTA: 3.9 mg/l CBOD5 (104 samples) and 6.10 mg/l TSS (104 samples). 11.40 mg/l was the max average monthly TSS average value. In practical terms, given the historic I&I issues, the facility TSS effluent values would have had to be ~2.7 mg/l to have met the 85% reduction value. Monitoring and Reporting will be required in this permit term.

Permitted WWTP Upgrade (WQM Permit No. 6420402): The 1/31/2022 Sewage Inspection Report indicated that these upgrades have not yet been started.

- NPDES Permit Application indicated WWTP upgrade would UV disinfection with liquid chlorine back-up, aerobic sludge digestion (upgrading from aerated sludge holding tanks), sludge dewatering (screw press), chemical addition for copper removal, unspecified WWTP improvements (to improve ammonia removal) and replace miscellaneous aging equipment in kind. A sludge polymer was anticipated to be in use in 2022. See above WQM permit description for other changes. See WQM permit description above for the IRR description.
- NPDES Permit Application included 6/11/2020 BCM Engineer's Memo regarding future Ammonia-N and Nitrogen Treatment. The consultant indicated Roamingwood would be investigating options for Ammonia-N reduction and nitrogen reduction. The 2020 Chapter 94 Report indicated planned Ammonia-N-related improvements (expected to improve the carbon source, minimize temperature loss during cold weather months, and increase the amount of air to assist the ammonia-N treatment process) included:
  - Convert 1.0 MGD EQ tanks to backwash and overflow storage.
  - Install submersible triplex influent pumping station to forward influent sewage directly to treatment carousel
  - Replace carousel surface aerators with larger aerators and mixers

2021 Chapter 94 Report-related comments (On-Base Reference No. 52232):

General: Pending NPDES Permit Renewal/Transfer Application from South Wayne County Water & Sewer Authority to Joint Co-permittees (South Wayne plus Roamingwood Sewer & Water Association which is the operator).

Form Items 1, 2, 3, and 9 (Hydraulic and Organic Loadings):

- No existing or projected overloading as compared to originally permitted design capacities (but actual as-operated capacities unclear):
  - Permitted Hydraulic Design Capacity: 1.755 MGD
    - Conversion from failing combined gravity sewer mains/failing water main trench design to Low Pressure Sewer (LPS) Sewer System (completed in 2018) has eliminated the historic high I&I inflow rates that were the basis for the 1.755 MGD NPDES Permit Basis flow. Since the complete conversion of the collection system to the LPS System, flows have been substantially reduced. In addition, the development flows/loadings indicate recreational/seasonal usage with greater flows/loadings during Spring to early Fall).
  - Organic Design Capacity: 1,900 lbs BOD5/day
  - **Actual Capacities Limitation**: Facility has not been operating with the original Bardenpho treatment process (SEJ ABAT) with assorted out-of-service units. As operated, the facility's organic and hydraulic capacities is reduced to an undefined extent. No plant upgrade planned in next 5 year per Report, but conversion to UV and some other upgrades approved by WQM Permit.
  - Approved WWTP Upgrades: Facility is approved for assorted limited WWTP Upgrades (2022 WQM Permit No. 6420402), but no re-evaluation of overall design capacities found. 2021 Chapter 94 Report indicated funding has been secured and was out to bid. Project description included: Conversion of existing 1 MGD EQ tanks to backwash and overflow storage; install submersible tri-plex influent pumping station to forward influent

directly to the treatment carousel; replace carousel surface aerators (with large aerators) and mixers; addition of soda ash to to aerated sludge decant to help precipitate copper out of solution; conversion to UV disinfection (but retaining sodium hypochlorite/de-chlorination for back-up); new screw press; replacing assorted equipment, etc.

- 2021 Chapter 94 Data:
  - Annual Average Flow: 0.21 MGD (ranging from 0.132 MGD – 0.333 MGD monthly average during year)
  - Max 3-month Flow: 0.267 MGD
  - Max Monthly Average Flow: 0.333 MGD (September)
  - Flow/EDU: 63.5 GPD
  - Flow/Capita: 25.4 GPD
    - DWFM Default is 80 GPCD for an LPS System, no I&I contribution)
    - 2020 Chapter 94 Data:
      - Flow/EDU: 60.8 GPD
      - Flow/Capita: 24.3 GPD
  - Annual Average Organic Loading: 342 lbs BOD5/day
    - They indicate sampling on Tuesdays and Wednesday, which might not reflect maximum weekend loading (people not leaving area for work during the day) or during high seasonal usage.
  - Max Monthly Average: 487 lbs BOD5/day
  - Persons/EDU: 2.5
  - Existing EDUs: 3,308
    - Original SEJ covered **4,100** single family home/connections, but it is unclear how many lots proved suitable for actual development. This would equate to a maximum possible 4,100 EDUs if every single lot was developed.
    - The 2020-2021 EDMR data is in the 0.132 – 0.333 MGD monthly average flows. Daily max values were generally in the 0.3 – 0.7 MGD range, except for spiking in August/September 2021 up to 1.889 MGD. Flows and loadings show seasonal variation
  - Load/EDU: 0.103 lbs BOD5/day
  - Load/Capita: 0.041 lbs BOD5/day (DWFM Default is 0.17 lbs BOD5/day, 0.22 lbs BOD5/day with garbage grinders)
  - New EDUs/year: 15 EDUs/year for next 5 years.
- 2020 Revised NPDES Permit Application tributary information:
  - Salem Township: 30% flow contribution, 2,449 persons
  - Lake Township: 70% flow contribution, 5,714 persons
  - Total: 8,163 persons (at standard DWFM defaults, this would equate to 0.8163 MGD ADF (gravity sewers) and 0.653 MGD (LPS system) plus ~1,387 lbs BOD5/day organic loading at current population. Now that a long-term connection ban was dropped, they are projecting new lot development.)
  - Max Future Population assuming 4,100 Lots @ 2.5/EDU: 10,250 persons. Using DWFM defaults maximum loadings would be:
    - 0.820 MGD ADF (at default 80 GPCD for LPS system with no I&I)
    - 1,742.5 lbs BOD5/day (at default 0.17 lbs BOD5/day/capita).

- **Form Item 4 (Sewer Extensions)**: "No sewer extensions constructed within the past calendar year, and there are no projects proposed requiring public sewers". In practical terms, new residences will be connecting to the existing LPS System.
- **Form Item 5 (Sewer System Monitoring, Maintenance, Repair)**: RSWA indicated to have all necessary equipment to operate, monitor, clean and maintain both the sewer and water assets within the Hideout community (with an electronic asset management database). RSWA staff members trained to maintain LPS System, including residential grinder pump systems. Staff responded to some grinder pump alarms in 2021. LPS project eliminated all pump stations except home grinder pumps.

- **Form Item 6 (Capacity related issues)**: Facility noted 100% replacement of old sewer/water lines in service area. They noted that they did video inspections of homeowner gravity laterals with letter follow-up requiring repair of any defect or illegal connection in a timely manner.
- **Form Item 8 (IW)**: Form item left blank. Narrative indicates no industrial users.
- **Item 10 (Sewage Sludge Management Inventory)**: 425,776 gallons of sludge wasted; 642,500 gallons of sludge removed (2.50% solids, 66.981 dry tons).

Compliance History

DMR Data for Outfall 001 (from January 1, 2021 to December 31, 2021)

Parameter	DEC-21	NOV-21	OCT-21	SEP-21	AUG-21	JUL-21	JUN-21	MAY-21	APR-21	MAR-21	FEB-21	JAN-21
Flow (MGD) Average Monthly	**0.1322**	**0.194**	**0.207**	**0.333**	**0.2614**	**0.207**	**0.1829**	**0.2060**	**0.299**	**0.2816**	**0.158**	**0.1509**
Flow (MGD) Daily Maximum	**0.2100**	**0.323**	**0.471**	**1.889**	**0.8220**	**0.247**	**0.322**	**0.3910**	**0.357**	**0.4630**	**0.354**	**0.2560**
pH (S.U.) Minimum	6.2	6.2	6.1	6.29	7.2	7.31	7.3	7.1	7.06	6.72	6.6	6.2
pH (S.U.) Maximum	7.1	7.3	7.1	7.55	7.6	7.67	7.7	7.5	7.43	7.42	7.2	7.3
DO (mg/L) Minimum	8.07	8.15	7.85	7.44	7.0	7.01	7.34	7.14	7.28	9.08	9.68	9.79
TRC (mg/L) Average Monthly	< 0.01	< 0.01	0.01	0.02	< 0.02	0.01	0.02	< 0.01	< 0.01	< 0.01	0.01	< 0.01
TRC (mg/L) Instantaneous Maximum	0.01	0.03	0.12	0.10	0.04	0.03	0.02	0.02	0.01	0.02	0.03	0.02
CBOD5 (lbs/day) Average Monthly	< 2.34	< 4.30	< 3.91	< 14.31	< 11.75	< 10.36	< 9.65	< 3.56	< 3.53	< 4.67	< 5.95	< 3.17
CBOD5 (lbs/day) Weekly Average	< 2.4	< 5.7	< 5.4	< 31.8	< 18.9	< 11.0	< 45.6	< 4.9	< 4.7	< 5.3	8.1	4.4
CBOD5 (mg/L) Average Monthly	**< 2.1**	**< 2.6**	**< 2.3**	**< 6.0**	**< 6.2**	**< 6.0**	**< 6.0**	**< 2.2**	**< 2.3**	**< 2.0**	**< 5.7**	**< 2.2**
CBOD5 (mg/L) Weekly Average	**< 2.1**	**3.0**	**< 2.65**	**< 6.0**	**< 6.9**	**< 6.0**	**< 6.0**	**< 2.2**	**< 2.3**	**< 2.2**	**9.2**	2.4
TSS (lbs/day) Average Monthly	< 4.95	< 8.28	< 4.0	< 11.92	< 10.14	< 8.64	< 8.04	< 11.63	< 6.46	< 9.12	< 7.63	< 5.67
TSS (lbs/day) Weekly Average	< 6.5	< 10.4	< 10.6	< 26.5	< 17.3	< 9.1	< 13.0	< 26.8	< 8.3	< 9.6	12.3	< 8.0
TSS (mg/L) Average Monthly	< 4.44	< 5.11	< 4.0	< 5.0	< 5.29	< 5.0	< 5.0	< 8.0	< 4.0	< 4.0	< 7.13	< 4.0
TSS (mg/L) Weekly Average	< 6.0	7.5	< 7.06	< 5.0	< 6.3	< 5.0	< 5.0	< 20.0	< 4.0	< 4.0	14.0	< 4.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1.0	< 1.62	< 1.23	< 1.52	< 1.87	< 1.19	< 1.0	< 2.3	< 1.0	< 1.0	< 4.96	< 1.0

