ROCKLAND, MASSACHUSETTS

Draft Comprehensive Wastewater Management

APRIL 2023

Phase 3 – Detailed Evaluation of Alternatives and Recommended Wastewater Management Plan

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Engineering a Better Environment

Comprehensive Wastewater Management Plan

Phase 3 – Detailed Evaluation of Alternatives and Recommended Wastewater Management Plan

Rockland, MA

DRAFT

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Section 1 Introduction

1.1 Background Information

The Town of Rockland continues to evaluate its current wastewater collection, pumping, treatment, and disposal needs through its Comprehensive Wastewater Management Plan (CWMP). Approximately 95 percent of the residents of Rockland rely upon the Town's existing wastewater system to collect, transport, treat, and dispose of their wastewater at the Wastewater Treatment Plant (WWTP). The remaining residents, which reside outside of the sewer service area, rely on individual onsite wastewater disposal systems (traditional septic systems). The purpose of the CWMP is to provide a wastewater management planning tool to guide the Town's sewer planning process for the next 20 years.

The Phase 1 - Existing Conditions, Problem Identification and Needs Assessment Draft Report and the Phase 2 – Alternatives Identification and Screening Draft Report were completed and submitted to the Massachusetts Department of Environmental Protection (MassDEP) and the Environmental Protection Agency (EPA) in August 2022 and December 2022, respectively. Both documents were revised during Phase 3 and are updated with the submission of this report.

This report, entitled 'Phase 3 - Detailed Evaluation of Alternatives and Recommended Wastewater Management Plan' presents the results of the three-phase study undertaken by the Town of Rockland to determine the viability of current wastewater disposal practices in non-sewered areas and the needs within the existing sewer system. In general, the intent of this phase of the CWMP is to evaluate shortlisted wastewater management alternatives previously identified in Phase 2 and recommend a wastewater management plan for the 20-year planning period.

1.2 Purpose and Scope of Services

This document satisfies the Phase 3 requirements of the three-phase CWMP process and is prepared in accordance with DEP's Guide to Comprehensive Wastewater Management Planning as outlined below:

- Phase 1: Assessed existing conditions, problem identification and needs assessment for the City. The completed needs assessment determined areas with a "need for further study" in Phase 2.
- Phase 2: Alternatives Identification and Screening. Identify and short-list appropriate means of wastewater management alternatives to address any "needs areas" identified in Phase 1. The analysis includes a review of technical, environmental, institutional, and economic factors.
- **Phase 3: Provide a detailed evaluation of alternatives short-listed in Phase 2 and development of recommended wastewater management plan**

1.3 Summary of Phase 1 Report

Study areas were delineated and evaluated in Phase 1. A total of 6 of the 7 areas were estimated to be well suited for the continued use of onsite individual septic systems. Those 6 study areas were categorized as having Average, Low, or Very Low wastewater disposal needs and were removed from further analysis.

The Phase 1 analysis also concluded that the Town has one "high needs area" (Study Area 1) as shown in Table 1-1 and in Figure 1-1. This area was the focus of the CWMP Phase 2 Alternatives Identification and Screening. Wastewater management alternatives for the area that were investigated include Innovative and Alternative (I/A) systems; local shared systems; sewer system extensions to Rockland’s existing collection system; decentralized wastewater treatment facilities; and continued use of individual septic systems.

Table 1-1 Areas with Need for Further Study

Needs Areas	Location Name
1	Weymouth Street

1.4 Summary of Phase 2 Report

The intent of the Phase 2 analysis was to determine if an identified “high needs area” requires additional wastewater management beyond conventional septic systems. The potential wastewater management alternatives include an evaluation of Innovative/Alternative (I/A), shared/decentralized systems, sewer extensions, treatment, and disposal of facilities, management techniques, and the continued use of septic systems.

1.4.1 Treatment Alternatives

Wastewater treatment, collection, and disposal techniques were evaluated for the needs area. A similar ranking and scoring system approach that was utilized in Phase 1 was used to evaluate the alternative wastewater treatment systems. Each of the treatment systems were scored based on primary (i.e., technical components) and secondary (i.e., evaluative and environmental components) criteria for the individual needs area.