Fecal Coliform (CFU/100 ml) Instantaneous Maximum	< 1.0	4.1	5.2	10.8	8.5	2.0	1.0	770.1	1.0	1.0	2419.6	< 1.0
Nitrate-Nitrite (lbs/day) Average Monthly	8.86	18.73	15.17	< 12.26	< 1.23	< 1.06	< 1.04	3.41	5.35	12.23	12.94	14.85
Nitrate-Nitrite (mg/L) Average Monthly	7.76	11.38	9.09	< 7.41	< 0.64	< 0.62	< 0.64	1.8	3.33	5.74	10.81	10.83
Ammonia (lbs/day) Average Monthly	2.44	< 2.46	< 2.28	< 0.48	< 1.53	< 4.11	< 0.32	< 0.48	< 0.47	< 0.43	< 3.04	< 3.2
Ammonia (mg/L) Average Monthly	**2.21**	**< 1.71**	**< 1.11**	**< 0.2**	**< 0.82**	**< 2.38**	**< 0.20**	**< 0.33**	**< 0.25**	**< 0.17**	**< 2.16**	**< 1.82**
Total Phosphorus (lbs/day) Average Monthly	< 0.04	< 0.17	< 0.13	< 0.33	< 0.33	< 0.22	< 0.29	< 0.28	0.25	< 0.24	0.52	0.16
Total Phosphorus (mg/L) Average Monthly	< 0.04	< 0.12	< 0.06	< 0.15	< 0.16	< 0.13	< 0.19	< 0.16	0.16	< 0.11	0.47	0.11
Total Copper (mg/L) Average Monthly	< 0.00500	< 0.00500	< 0.005028	0.00278	0.003440	0.00170	0.00122	< 0.00500	< 0.00500	< 0.00500	< 0.0083	< 0.00538
Total Copper (mg/L) Daily Maximum	< 0.00500	0.00520	0.00610	0.00383	0.006670	0.00214	0.00159	< 0.00500	< 0.00500	< 0.00500	0.0130	0.00650

DMR Data for Outfall 001 (from January 1, 2020 to December 31, 2020)

Parameter	DEC-20	NOV-20	OCT-20	SEP-20	AUG-20	JUL-20	JUN-20	MAY-20	APR-20	MAR-20	FEB-20	JAN-20
Flow (MGD) Average Monthly	**0.231**	**0.193**	**0.159**	**0.1625**	**0.223**	**0.2125**	**0.2051**	**0.2145**	**0.208**	**0.167**	**0.1879**	**0.176**
Flow (MGD) Daily Maximum	**0.681**	**0.242**	**0.233**	**0.2720**	**0.3860**	**0.3180**	**0.3800**	**0.3950**	**0.287**	**0.3**	**0.3820**	**0.314**
pH (S.U.) Minimum	6.17	6.9	7.14	6.24	6.8	7.1	7.1	6.05	6.6	6.67	6.03	6.59
pH (S.U.) Maximum	7.43	7.5	7.62	7.53	7.6	7.62	7.6	7.41	7.5	7.26	7.26	7.37
DO (mg/L) Minimum	**7.88**	**7.96**	**7.75**	**7.43**	**7.02**	**7.0**	**7.1**	**7.19**	**7.0**	**7.74**	**8.90**	**8.53**
TRC (mg/L) Average Monthly	0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01	0.01	< 0.01	< 0.01	< 0.01	0.01	< 0.01

TRC (mg/L) Instantaneous Maximum	0.06	0.02	0.02	0.02	0.02	0.03	0.02	0.05	0.02	0.04	0.09	0.02
CBOD5 (lbs/day) Average Monthly	< 3.96	< 9.49	< 8.7	8.26	< 10.66	< 11.07	< 3.15	< 4.29	7	< 5	6.43	< 4
CBOD5 (lbs/day) Weekly Average	3.8	< 10.5	< 11.6	< 12.3	< 15	< 11.9	< 4.9	< 7.6	9	7	11.7	7.3
CBOD5 (mg/L) Average Monthly	**< 2.2**	**< 6.0**	**< 6.0**	**< 6.0**	**< 6.0**	**< 6.0**	**< 2.2**	**< 2.3**	**3.7**	**< 3.8**	**3.9**	**< 2.5**
CBOD5 (mg/L) Weekly Average	**2.3**	**< 6.0**	**< 6.0**	**< 6.0**	**< 6.0**	**< 6.0**	**< 2.2**	**< 2.7**	**5.0**	**5.4**	**4.8**	**3.0**
TSS (lbs/day) Average Monthly	< 11.44	< 7.91	< 7.25	< 6.88	< 9	< 9.22	< 5.8	< 7.18	< 8	< 5	< 8.16	< 6
TSS (lbs/day) Weekly Average	< 33.6	< 8.8	< 9.7	< 10.2	< 12	9.9	< 9.0	< 11.2	< 9	< 6	< 14.6	10
TSS (mg/L) Average Monthly	**< 5.7**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 5.0**	**< 4.0**	**< 4.0**	**< 4.3**	**< 4.2**	**< 5.0**	**< 4.0**
TSS (mg/L) Weekly Average	< 12.5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 4.0	< 4.0	< 5.0	< 4.5	< 6.0	4.0
Fecal Coliform (CFU/100 ml) Geometric Mean	< 1.0	< 1.0	< 1	< 1.15	< 1.63	< 1	< 1.31	< 1.0	< 1	< 1	< 1	< 1
Fecal Coliform (CFU/100 ml) Instantaneous Maximum	1.0	< 1.0	1	4.1	49.5	< 1	8.6	1.0	1	2	< 1	1
Nitrate-Nitrite (lbs/day) Average Monthly	17.84	16.72	12.46	5.16	4.36	7.65	3.48	11.76	10.3	14.6	11.79	10
Nitrate-Nitrite (mg/L) Average Monthly	**9.46**	**10.64**	**9.02**	**4.28**	**2.23**	**3.96**	**2.56**	**5.64**	**5.5**	**13.3**	**7.80**	**6.0**
Ammonia (lbs/day) Average Monthly	< 3.16	< 1.86	< 0.74	< 1.05	< 2.46	5.20	< 2.36	< 1.34	< 1	< 0.41	< 4.54	< 2
Ammonia (mg/L) Average Monthly	**< 1.49**	**< 1.14**	**< 0.47**	**< 0.64**	**< 1.22**	**2.78**	**< 1.47**	**< 1.26**	**< 0.6**	**< 0.26**	**< 2.41**	**< 1.4**
Total Phosphorus (lbs/day) Average Monthly	0.39	< 0.16	< 0.16	< 0.17	< 0.36	< 0.22	< 1.14	0.41	< 0.4	0.32	0.28	0.4
Total Phosphorus (mg/L) Average Monthly	0.20	< 0.10	< 0.11	< 0.12	< 0.20	< 0.12	< 0.10	0.26	< 0.22	0.25	0.17	0.26
Total Copper (mg/L) Average Monthly	**< 0.00620**	**0.00250**	**< 0.00213**	**0.00229**	**0.00188**	**0.00369**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**< 0.0061**	**< 0.00500**	**< 0.00500**
Total Copper (mg/L) Daily Maximum	**0.0110**	**0.00291**	**0.00373**	**0.00364**	**0.00231**	**0.00524**	**< 0.0050**	**< 0.0050**	**< 0.0050**	**0.0081**	**< 0.00500**	**< 0.00500**

DMR Data for Outfall 002 (from October 1, 2018 to September 30, 2019): More recent data not accessible for inclusion in this Fact Sheet.

Parameter	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18
pH (S.U.) Minimum										6.67		
pH (S.U.) Maximum										6.67		
CBOD5 (mg/L) Daily Maximum										7.0		
COD (mg/L) Daily Maximum										< 20.0		
TSS (mg/L) Daily Maximum										< 5.0		
Oil and Grease (mg/L) Daily Maximum										< 5.1		
TKN (mg/L) Daily Maximum										< 0.840		
Total Phosphorus (mg/L) Daily Maximum										< 0.050		
Total Iron (mg/L) Daily Maximum										0.102		

DMR Data for Outfall 003 (from October 1, 2018 to September 30, 2019): More recent data not accessible for inclusion in this Fact Sheet.

Parameter	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18
pH (S.U.) Minimum										7.21		
pH (S.U.) Instantaneous Maximum										7.21		
CBOD5 (mg/L) Daily Maximum										16.0		
COD (mg/L) Daily Maximum										25.0		
TSS (mg/L) Daily Maximum										**188.0**		
Oil and Grease (mg/L) Daily Maximum										< 4.9		

TKN (mg/L) Daily Maximum										< 0.840		
Total Phosphorus (mg/L) Daily Maximum										0.137		
Total Iron (mg/L) Daily Maximum										10.5		

DMR Data for Outfall 004 (from October 1, 2018 to September 30, 2019): More recent data not accessible for inclusion in this Fact Sheet.

Parameter	SEP-19	AUG-19	JUL-19	JUN-19	MAY-19	APR-19	MAR-19	FEB-19	JAN-19	DEC-18	NOV-18	OCT-18
pH (S.U.) Minimum										7.07		
pH (S.U.) Instantaneous Maximum										7.07		
CBOD5 (mg/L) Daily Maximum										8.0		
COD (mg/L) Daily Maximum										34.2		
TSS (mg/L) Daily Maximum										5.0		
Oil and Grease (mg/L) Daily Maximum										< 5.2		
TKN (mg/L) Daily Maximum										< 0.840		
Total Phosphorus (mg/L) Daily Maximum										< 0.050		
Total Iron (mg/L) Daily Maximum										0.235		

COMPLIANCE HISTORY:

Effluent Violations for Outfall 001, from: March 1, 2017 To: February 28, 2022

Parameter	Date	SBC	DMR Value	Units	Limit Value	Units
Ammonia	07/31/21	Avg Mo	< 2.38	mg/L	2.0	mg/L
Ammonia	07/31/20	Avg Mo	2.78	mg/L	2.0	mg/L
Copper, Total	10/31/19	Daily Max	0.0158	mg/L	0.0157	mg/L
Copper, Total	12/31/17	Daily Max	0.0238	mg/L	0.0157	mg/L
Nitrate-Nitrite	01/31/22	Avg Mo	12.5	mg/L	11.0	mg/L
Nitrate-Nitrite	11/30/21	Avg Mo	11.38	mg/L	11.0	mg/L
Nitrate-Nitrite	03/31/20	Avg Mo	13.3	mg/L	11.0	mg/L
Nitrate-Nitrite	4/30/19	Avg Mo	11.18	mg/L	11.0	mg/L
Nitrate-Nitrite	3/31/19	Avg Mo	11.16	mg/L	11.0	mg/L
CBOD5	1/31/19	Weekly Avg	21.5	mg/L	15.0	mg/L
CBOD5	1/31/19	Avg Mo	10.5	mg/L	10.0	mg/L
CBOD5	3/31/17	Weekly Avg	301.611	Lb/d	220	Lb/d
Fecal Coliform	5/31/18	IMAX	1419	CFU/100 ml	1000	CFU/100 ml
Total Residual Chlorine	4/30/17	IMAX	0.24	mg/L	0.14	mg/L

Summary of Inspections:

FACILITY NAME	INSP PROGRAM	PF TYPE	INSP ID	INSPECTED DATE	INSP TYPE	INSPECTION RESULT DESC	# OF VIOLATIONS
ROAMINGWOOD WWTP	WPCNP	Water Pollution Control Facility	3318037	01/31/2022	Compliance Evaluation	Violation(s) Noted	1
ROAMINGWOOD WWTP	WPCNP	Water Pollution Control Facility	3231878	08/03/2021	Compliance Evaluation	No Violations Noted	0
ROAMINGWOOD WWTP	WPCNP	Water Pollution Control Facility	3022096	08/05/2020	Administrative/File Review	No Violations Noted	0
ROAMINGWOOD WWTP	WPCNP	Water Pollution Control Facility	3013611	05/27/2020	Administrative/File Review	No Violations Noted	0
ROAMINGWOOD WWTP	WPCNP	Water Pollution Control Facility	3037135	04/20/2020	Administrative/File Review	No Violations Noted	0
ROAMINGWOOD WWTP	WPCNP	Water Pollution Control Facility	3067193	03/23/2020	Compliance Evaluation	No Violations Noted	0

1/31/2022 Inspection: Facility is operating one treatment train at present, bypassing primary clarifier and two fermentation units. WQM Permit No. 6420402 WWTP upgrade project has not yet started.

Other Comments:

- **Minimum Monthly Average TSS Reduction:** See Treatment Section. It is unclear if the facility met the regulatory requirement during the high I&I flow time-frames, based on application influent data and insensitive ND concentration. Influent Monitoring and Reporting will be required in this permit term.
- **10/8/2018 NOV:** Issued for starting Stage 3 LPS construction without WQM permit.
- **Open Violations by Client Number**: 4/29/2022 WMS query indicated one open violation:

FACILITY	INSP PROGRAM	INSP ID	VIOLATION ID	VIOLATION DATE	VIOLATION
ROAMINGWOOD WWTP	WPC NPDES	3318037	948396	01/31/2022	NPDES - Violation of effluent limits in Part A of permit

Development of Effluent Limitations

Outfall No. 001 **Design Flow (MGD)** 1.755
Latitude 41º 25' 13.00" **Longitude** -75º 20' 42.00"
Wastewater Description: Sewage Effluent

Permit limits and/or monitoring requirements: Changes bolded.

Parameter	Limit (mg/l unless otherwise specified)	SBC	Model/Basis
CBOD5 **Tier 1 (≤0.490 MGD) – Existing concentration limits**	**40.8** Lbs/d **61.3** Lbs/d 10.0 15.0 20.0	Monthly Average Weekly Average Monthly Average Weekly Average IMAX	**Existing Antidegradation WQBEL limit is no longer supported by water quality modeling at 1.755 MGD NPDES Permit Basis flow, but supported at 0.490 MGD discharge. Assimilative capacity of stream exceeded at higher flows. Mass loadings recalculated for flow range.** Application data: 13.00 mg/l max and 3.90 mg/l LTA (104 samples). EDMR (2020 -2021): <6.2 monthly average ABACT Limit: 10 mg/l monthly average**.**
CBOD5 **Tier 2 (>0.490 MGD - <1.755 MGD)**	**73.3** Lbs/d **109.9** Lbs/d **5.01** **7.51** **10.02**	Monthly Average Weekly Average Monthly Average Weekly Average IMAX	**Tier 2 (based on sensitivity analysis and most stringent possible limits in tier range).**
CBOD5 **Tier 3 (1.755 MGD)**	**84.7** Lbs/d **127.1** Lbs/d 5.79 8.68 11.58	Monthly Average Weekly Average Monthly Average Weekly Average IMAX	**Third and Final Tier (existing NPDES Permit Basis flow also used for WQBELs for Toxic Pollutants). Presence of additional food resources would increase stream biology's ability to assimilate effluent discharge.**
TSS	439**.0** Lbs/d 878**.0** Lbs/d 30.0 45.0 60.0	Monthly Average Weekly Average Monthly Average Weekly Average IMAX	Existing Technology limit (Chapter 92a.47) **Significant digit added for mass limits.** Application data: 34 mg/l max and 6.10 mg/l LTA (104 samples).
pH	6.0 – 9.0 SU	**Inst.** Min - IMAX	Existing Technology limit (Chapter 92a.47) Application data: 6.0 – 8.2 SU (365 samples)
Dissolved Oxygen (DO)	7.0	**Inst.** Minimum	Existing WQBEL supported by existing water quality modeling. See Stream Section comments. Application data: 7.0 mg/l minimum (104 samples).
Fecal Coliform (5/1 – 9/30)	200/100 ml 1,000/100 ml	Geo Mean IMAX	Existing Technology limit (Chapter 92a.47).

			Application data: 2410/100 ml max, 389/100 ml max monthly, and 70/100 ml LTA (104 samples).
Fecal Coliform (10/1 – 4/30)	2,000/100 ml 10,000 ml/100 ml	Geo Mean IMAX	See above
E Coli	**Report #/100 ml**	**IMAX**	**New monitoring requirement per new Chapter 93 Water Quality Standard.**
Total Residual Chlorine **– Interim (prior to WWTP upgrade to UV)**	0.06 0.14	Monthly Average IMAX	Existing WQBEL Application data: **0.24 mg/l max**, 0.03 mg/l max monthly and 0.01 mg/l LTA (365 samples).
Total Residual Chlorine – Final (after WWTP upgrade to UV)	**0.02** **0.06**	**Monthly Average** **IMAX**	**New WQBEL per updated water quality modeling (in effect after conversion to UV disinfection with chlorine back-up). DEP Target QL is 0.02 mg/l.**
Ammonia-Nitrogen (May 1 - Oct 31) **Tier 1 (≤0.490 MGD) – Existing concentration limits**	**8.1** Lbs/d **16.2 Lbs/d** 2.0 **4.0** 4.0	Monthly Average **Daily Max** Monthly Average **Daily Max** IMAX	**Existing Antidegradation WQBEL limit is no longer supported by water quality modeling at 1.755 MGD NPDES Permit Basis flow, but supported at 0.490 MGD discharge. Assimilative capacity of stream exceeded at higher flows. Mass loadings recalculated for flow range.** Application data: 5.64 mg/l max and 1.40 mg/l LTA (104 samples). No daily max data in EDMR. EDMR (2020 – 2021): **2 definite months above new 1.76 mg/l monthly average and 4 potential months (insensitive ND). No daily max data.** ABACT Limit: 1.5 mg/l summer and 4.5 mg/l winter monthly average.
Ammonia-Nitrogen (Nov 1 - Apr 30) **Tier 1 (≤0.490 MGD - <1.755 MGD) – Existing concentration limits**	**24.5** Lbs/d **73.5 Lbs/d** 6.0 **12.0** 12.0	Monthly Average **Daily Max** Monthly Average **Daily Max** IMAX	See above. Standard winter multiplier.
Ammonia-Nitrogen (May 1 - Oct 31) **– Tier 2 (>0.490 MGD - <1.755 MGD)**	**21.9 Lbs/d** **43.9 Lbs/d** **1.5** **3.0** **3.0**	Monthly Average **Daily Max** Monthly Average **Daily Max** IMAX	**Tier 2 (based on sensitivity analysis and most stringent possible limits in tier range). Mass loadings recalculated.**
Ammonia-Nitrogen (Nov 1 - Apr 30) **Tier 2 (>0.490 MGD - <1.755 MGD)**	**65.8 Lbs/d** **131.7 Lbs/d** **4.5** **9.0** **9.0**	Monthly Average **Daily Max** Monthly Average **Daily Max** IMAX	See above. Standard Winter Multiplier
Ammonia-Nitrogen (May 1 - Oct 31) **Tier 3 (1.755 MGD)**	**24.2 Lbs/d** **48.4 Lbs/d** **1.6** **3.3** **3.3**	Monthly Average **Daily Max** Monthly Average **Daily Max** IMAX	**Third and Final Tier (existing NPDES Permit Basis flow also used for WQBELs for Toxic Pollutants). Presence of additional food resources would increase stream biology's ability to assimilate effluent discharge.**