Based on the analysis, a shortlist of wastewater treatment alternatives was provided for the study area as shown in Table 1-2 and is the focus of Phase 3.

Table 1-2 Short List of Treatment Alternatives for Needs Areas

Treatment Technology	Needs Area 1 Weymouth Street
Individual Onsite Septic Systems	X
I/A Systems	X
Decentralized Systems (Shared System or WWTP)	X
Collection System Extension	X

1.4.2 Groundwater Discharge Alternatives

Groundwater discharge sites were evaluated in Phase 2 for discharge of wastewater from the needs area, potentially shedding flow from the existing collection system, and potentially to add an option for WWTP effluent discharge other than the existing surface water discharge. Six discharge sites were identified as possible effluent disposal sites. All six locations were able to accommodate the flow estimates from Needs Area 1 based on a "desktop" level analysis. Further hydrogeological investigations and evaluation would be required to determine the actual loading rates of each site. After the issuance of the Phase 2 draft, members of the Town, local golf courses, a representative for Union Point, and Wright-Pierce met to discuss groundwater disposal. Two new sites were added, and four sites were removed, as will be discussed later in this report.

1.5 Public Review

The report for Phases 1 and 2 of the CWMP are currently available online and at the Town Hall for review and comment by all interested stakeholders. The draft of Phase 3 will also be available online and at the Town Hall. Public and interested stakeholders will be given the opportunity to provide input for the CWMP during the public information hearing. The public information hearing will be held on Month, day, year, at Time. The public notice for this hearing has been published in the Saturday, Month, day, year edition of the *Quincy Patriot Ledger*. The presentation and discussion will include the final recommended wastewater management and implementation plan. A copy of the presentation and meeting minutes, including questions and answers, will be included in Appendix A.

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Section 2 Evaluation of Shortlisted Alternatives for Needs Area 1 – Weymouth Street

2.1 Summary of Shortlisted Alternatives

Needs Area 1 had four wastewater treatment alternatives that were shortlisted in Phase 2 of the CWMP, including the following:

- Individual Onsite Septic Systems
- Innovative/Alternative (I/A) Treatment Systems
- Extension of the Rockland Wastewater Collection System
- Decentralized WWTF

The following sections estimate the preliminary costs for the alternatives, and the impacts each alternative has on environmental issues, institutional issues, public health, water supply protection, surface water protection, and managed growth. The Decentralized WWTF (and groundwater discharge) option is summarized in Section 3, as part of the capacity analysis of the existing collection system/WWTF.

2.2 Preliminary Cost Analysis

The preliminary cost analysis was performed for each of the Phase 2 shortlisted wastewater treatment alternatives. The cost analysis was based on accepted engineering economic principles as stated in MassDEP Guidelines and was performed using a 20-year present worth analysis. The present worth analysis was primarily based on the capital and O&M costs for each of the treatment alternatives.

The capital cost estimates included construction, engineering design and construction administration, legal, land acquisition, easements, and contingencies. The O&M costs consisted of typical items such as labor, energy, chemicals, and sludge disposal. The present worth O&M cost is the total estimated cost to maintain each alternative over the 20-year planning period. In general, the costs are not intended to be used as specific construction cost estimates but are intended to be used to compare viable alternatives.

2.2.1 Individual Onsite Septic Systems

For this alternative, septic systems would be the method of treating and disposing of the property owner's wastewater. For the cost analysis, the worst-case scenario was used, where every septic system in the needs area would have to be replaced during the 20-year planning period.

There are three parcels in Needs Area 1. None of the parcels have existing buildings. "Build-out homes" were calculated based on the parcel size, zoning, and developable area and access for future planning purposes. The number of build-out homes for Needs Area 1 is estimated to be four. If the parcels were developed as commercial properties, which is the predominant use type in this area, septic systems may be too small for the design flow. As such, it is assumed that single family homes will be constructed in the undeveloped areas.

The capital costs for each type of onsite wastewater disposal system were estimated using cost information from various onsite disposal system manufacturers and construction contractors. A new septic system was estimated to cost an average of $50,000. This alternative's total present worth capital cost includes the present worth cost for the four new septic systems as well as other fees such as engineering, construction administration, legal fees, and contingencies. The costs were distributed evenly over the 20-year period.