Ammonia-Nitrogen (Nov 1 - Apr 30) **Tier 3 (1.755 MGD**	**70.2 Lbs/d** **140.5 Lbs/d** **4.8** **9.6** **9.6**	Monthly Average **Daily Max** Monthly Average **Daily Max** IMAX	Standard Winter multiplier
Total Phosphorus	7.3 Lbs/day **14.6 Lbs/day** 0.50 **1.00** 1.00	Monthly Average **Daily Max** Monthly Average **Daily Max** IMAX	Existing WQBELs (implemented Lake Wallenpaupack TDML). **Daily max is set equal to existing IMAX to ensure reporting if exceedance (as any daily max violation would be an IMAX violation).** Application data: **0.86 mg/l max** and 0.13 mg/l LTA (104 samples). No daily max data in EDMR.
Total Nitrogen (Nitrate-Nitrite-N + TKN measured in same sample)	**Report Lbs/day** **Report Lbs/d** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**New monitoring requirement (Chapter 92a.61)** Application data: 16.52 mg/l max and 3.90 mg/l LTA (104 samples).
Nitrate-Nitrite-N	161**.0** Lbs/d **Report Lbs/d** 11.0 **22.0** 22.0	Monthly Average **Daily Max** Monthly Average **Daily Max** IMAX	Existing WQBEL. **Significant digit added. Daily max is set equal to existing IMAX to ensure reporting if exceedance (as any daily max violation would be an IMAX violation).** Application data: **15.30 mg/l max**, 10.2 mg/l max monthly, and 7.0 mg/l LTA (104 samples). No daily max data in EDMR.
Total Kjehldahl Nitrogen (TKN)	**Report Lbs/day** **Report Lbs/day** **Report** **Report**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**New monitoring requirement (Chapter 92a.61)** Application data: 1.22 mg/l max and 0.97 mg/l LTA (3 samples).
Total Dissolved Solids (TDS)	**Report Lbs/day** **Report Lbs/day** **1000.0** **2000.0** **2500.0**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**6/13/2018 DRBC DOCKET NO. D-1988-014 CP-3 requirement with standard multipliers. EDMR requires monthly monitoring for monthly average limits (not quarterly per the DRBC minimum monitoring requirement)** Application data: 336.0 mg/l max and 267 mg/l LTA (3 samples).
CBOD5 Minimum Reduction	**85%**	**Minimum Monthly Average**	**6/13/2018 DRBC DOCKET NO. D-1988-014 CP-3 requirement plus existing POTW requirement (permit and Chapter 92a.47).**
TSS Minimum Reduction	**85%**	**Minimum Monthly Average**	**New Reporting requirement for existing NPDES Permit Part A.I Additional Requirements and Chapter 92a.47 requirement.**
Cadmium	**Report Lbs/d** **Report Lbs/d** **Report ug/l** **Report ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**New monitoring requirement per Reasonable Potential Analysis** Application data: 0.1 ug/l max and 0.07 ug/l LTA (3 samples, no ND, Lab RL at 0.50). DEP Target QL is 0.2 ug/l.
Copper	Report Lbs/d Report Lbs/d 10.8 ug/l	Monthly Average Daily Max Monthly Average	Existing WQBELs supported by updated water quality modeling. Antibacksliding prohibits any relief from existing limits. **IMAX**

	15.7 ug/l **21.6 ug/l**	Daily Max **IMAX**	**value added using standard multiplier of 2.0.** Application data: **23.80 ug/l max** and 6.7 ug/l LTA (52 samples). Ten-Week sampling: 4 ug/l (0.004 mg/l) max and <3 average (10 samples, no ND, Lab RL at 2), DEP Target QL is 4.0 ug/l.
Free Cyanide	**0.063 Lbs/d** **0.11 Lbs/d** **4.33 ug/l** **7.21 ug/l** **10.8 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis.** Application data: 7 ug/l Max and 3.9 ug/l Average (10 samples, no ND). DEP Target QL of 1 ug/l. Ten-Week sampling: 6.1049 ug/l (0.0061 mg/l) max with 0.6296 COV.
Dissolved Iron	**Report Lbs/d** **Report Lbs/d** **Report ug/l** **Report ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**New Monitoring requirement per Reasonable Potential Analysis.** Application data: Single influent sample at 199 mg/l. 114.0 ug/l max and 58.80 ug/l LTA (3 samples, no ND, Lab RL at 50.0)
Total Manganese	**Report Lbs/d** **Report Lbs/d** **Report ug/l** **Report ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**New monitoring requirement per Reasonable Potential Analysis.** Application data: Single Influent Sample of 174 ug/l. 33.10 ug/l max and 28.93 ug/l LTA (3 samples, no ND. Lab RL at 3.66)
Total Zinc	**Report Lbs/d** **Report Lbs/d** **Report ug/l** **Report ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**New monitoring requirement per Reasonable Potential Analysis** Application data: Single Influent Sample of 31.60 ug/l. 72.10 ug/l max and 38.33 ug/l LTA (3 samples, no ND, Lab RL at 0.50)
Chlorodibromomethane **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**0.020 lb/d** **0.026 lb/d** **1.39 ug/l** **1.78 ug/l** **3.48 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis.** Application data: Single Influent Sample of 0.770 ug/l (possibly due to recycle flows because influent sampling point is located after recycle flows to EQ Tanks.). **2.98 ug/l max and 2.46 ug/l LTA (3 samples, no ND**, Lab RL at 0.50). DEP QL at 0.5 ug/l. **WQBEL at 0.70 ug/l.** Ten-Week sampling: **0.90 ug/l max** and <0.55 average (10 samples, no ND, Lab RL at 0.50). LTAMEC at ~0.706 ug/l.

Chloroform	**Report Lbs/d** **Report Lbs/d** **Report ug/l** **Report ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max**	**New monitoring requirement per Reasonable Potential Analysis**. WQBEL at 9.93 ug/l. Application data: Single Influent Sample of 2.08 ug/l (possibly due to recycle flows). **10.90 ug/l max and 8.47 ug/l LTA** (3 samples, no ND, Lab RL at 0.50). DEP QL at 0.5 ug/l. **WQBEL at 9.93 ug/l.** Ten-Week sampling: 6.90 ug/l max and <1.95 average (10 samples. No ND, Lab RL at 0.50). LTAMEC at ~3.952 ug/l.
Dichlorobromomethane **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**0.024 lb/d** **0.043 lb/d** **1.65 ug/l** **2.95 ug/l** **4.14 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis.** Application data: **6.07 ug/l max and 5.45 ug/l LTA** (3 samples, no ND, Lab QL at 0.50). DEP QL at 0.5 ug/l. Ten-Week sampling: **3.50 ug/l max and <1.01 average (10 samples, no ND, Lab RL at 0.50). LTAMEC at ~2.153 ug/l.**
2,4-Dinitrophenol **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**0.16 Lbs/d** **0.25 Lbs/d** **10.8 ug/l** **16.9 ug/l** **27.1 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis.** Application data: <20.60 ug/l max and <14.30 ug/l LTA (3 samples, all ND, Lab RL at 0.0206). **Insensitive ND Level.** DEP Target QL is 10 ug/l.
Benzo(a)Anthracene **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**Report lb/d** **Report lb/d** **0.002 ug/l** **0.003 ug/l** **0.004 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis.** Application data: <4.12 ug/l max and <2.86 ug/l LTA (3 samples, all ND, Lab RL at 2.86). **Insensitive ND Level.** DEP Target QL is 2.5 ug/l. **Part C (WQBELS below QL) will apply. No load limit due to TQL limitation.** **Ten-Week sampling: 0.566 ug/l max and <0.2477 average (10 samples, no ND, Lab QL at 0.0604). LTAMEC at ~0.641 ug/l.**
Benzo(a)Pyrene **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**Report lb/d** **Report lb/d** **0.0002 ug/l** **0.0003 ug/l** **0.0004 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis** Application data: <4.12 ug/l max and <2.86 ug/l LTA (3 samples, all ND, Lab RL at 2.86). **Insensitive ND Level.** DEP Target QL is 2.5 ug/l. **Part C (WQBELS below QL) will apply**. **No load limit due to TQL limitation.** Ten-Week sampling: **1.04 ug/l max and <0.2352 average (10 samples, no ND, Lab RL at 0.0701). LTAMEC at ~0.0606 ug/l**.
3,4-Benzofluoranthene	**Report lb/d** **Report lb/d**	**Monthly Average** **Daily Max**	**New WQBEL per Reasonable Potential Analysis**

Interim – monitoring 3 years **Final – 4th and 5th Years**	**0.002 ug/l** **0.003 ug/l** **0.004 ug/l**	**Monthly Average** **Daily Max** **IMAX**	Application data: **4 ug/l max and <3 average (3 samples, 3 ND, Lab RL at 2.86.** DEP Target QL is 2.5 ug/l. **Part C (WQBELS below QL) will apply**. **No load limit due to TQL limitation.**
Benzo(k)Fluoranthene **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**Report lb/d** **Report lb/d** **0.017 ug/l** **0.027 ug/l** **0.044 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis. Insensitive ND.** Application data: <4.12 ug/l max and 2.86 ug/l LTA (3 samples, all ND, Lab RL at 2.86). **Insensitive ND Level.** DEP Target QL is 2.5 ug/l. **Part C (WQBELS below QL) will apply**. **No load limit due to TQL limitation.**
Bis(2-Ethylhexyl)Phthalate **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**Report lb/d** **Report lb/d** **0.56 ug/l** **1.03 ug/l** **1.39 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis** Application data: 4.12 ug/l max and 2.86 ug/l LTA (3 samples, no ND, Lab QL at 3.83). DEP Target QL is 5.0 ug/l. **Part C (WQBELS below QL) will apply. No load limit due to TQL limitation.** Ten-Week sampling: 1.54 ug/l max and <0.776 average (10 samples, no ND, Lab RL at 0.1800). **LTAMEC at ~2.331 ug/l.**
Chrysene **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**Report lb/d** **Report lb/d** **0.21 ug/l** **0.36 ug/l** **0.52 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis** Application data: <4.12 Max and <2.86 ug/l average (3 samples, all ND). **Insensitive ND level.** DEP Target QL is 2.5 ug/l **WQBELs below QL will apply**.
Dibenzo(a,h)Anthracene **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**Report lb/d** **Report lb/d** **0.0002 ug/l** **0.0003 ug/l** **0.0004 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis** Application data: <4.12 Max and <2.86 ug/l average (3 samples, all ND). **Insensitive ND level.** DEP Target QL is 2.5 ug/l. **WQBELs below QL will apply. No load limit due to TQL limitation.**
1,3-Dichlorobenzene **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**0.11 lb/d** **0.17 lb/d** **7.58 ug/l** **11.8 ug/l** **18.9 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	**New WQBEL per Reasonable Potential Analysis** Application data: <4.12 Max and <2.86 ug/l average (3 samples, all ND). DEP Target QL is 0.5 ug/l. **Insensitive ND Level.**
1,2,4-Trichlorobenzene **Interim – monitoring 3 years** **Final – 4th and 5th Years**	**Report lb/d** **Report lb/d** **0.076 ug/l** **0.12 ug/l** **0.19 ug/l**	**Monthly Average** **Daily Max** **Monthly Average** **Daily Max** **IMAX**	Application data: <4.12 Max and <2.86 ug/l average (3 samples, all ND). **Insensitive ND level.** DEP Target QL is 0.5 ug/l. **WQBEL below QL condition will apply. No load limit due to TQL limitation.**

Comments:

- **Old Pollutant Group Data:** The permittee declined to submit Pollutant Group Tables with one (1) influent and three (3) effluent samples to address change in effluent quality due to conversion to LPS System (i.e. elimination of known substantial dilution impacts). Original pollutant group tables did not meet DEP QLs for many constituents (including several monitored constituents above). The revised Pollutant Group tables only addressed the permittee's Ten Week Sampling Program constituents (not including original application data).
- **Monitoring & Reporting Updating: In addition to the above:**
  - Updating to meet current EDMR requirements (instantaneous minimums, etc.)
  - Going to 24-hour composite sampling to eliminate biasing and due to new Toxics Pollutants.
  - Reporting daily max mass and concentrations (no additional sampling requirements).
  - Daily max limits set at existing IMAX limits as any duration of exceedance of the IMAX limit is a permit limit exceedance.
  - Standard monitoring frequencies for a 1.755 MGD STP.
- **Updated WQM Model 7.1.1 (CBOD5, Ammonia-N, and DO)**: **The updated water quality modeling (addressing the revised Ammonia-N WQS) indicated more stringent CBOD5 and Ammonia-N limits are needed to protect the waters of the Commonwealth at the 1.755 MGD NPDES Permit-Basis Flow. This triggered further evaluation of the facility's loadings, SEJ coverage, LFY assumption, and water quality limits.**
  - **Loadings:** With the removal of the substantial I&I flows, the facility will never discharge its 1.755 MGD NPDES Permit Basis flows/loadings. With the elimination of the former connection ban (due to substantial I&I removal by conversion to Low Pressure Sewer System from failing combined sewer/water main system), additional lots can be developed (present flows & loadings will increase over time). The service area appears to have high recreational/seasonal usages, with flows/loadings substantially below normal DWFM default assumption values.
    - **Existing EDUs (2020)**: 3,308 (8270 persons at 2.5/EDU) per 2020 Chapter 94 Report.
      - **At the standard default 250 GPD/EDU (100 GPD/capita, 2.5 persons per lot) and 0.17 lb/day/capita at full occupancy**:
        - 0.827 MGD dry weather discharge
        - 1405.9 lb BOD/day (normal default)
        - 1819.4 lb BOD/day (if the 0.22 lb/capita garbage grinder default assumption is used)
      - **At the default LPS default (80 GPD/capita discounting I&I contributions)**: 0.662 MGD dry weather flow.
      - **2020 Chapter 94 Report data**:
        - **Flows**: 0.201 MGD ADF and 0.237 MGD 3-month maximum average
        - **Organic Loading**: 355 lbs BOD/day annual average and 487 lbs BOD/day maximum month (potential for biasing if they used 8-hour composite sampling data only).
        - **Projected Growth**: 15 EDUs/year
    - **Original SEJ**: Covered 4,100 single family home/connections (with very large I&I allowance) at full occupancy, but it is unclear how many lots proved suitable for actual development.
      - **At the standard default 250 GPD/EDU (100 GPD/capita, 2.5 persons per lot) and 0.17 lb/da/capita at full occupancy**:
        - 1.025 MGD dry weather discharge at full occupancy.
        - 1742.5 lbs BOD5/day
        - 2250 lb BOD5/day (if the 0.22 lb/capita garbage grinder default assumption is used)
      - **At the default LPS default (80 GPD/capita discounting I&I contributions)**: 0.82 MGD dry weather flows.
    - **2020-2021 EDMR data**: Did show evidence of recreational/seasonal usages.
      - **Monthly Average Flows**: 0.132 – 0.333 MGD
      - **Daily Max Flows**: 0.3 – 0.7 MGD range, except for spiking in August/September 2021 up to 1.889 MGD.
      - **CBOD5**: <2.1 - <6.2 mg/l monthly average range reported
      - **Ammonia-N**: <0.2 – 2.27 mg/l monthly average range reported.
  - **Modeling Assumptions**:
    - **Stream Conditions:**

- **LFY:** 0.0220 CFS/Square Mile (derived from USGS PA Streamstats as best available data and removing a source of uncertainty/error from modeling already impacted by heavily-effluent dominated stream conditions and existing organic enrichment issues)
- **pH**: 7.0 SU default (previous modeling assumed obsolete 6.5 SU CWF default in the absence of stream-specific data, but higher pH found in DEP sampling).
- **Stream Temperature**: 20 °C for CWF stream default assumed.
- **Stream Total Hardness**: 37 mg/l

▪ **Discharge:**

- **Temperature:** Max effluent temperature of discharge (365 days monitoring) was 23.5 ºC (i.e. hottest temperature discharge) used due to Ammonia-N toxicity relationship to temperature. Maximum average monthly temperature of 22.1°C.
- **Discharge Total Hardness:** 151 mg/l

○ **Sensitivity Analysis and Tier Flow Analysis (CBOD5 and Ammonia-N): See attached modeling below.** The WQM Model 7.1 (updated Ammonia-N Chapter 93 Criteria) was run at different design flows to determine sensitivity and to determine workable NPDES Permit Tier limits. The results indicated existing concentration limits are protective up to 0.490 MGD (Tier 1), but assimilative capacity of stream exceeded at 0.500 MGD. The next tier (Tier 2) is from >0.490 MGD to <1.755 MGD (with 0.700 MGD flow limits most stringent in that range). The third tier (Tier 3) is the existing NPDES Permit Basis flow used to generate original limits and WQBELs for Toxic Pollutants. Potential conflicts with schedule of compliance do not allow for addressing the proposed Toxics WQBELs in the proposed tiers at this time. The permittee would be able to pursue tiered toxics WQBELs through the Part C (WQBELs for Toxic Pollutants) process.

Flow	Ammonia-N Monthly Average Limit (mg/l)	CBOD5 Monthly Average Limit (mg/l)	Comment
1.755	**1.66**	**5.79**	**Existing NPDES Permit-Basis Flow (Final Tier 3) also used for WQBELs for toxics**
1.70	1.67	5.8	-
1.60	1.68	5.81	-
1.50	1.66	5.54	-
1.40	1.67	5.56	-
1.30	1.67	5.58	-
1.20	1.6	5.33	-
1.10	1.61	5.35	-
1.00	1.54	5.12	6.87:1 effluent domination
0.90	1.55	6.16	-
0.80	1.59	5.03	4,100 lots @ 80 GPCD would equate to 0.82 MGD flows if all SEJ-addressed lots were developable.
0.70	**1.5**	**5.01**	**Most stringent limits (Tier 2 limits for >0.49 MGD through <1.755 MGD flows)**
0.60	1.59	5.03	-
0.50	1.85	6.18	Assimilative capacity of stream exceeded; 3.4:1 effluent domination
0.49	**2.0**	**10.0**	**Existing limits (Tier 1 limits) protecting stream and downstream pond**

Reasonable Potential Analysis: See Toxic Management Spreadsheet (TMS) and TOXCONC output.

- The Pre-Permit Survey for Toxic Pollutants indicated the permittee was unaware of the source of the toxic pollutants and uncertain whether it could meet the potential permit limits.
- The permittees declined to redo the influent/effluent Pollutant Group Sampling (per Department request to meet DEP Target Quantitation Limits) except for the identified toxics listed in the Pre-Permit Survey.
- **Chlorine Disinfection byproducts (Chlorodibromomethane, Chloroform, Dichlorobromomethane)**: These constituents were detected in original sampling and subsequent ten sample analysis (for LTAMEC and COV calculation).
    - Facility is converting to UV disinfection with (new) liquid chlorine back-up system. This is expected to reduce TRC and chlorine disinfection byproducts concentrations in the future.
    - Original Application sampling had a higher chloroform max (above WQBEL) than the Ten Week Sampling data. Interim Monitoring will be weekly until the start-up of UV disinfection. The Department has broad authority to impose new limits if future monitoring shows potential negative impacts on the receiving stream.
- **Copper:** Existing Copper limits protective. The facility is installing copper treatment units. Antibacksliding prohibits any relaxation of the existing Copper limits.
- **New Monitoring Requirements (Cadmium; Dissolved Iron; Zinc):** Monitoring will prevent additional degradation of the receiving stream. The Department has broad authority to impose new limits if future monitoring shows potential negative impacts on the receiving stream.
- **New Permit Limits (Free Cyanide; 2,4-Dinitrophenol; Benzo(a)Anthracene; Benzo(a)Pyrene; 3,4-Benzofluoranthene, Benzo(k)Fluoranthene, Bis(2-Ethylhexyl)Phthalate, Chrysene, Dibenzo(a, h) Anthracene, 1,3-Dichlorobenzene, 1, 2, 4-Trichlorobenzene:** New permit limits and Part C.III (WQBELs for Toxics) conditions required. Some of these constituent limits resulted from the EPA Sufficiently Sensitive Rule (treating any insensitive ND concentration level as the constituent being present at the ND level) with options for additional monitoring to show the constituents are not present.

At 1.755 MGD Flow and 0.0220 CFS/Square Mile LFY:

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

No. Samples/Month: 4

	Mass Limits		*Concentration Limits*						
Pollutants	AML (lbs/day)	MDL (lbs/day)	AML	MDL	IMAX	Units	Governing WQBEL	WQBEL Basis	Comments
Total Cadmium	Report	Report	Report	Report	Report	µg/L	0.38	CFC	Discharge Conc > 10% WQBEL (no RP)
Total Copper	Report	Report	Report	Report	Report	µg/L	13.7	CFC	Discharge Conc > 10% WQBEL (no RP)
Free Cyanide	0.063	0.11	4.33	7.21	10.8	µg/L	4.33	THH	Discharge Conc ≥ 50% WQBEL (RP)
Dissolved Iron	Report	Report	Report	Report	Report	µg/L	325	THH	Discharge Conc > 10% WQBEL (no RP)
Total Manganese	Report	Report	Report	Report	Report	µg/L	1,073	THH	Discharge Conc > 10% WQBEL (no RP)
Total Zinc	Report	Report	Report	Report	Report	µg/L	162	AFC	Discharge Conc > 10% WQBEL (no RP)
Chlorodibromomethane	0.02	0.026	1.39	1.78	3.48	µg/L	1.39	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chloroform	Report	Report	Report	Report	Report	µg/L	9.93	CRL	Discharge Conc > 25% WQBEL (no RP)
Dichlorobromomethane	0.024	0.043	1.65	2.95	4.14	µg/L	1.65	CRL	Discharge Conc ≥ 50% WQBEL (RP)
2,4-Dinitrophenol	0.16	0.25	10.8	16.9	27.1	µg/L	10.8	THH	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Anthracene	0.00003	0.00005	0.002	0.003	0.004	µg/L	0.002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(a)Pyrene	0.000003	0.000005	0.0002	0.0003	0.0004	µg/L	0.0002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
3,4-Benzofluoranthene	0.00003	0.00004	0.002	0.003	0.004	µg/L	0.002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Benzo(k)Fluoranthene	0.0003	0.0004	0.017	0.027	0.044	µg/L	0.017	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Bis(2-Ethylhexyl)Phthalate	0.008	0.015	0.56	1.03	1.39	µg/L	0.56	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Chrysene	0.003	0.005	0.21	0.36	0.52	µg/L	0.21	CRL	Discharge Conc ≥ 50% WQBEL (RP)
Dibenzo(a,h)Anthrancene	0.000003	0.000004	0.0002	0.0003	0.0004	µg/L	0.0002	CRL	Discharge Conc ≥ 50% WQBEL (RP)
1,3-Dichlorobenzene	0.11	0.17	7.58	11.8	18.9	µg/L	7.58	THH	Discharge Conc ≥ 50% WQBEL (RP)
1,2,4-Trichlorobenzene	0.001	0.002	0.076	0.12	0.19	µg/L	0.076	THH	Discharge Conc ≥ 50% WQBEL (RP)

RoamingwoodTMS PDF.pdf

RoamingwoodWQ Mmodeling.pdf

A	B	C	D	E	F	G

TRC EVALUATION

Input appropriate values in A3:A9 and D3:D9 — Roamingwood WWTP

0.225	= Q stream (cfs)	0.5	= CV Daily
1.755	= Q discharge (MGD)	0.5	= CV Hourly
4	= no. samples	1	= AFC_Partial Mix Factor
0.3	= Chlorine Demand of Stream	1	= CFC_Partial Mix Factor
0	= Chlorine Demand of Discharge	15	= AFC_Criteria Compliance Time (min)
0.5	= BAT/BPJ Value	720	= CFC_Criteria Compliance Time (min)
0	= % Factor of Safety (FOS)		=Decay Coefficient (K)

Source	Reference	AFC Calculations		Reference	CFC Calculations	
TRC	1.3.2.iii	WLA afc =	0.045	1.3.2.iii	WLA cfc =	0.037
PENTOXSD TRG	5.1a	LTAMULT afc =	0.373	5.1c	LTAMULT cfc =	0.581
PENTOXSD TRG	5.1b	LTA_afc=	0.017	5.1d	LTA_cfc =	0.021

Source		Effluent Limit Calculations		
PENTOXSD TRG	5.1f	AML MULT =	1.720	
PENTOXSD TRG	5.1g	AVG MON LIMIT (mg/l) =	0.029	AFC
		INST MAX LIMIT (mg/l) =	0.068	

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)**

TOXCONC Results: Had to do Benzo(a)Pyrene in two columns due to spreadsheet column bug. One constituent was ND (Division by zero) and did not require any monitoring/limits.

		Reviewer/Permit Engineer:	Berger
Facility:	Roamingwood WWTP		
NPDES #:	PA0033430		
Outfall No:	001		
n (Samples/Month):	4		

Parameter	Distribution Applied	Coefficient of Variation (daily)	Avg. Monthly
hlormdibromomthane (ug/	Delta-Lognormal	0.2342986	0.7066183
Chloroform (ug/l)	Delta-Lognormal	0.8866755	4.3343390
chlorobromomethane (µg/	Delta-Lognormal	0.8567514	2.1534188
Free Cyanide (mg/L)	Delta-Lognormal	0.6296104	0.0061049
4.6-Dinitro-o-cresol (µg/L)	Delta-Lognormal	#DIV/0!	#DIV/0!
Benzo(a)Anthracene (µg/L	Delta-Lognormal	1.0151283	0.6411966
Benzo(a)pyrene (ug/l)	Delta-Lognormal	#NAME?	0.6060180
Chrysene (µg/L)	Delta-Lognormal	0.6883248	0.1970682
enzo(a, h) anthracene (µg	Delta-Lognormal	2.1507895	0.3160385
Indeno(c,d)pyrene (µg/L)	Delta-Lognormal	1.3913530	0.3753036
Copper (mg/L)	Delta-Lognormal	0.2872541	0.0033970
(2-ethylhexyl)Phthlate (µg	Delta-Lognormal	1.1038164	2.3317181
Benzo(a)pyrene (µg/L)	Delta-Lognormal	1.4642225	0.6060180

Antidegradation Considerations: No additional degradation of the waters of the Commonwealth is expected (due to new tiered limits). SEJ coverage applies to existing permit limits as discussed below.

- **Loadings:** No new loading (loadings requiring a new Treatment Plant), additional loading (loadings not requiring Treatment Plant construction), or increased loading (requiring Treatment Plant construction) are proposed in this renewal.
    - Elimination of I&I will not increase pollutant mass loadings, only relative concentrations (with removal of I&I dilution factor). The Tiered Limits address the more concentrated effluent discharges.
    - Original SEJ covered 4,100 single family home/connections. At the DWFM standard 250 GPD/EDU, this would equate to a dry weather flow of 1.025 MGD at full buildout. Additional connections (above 4,100) would increase mass loadings and would trigger Chapter 93 Antidegradation considerations (including antidegradation best available combination of technologies (ABACT)). Act 537 Planning provisions would apply.
    - Any continued failure to meet existing NPDES Permit limits would constitute new loadings subject to Chapter 93 Antidegradation considerations (including ABACT requirements).
- **Unusual SEJ Complication**: As noted in the Treatment Plant Section, the facility is not implementing the originally permitted complete BAT Bardenpho treatment process (with out-of-service treatment units that resulted in change in overall treatment process) and has had permit limit exceedances (CBOD5, Nitrate-Nitrite-N, etc.) per Compliance Section.

- **In event that they cannot meet the permit limits in this permit term, new Permit Part C.I.H condition would require implementation of the complete permitted Bardenpho treatment process**.
- If they chose to modify the permitted Treatment process by Part II WQM Permitting, then changes in treatment plant technologies since 1988 might trigger more stringent ABACT permit limits.

- **Original SEJ Coverage**: The facility was permitted with a 1.755 MGD NPDES Permit-Basis Flow & SEJ in the 1980s due to historic I&I issues. The complete replacement of the failing gravity sewer system with a new Low Pressure Sewer System has essentially eliminate the historic I&I issues. To clarify Antidegradation/SEJ history and Coverage:
  - **1/15/1987 DEP SEJ Regional Memorandum:** SEJ proposal allowed for 4,100 single family unit/lots at maximum buildout. They originally requested 5.0 MGD (as an extraordinarily large safety factor for both total development and existing I&I issues as noted in internal DEP memos), referencing the attached 1987 WPC Report. The attached WPC Report assumed a Q7-10 low flow of 0.468 CFS. Original modeling showed pond area upstream of Route 590 in addition to identified Lake Genero (south of Route 590). WPC Report-recommended limits included:
    - 10 mg/l BOD5 (not CBOD5) monthly average; 20 mg/l Max
    - 30 mg/l TSS monthly average; 60 mg/l Max,
    - 2 mg/l Ammonia-N monthly average Summer; 4 mg/l Max
    - 6 mg/l Ammonia-N monthly average Winter; 12 mg/l Max
    - 10 mg/l Nitrate-Nitrite-N monthly average; 20 mg/l Max
    - 0.5 mg/l Total Phosphorus monthly average; 1.0 mg/l Max
    - 7.0 mg/l DO minimum
    - TBELs for Fecal Coliform (200/100 ml Geo Average Summer; 2000/100 ml Geo Average Winter).
    - pH: 6 – 9 SU.
  - **1/26/1987 DEP Division of Water Quality SEJ Approval (based on above DEP SEJ Regional Memo and attached WPC Report):** DEP Approval Memo indicated the need to work with the Township and design engineer to arrive at a realistic flow for the project. The approval noted the proposal addressed an estimated 60% to account for groundwater infiltration. The Department found: "the proposed expansion of the Hideout residential development and sewage treatment plant has sufficient social and economic justification to allow a change in the water quality of Ariel Creek" based on information and project support. "The sewage treatment plant will provide best available treatment and will not interfere nor preclude any of the water uses of Ariel Creek". The SEJ requirements were addressed in the subsequent 1988 NPDES and WQM permitting:
  - **2/3/1988 NPDES Permit**: **These are the SEJ limits covered by DEP SEJ approval and now Antibacksliding provisions.** The NPDES Permit Part C.I Four specifically noted that previous NPDES Permit Amendment No PA0033430 Amendment 1 limits (5 MGD discharge) were superseded by this permit. Changes bolded:
    - **1.755 MGD NPDES Permit basis-flow (reduced)**
    - **10.0 mg/l CBOD5 monthly average (146 lbs/day); 20.0 mg/l Max (less stringent concentration limits than original SEJ as CBOD5 is component of BOD5 (1.2 BOD5: 1 CBOD5 effluent ratio in absence of better data**), but reduced impact due to reduced permit basis flow).
    - 30.0 mg/l TSS monthly average (439 lbs/day); 60.0 mg/l Max,
    - 2.0 mg/l Ammonia-N monthly average Summer (29 lbs/day); 4.0 mg/l Max. **NOTE**: Current ABACT Ammonia-N Standards would be more stringent in event of any new, additional or increased limits.
    - 6.0 mg/l Ammonia-N monthly average Winter (88 lbs/day); 12.0 mg/l Max
    - **11.0 mg/l Nitrate-Nitrite-N monthly average (161 lbs/day); 22.0 mg/l Max (less stringent concentration limits than original SEJ).**
    - 0.5 mg/l Total Phosphorus monthly average (7.3 lb/day); 1.0 mg/l Max
    - 7.0 mg/l DO minimum
    - 200/100 ml Geo Average Summer Fecal Coliform; 2000/100 ml Geo Average Winter
    - pH: 6.0 – 9.0 SU.
    - TRC: Not identified in the NPDES permit Part A.
      NOTE: Subsequent NPDES Permitting added weekly average limits, TRC/Copper limits, etc.
  - **4/29/1988 WQM Permit No. 6488401 (STP expansion)**: See Treatment Plant Section for details. The build-out population was estimated at 11,200.
  - **Present Loadings**: See Treatment Plant section for Chapter 94 reported data. The 10/25/2019 DEP letter terminated a previous "new connection" ban.

- **Total Residual Chlorine (TRC)**: They are converting to UV disinfection with new liquid chlorine back-up chorine disinfection/dechlorination (from old chlorine disinfection system). They will be receiving more stringent TRC permit limits and Chlorine Minimization conditions for any usage of chlorine in a manner that would result in chlorine in the site effluent.
- **Toxics**: SEJ does not cover toxic pollutants. New permit limits/Monitoring Requirements, Part C.IV (WQBELs for Toxics), and Whole Effluent Toxicity (WET) Tests will prevent additional stream degradation. See Reasonable Potential Analysis for details.
- **Stormwater outfalls:** Uncontaminated stormwater is not expected to degrade the waters of the Commonwealth. The permit renewal includes stormwater outfall monitoring, BMPs, and permit conditions to ensure that site stormwater runoff is uncontaminated.

Development of Effluent Limitations

Outfall No.	002, 003, and 004	**Design Flow (MGD)**	0 (stormwater only)
Latitude	41º 25' 20.20" (002) 41º 25' 13.70" (003) 41º 25' 13.30" (004)	**Longitude**	-75º 20' 47.90" (002) -75º 20' 43.80" (003) -75º 20' 44.10" (004)

Wastewater Description: Stormwater associated with industrial activities

Permit limits and/or Monitoring Requirements: Changes bolded.

Parameter	Limit (mg/l unless otherwise specified)	SBC	Model/Basis
CBOD5	Report	**IMAX**	Existing monitoring requirement. Retained due to receiving stream organic enrichment issues. EDMR Data: CBOD5 values ranged from <2.2 mg/l to 16 mg/l during the 2018 – 2020 sampling.
Chemical Oxygen Demand (COD)	Report	**IMAX**	**Statewide PAG-03 Best Professional Judgment (BPJ) benchmark value (120 mg/l) incorporated into permit.** EDMR Data: COD values ranged <20 to 50 mg/l during the 2018 – 2020 stormwater sampling.
TSS	Report	**IMAX**	**Statewide PAG-03 Best Professional Judgment (BPJ) benchmark value (100 mg/l) incorporated into permit.** EDMR data: **Outfalls Nos. 002 (148 mg/l in 2018) and 003 (188 mg/l in 2018 and 104 mg/l in 2020).**
TKN	Report	**IMAX**	Monitoring requirement to ballpark nutrient impacts. EDMR Data: TKN values ranged <0.840 mg/l to 9.42 mg/l during the 2018 – 2020 stormwater sampling.
Total Iron	Report	**IMAX**	Existing Monitoring requirement. EDMR Data: Total Iron values ranged 0.037 to 10.5 mg/l (Outfall No. 003) during the 2018 – 2020 stormwater sampling.
pH	**6.0 – 9.0 SU**	**Inst.** Min - IMAX	**Chapter 95.2 regulatory requirement being incorporated into the permit.** EDMR Data: 6.67 SU – 7.27 SU in the 2018-2020 stormwater sampling.
Oil & Grease	**30.0**	**IMAX**	**Chapter 95.2 regulatory requirement being incorporated into the permit.**

			EDMR Data: O&G values ranged <4.8 to 5.43 mg/l during the 2018 – 2020 stormwater sampling.
Total Phosphorus	Report	**IMAX**	Existing Monitoring requirement. EDMR Data: TP values ranged <0.050 to 0.529 mg/l during the 2018 – 2020 stormwater sampling.

Comments:

Application-identified Stormwater BMPs: Area is inspected daily. Spills and leaks are addressed immediately using absorbent/vacuum, Waste containers and spill kits are maintained onsite. Secondary containment is provided for STS and USTs. The plant upgrade project will utilize erosion and sediment control BMPs. Applicant also indicated compliance with current Part C POTW Stormwater BMPs.

Stormwater Additional Information Reports indicate:

- Stormwater Outfall No. 002 drainage area: 2,000 SF, unpaved
- Stormwater Outfall No. 003 drainage area: 63,600 SF (20,963 SF paved; 42,604 SF unpaved)
- Stormwater Outfall No. 004 drainage area: 3,200 SF unpaved

Development of Effluent Limitations

Outfall No. 101 **Design Flow (MGD)** NA – internal monitoring point at headworks.
Latitude 41º 25' 17.00" **Longitude** -75º 20' 46.00"
Wastewater Description: Raw Sewage Influent

Permit Limits and/or Monitoring:

Parameter	Limit (mg/l unless otherwise specified)	SBC	Model/Basis
Influent Flow	**Report MGD** **Report MGD**	**Average Monthly** **Daily Max**	
CBOD5 Influent (at 20º C)	**Report Lbs/d** **Report** **Report**	**Monthly Average** **Monthly Average** **Daily Max**	**DRBC DOCKET NO. D-1988-014 CP-3 requirement plus existing POTW requirement (Part A.I Additional Requirements permit and Chapter 92a.47).**
TSS Influent	**Report Lbs/d** **Report** **Report**	**Monthly Average** **Monthly Average** **Daily Max**	**Required to calculate compliance with existing Part A.I Additional Requirements permit and Chapter 92a.47 requirement.**

Comments: This is an administratively created Internal Monitoring Point/Outfall to allow for monitoring and reporting raw sewage influent separately from effluent monitoring.

Whole Effluent Toxicity (WET)

For Outfall 001, **X Chronic** WET Testing was completed:
X Other: **Single Post-LPS System Upgrade WET Test (2020) and one permit renewal application test (2017) plus 2014 WET Testing.**

The dilution series used for the tests was: 100%, 97.0%, 94.5%, 47.0%, and 24.0%. The Target Instream Waste Concentration (TIWC) to be used for analysis of the results is: **94.5**.

Summary of Four Most Recent Test Results

NOEC/LC50 Data Analysis

	***Ceriodaphnia* Results (% Effluent)**			***Pimephales* Results (% Effluent)**			
Test Date	**NOEC Survival**	**NOEC Reproduction**	**LC50**	**NOEC Survival**	**NOEC Growth**	**LC50**	**Pass? ***
2/25/2014	100	100	>100	100	100	>100	Pass
4/2/2014	100	100	>100	100	100	>100	Pass
9/2/2014	100	>24	>100	100	100	>100	Fail
10/30/2014**/Retest**	100	100	>100	NA	NA	NA	Pass
12/4/2014	100	100	>100	100	100	>100	Pass
8/1/2017	100	100	>100	100	100	>100	Pass
3/5-12/2020	100	47	>100	100	100	>100	See below
4/17/2020**/Retest**	100	100	>100	100	100	>100	Pass

***** *A "passing" result is that which is greater than or equal to the TIWC value.*

Is there reasonable potential for an excursion above water quality standards based on the results of these tests? (*NOTE – In general, reasonable potential is determined anytime there is at least one test failure in the previous four tests).*

X **NO (see comments below).**

Comments:

- **DEP Biologist (JR Holtsmaster) provided the following feedback: "They have history of two failures in the WET Tests for Chronic Water Flea Reproduction in 2014 and 2020. The applicant did pass the follow up WET tests using water flea after both failures in 2014 and 2020. According to the WET Testing procedures the facility passed the WET tests for both 2014 and 2020."**
- Applicant did not do 4 quarterly WET Tests for the year prior to NPDES Permit Renewal Application per 40 CFR 122.21(j)(5)(iv) in the absence of annual WET Testing (not required by previous NPDES Permit). The previous NPDES Permit Part C.I.F condition was unclear on this requirement and quality of effluent was changing due to collection system upgrade to Low Pressure Sewer System (greater concentrations in facility influent/effluent for same mass loads, by eliminating substantial I&I dilution). Pre-2019 WET Tests of uncertain future validity. Single post-LPS upgrade WET test requested and received in 2020 but required retesting **This permit will require four (4) quarterly WET Tests during 1st Year of new permit term.**

Evaluation of Test Type, IWC and Dilution Series for Renewed Permit

Acute Partial Mix Factor (PMFa): **1** Chronic Partial Mix Factor (PMFc): **1**

1. Determine IWC – Acute (IWCa):

$(Q_d \times 1.547) / ((Q_{7\text{-}10} \times PMFa) + (Q_d \times 1.547))$

[(1.755 MGD x 1.547) / ((0.225 cfs x 1) + (1.755 MGD x 1.547))] x 100 = **IWCa% = 92.34%**

Is IWCa < 1%? **X NO**

If the discharge is to the tidal portion of the Delaware River, indicate how the type of test was determined: NA

Type of Test for Permit Renewal: **Chronic**

2a. Determine Target IWCa (If Acute Tests Required): NA

TIWCa = IWCa / 0.3 = NA**%**

2b. Determine Target IWCc (If Chronic Tests Required)

(Q_d x 1.547) / ($Q_{7\text{-}10}$ x PMFc) + (Q_d x 1.547)

[(1.755 MGD x 1.547) / ((0.225 cfs x 1) + (1.755 MGD x 1.547))] x 100 = **TIWCc% = 92.34% (~93%)**

3. Determine Dilution Series

(NOTE – check Attachment C of WET SOP for dilution series based on TIWCa or TIWCc, whichever applies).

Dilution Series = 100%, 97%, 93%, 44%, and 23%.

WET Limits

Has reasonable potential been determined? **X** NO

Will WET limits be established in the permit? **X** NO

If WET limits will be established, identify the species and the limit values for the permit (TU). NA

If WET limits will not be established, but reasonable potential was determined, indicate the rationale for not establishing WET limits:

The facility passed the 2020 retest but did not do four quarterly NPDES Permit Renewal WET Tests or Annual WET Tests (not an existing permit requirement). The The Department retains authority to reopen the permit in event the First Year's Quarterly WET Tests or subsequent WET Tests indicate reasonable potential.

Communications Log:

2/12/2018: Original NPDES Permit Renewal Application received (SWCWSA) under APS# 698814, Auth# 1220206.
3/13/2018: Application Incompleteness Letter (which raised question about who was the NPDES permittee).
3/16/2018: Telephone call from Mr. Lennox (RSWA) who indicated difficulty in finding copy of NPDES Permit renewal application.

- He indicated the Authority is still the operator with financial control. The Authority has same mailing address as RSWA.
- He indicated that they are doing Stage 3 LPS Work, but was unsure what Part II WQM Permit covered it (I cannot find any Part II WQM permit explicitly addressing a "Stage 3 LPS Project").
- Told him that he could request an Admin Ext letter after application is complete, before current NPDES Permit expiration date. Told him M&C has a say in such letters.

3/22/2018: Telephone call from Mr. Nardone, who indicated he was new contact.

- They are talking to the solicitors and Joe Cigan (DEP OCC) about who is the operator with financial control (i.e. correct NPDES permittee).
- They are missing files and will be doing a file review to get some missing information. They think that Low Pressure System Stage 3 will be finished in August, but not clear on whether it was covered by the Stage 2 LPS System WQM permit (they are reaching out to their engineer). Need to let me know if Stage 1 and 2 are complete (need to make abandoned pump stations as inactive in DEP E-facts).
- They are considering a sludge press as a possible site upgrade within the next 5 years, but no tentative plans for biosolids processing/beneficial use.
- He will update site plan to show stormwater controls and form with drainage area for plant;
- He will provide the bypass information; explained need for other GC/MS 5-peaks/other organics; no water filtration plant – WWTP meant; their option if they want to submit site-specific data for enhanced water quality modeling – they submitted some in previous permitting but late in review process but should provide it upfront if they want the Department to consider it this time around.
- They will send in replacement forms (GIF and Major Sewage NPDES Permit form). Three copies plus DRBC copy needed.

6/28/2018: NPDES Permit Renewal Application determined to be complete (with new Joint Client). Original application entry changed to "entered in error" and replaced, based on this date.
8/17/2018: Administrative extension letter generated.
11/21/2019: Meeting to discuss proposed facility changes (upgrades and maintenance under future WQM Permit Application) to the circa 1988 constructed WWTP:

- **I&I Work:** The gravity sewer/water main replacement project is all completed, eliminating I&I by going to LPS system. Improvement in flows seen.
- **Needed DRBC Contact: They have not yet contacted the DRBC about the proposed project.**
    - The Department advised the facility to immediately contact the DRBC to determine if DRBC will require application of Anti-deg limits BDT permit limits due to proposed facility changes. The DRBC has been applying more stringent Best Demonstrated Technology (BDT) limits at other sites making site changes. DRBC Docket BDT limits would have to be added to the NPDES Permit per regulations. They can impose other limits such as TDS limits as well.
    - The BDT process can take 9 months or so.
    - The DRBC seems willing to make decisions about BDT requirements upfront when given hypotheticals. A copy of any DRBC determination should be provided to the Department and retained by the permittee.
    - The facility indicated that they would call the DRBC that day.
- **Funding:** The facility is in the process of obtaining RUS funding for the project. No PENNVEST funding.
- **Tentative Schedule:** They were thinking of constructing in October 2020, with permit applications in February 2020. This might change depending on DRBC feedback.
- **PACT Meeting Option:** The facility can request a PACT Meeting to meet with all DEP programs to clarify if other permits are needed (Air Quality for changes in facility emissions/lead or asbestos demolition requirements, tank program, etc.) electronically via DEP website. The Assistant Regional Director schedules the meeting.
- **WQM Permitting:** They can ask for a new WQM permit number. If they identify WQM permit application as amendment, a copy of the old WQM permit is required. The Department recommended the facility do a file review to determine what was originally permitted. If they notice any differences between as-built and permitted construction, they can "come clean" in the WQM permit application.

- **General Description of Project: See meeting handouts**. They think the disturbed area is less than 1 acre. Much is normal rehab work for 30-year old WWTP. Work includes the following:
  - **EQ Tanks work:** Replacement of aeration system. Inspector noted nothing should drain to nearby stormwater outfall when tank washing, painting, etc.
  - **Secondary Clarifiers work**
  - **Tertiary Filters work**
  - **New Copper Removal Treatment**: They have not decided what to do yet. Department noted that some people use polymers or other treatment chemicals. The Department would need to know exactly what due to discharge to HQ stream for NPDES permitting (anti-deg considerations). The Department recommended they look to see if whatever they plan to use is on the DEP List of Approved Chemical Additives as that table has water quality standards for the additives. Treatment chemicals are not chemical additives, but this can speed permitting.
  - **UV Disinfection with retained Chlorine Back-up**: Department noted draft UV DWFM technical guidance can be provided. TRC would only be monitored when chlorine is used onsite. Chlorine residual permit limits appear needed, but permitting will factor in plant upgrade.
  - **Aerobic Digesters work: Handout figure indicated "new aerobic digester"**
  - **New screw press pump dewatering system and polymer feed system: Handout figure indicated centrifuge and chemical system, but they think they prefer the screw press pump.**
  - **Building work (Ops/Control building; vehicle storage garage, blower building**): Will require that any building drains are connected to treatment process, not discharged to stormwater
  - **New electrical generators**
- **NPDES Permit Part A.III.C.1 (Planned Changes in Physical Facility)/Request for Determination of what requires Part II WQM Permitting: The design work is in progress (not having decided copper treatment technology, etc.). Once they have further determined all the proposed changes, then they can submit a Part A.III.C.1 notification/request for written determination of which changes require permitting. Painting and some other proposed work would not require DEP permitting. Buildings need to show where drains go, but are often outside permitting otherwise.**
  - **EPA review**: EPA is involved in any major STP permit renewal.
  - **Replacement-in-Kind**: Simple replacement-in-kind (no technology change such as change in pump type or going from coarse to fine bubble diffusors; no increase in capacity) usually does not require permitting.
  - **DWFM**: The Department noted that the existing DWFM provides technical guidance on facility changes and application requirements. It speeds reviews if the Design Engineer can state that the design is in compliance with the existing DWFM requirements, including emergency power, how facility operates during construction (especially if major storm event happens), etc.
  - **Draft DWFM**: The Department will be publishing a revised DWFM with updated technical guidance in 2020. The Department can make draft UV standards available when needed, but would have to check with Central Office to see if other draft sections can be made available (prior to publishing date). Not sure what technical standard might have changed for other types of unit/equipment offhand.
  - **PPC Plan**: The Department noted that tank sizes can trigger PPC Plan requirements about downstream notifications in event of releases, etc.
- **Draft NPDES Permit Renewal Application-related feedback**: A draft Technical deficiency letter will be issued in next month or so, but not sure when it will go out due to holidays, vacations and other priorities. Several issues were mentioned:
  - **No Technical Consultant**: If they wanted any consultant copied on application, then they would have to identify the consultant. They said to just send letter to Mr. Nardone (facility).
  - **DRBC Copy**: A copy of the revised application would have to be sent to the DRBC. If BDT limits are required, the Department will wait until there is a Draft Docket prior to issuing a Draft NPDES permit.
  - **Rerate**: The NPDES Permit Application assumed higher organic and hydraulic design capacity than originally permitted back in 1988. The Department would require a Part II WQM Permit rerate, with proof of Act 537 Planning approval to change the numbers.
  - **Clarification on Treatment Plant**: Will need clarification on proposed upgrades and what units/equipment are not in present use.
  - **Stormwater Requirements**: There are some new standard stormwater BMPs for new construction that will be in the Draft NPDES Permit. The Department will also be incorporating General Permit PAG-03 BPJ permit limits based on the PAG-03 benchmarks. It was noted that the last Outfall No. 003 sample result exceeded the future 100 mg/l TSS limit.
  - **Need for new Influent/Effluent Sampling Data**: Due to removal of I&I (70% dilution per Chapter 94 Reports), the application analysis is no longer representative of future discharges. Also, the non-representative analysis did not meet Target QLs, so ~12 new permit limits would be triggered per EPA

Sufficiently Sensitive Rule. The Department will be requiring new sampling and analysis meeting DEP Target Quantitation Limits. The facility can also consider a new WET test to avoid a potential need for 4 new WET tests in the first year of the new permit.

- Detected Constituents with New Limits per Obsolete Data: Chlorine Residuals, Thallium, Bis(2-Ethylhexyl)Phthalate (often a sampling contamination problem)
- Insensitive ND Constituents with possible limits: About 12-13

11/27/2019: DEP Technical Deficiency Letter issued.
12/27/2019: NPDES Permit Revision (submitted in response to 11/27/2019 Technical Deficiency Letter)
6/10/2020: DEP (Berger) E-mail with Technical Deficiency Questions.
3/25/2020: Revised NPDES Permit Application received (including results of Ten Weeks Sampling and 2020 WET Test results).