A septic system is recommended to be pumped out once every two years and currently costs approximately $500 per "pump out" of a 1,500-gallon tank. This would be an annual cost of $250. There are generally no other associated O&M costs for a septic system.

The total present worth cost for adding septic systems for treating and disposing of wastewater from undeveloped parcels for this needs area was estimated at approximately $329,000 as shown in Table 2-1. The present worth value accounts for inflation and interest of future costs for the project. For the future capital costs and total present worth, 5% inflation and 5% interest were used to calculate the costs. The present worth O&M costs assumed 5% inflation and 5% interest. A summary comparing all the different alternatives' capital costs, O&M costs, and total present worth costs is presented later in Table 2-4.

Table 2-1 Present Worth Cost of Septic Systems

Cost Estimate	Septic System
Initial Capital Cost	$0
Present Worth of Future Capital Costs	$309,000
Present Worth O&M Costs	$20,000
Total Present Worth	**$329,000**

2.2.2 I/A Systems

For the I/A system wastewater treatment alternative, it was assumed that four build-out homes would be installed with a new I/A system.

There is a wide variety of MassDEP approved I/A systems available (as was described in the Phase 2 Report). Construction and O&M costs for the I/A systems were obtained based on the recent needs of I/A technologies. The average construction cost for a new I/A system is approximately $75,000. This alternative's total present worth capital cost includes the present worth cost for the four build-out systems along with other fees such as engineering, construction administration, legal fees, and contingencies. It was assumed that the construction of four new I/A systems would be equally distributed over the 20 years.

In order to obtain a higher level of treatment, most of the I/A systems require pumps and/or blowers to operate. The O&M costs were calculated based on estimates for sludge removal and disposal, testing, and electrical usage. The cost to pump out an I/A system currently averages $500, which should be performed once every two years (same as a traditional septic system). Regarding the DEP sampling requirements, the average annual cost for a certified laboratory to perform sampling and testing of an I/A system varies between $100 and $500, with some requiring higher first-year testing costs. The average electrical cost per unit is estimated to be $400 per year. It was assumed that an average total annual O&M cost is approximately $2,400, which accounts for electricity, septage pumping, routine inspections, routine laboratory analysis, non-compliance inspections/lab analysis, chemicals, repairs, and program costs.

The total present worth cost using I/A systems for treating and disposing of wastewater for this needs area is estimated at approximately $669,000 as shown in Table 2-2. For the future capital costs and total present worth, 5% inflation and 5% interest were used to calculate the costs. The present worth O&M costs assume 5% inflation and 5% interest.

Table 2-2 Present Worth Cost of I/A Systems

Cost Estimate	Septic System
Initial Capital Cost	$0
Present Worth of Future Capital Costs	$477,000
Present Worth O&M Costs	$192,000
Total Present Worth	**$669,000**

2.2.3 Extension of the Rockland Wastewater Collection System

Another treatment alternative evaluated for this area is extending the existing wastewater collection system. The wastewater would be treated at the Town of Rockland 's Wastewater Treatment Plant (WWTP). The Town's existing collection system extends near many of the parcels in the needs area, including on Weymouth and Hingham Streets and Reservoir Park Drive. Additional sewer is needed along the access drive off Reservoir Drive to connect three of the parcels to the existing collection system and a service connection would be required for the parcel off Weymouth Street.

The proposed sewer extension route to reach the existing wastewater collection system is near Reservoir Park Drive, on a driveway entrance between Ledgewood Place and Hingham Street. The proposed wastewater collection system would consist of 8-inch diameter gravity sewer pipes, 6-inch diameter service laterals, and manholes approximately 300 feet apart. No additional pump stations are assumed to be needed. The proposed sewer route is shown in Figure 2-1.

The total present worth cost for installing the proposed sewer, including trenching and paving, was estimated at approximately $1,560,000 as shown below in Table 2-3. The cost assumed 20 feet of 6-inch PVC from the road to property line for the sewer service connections. Costs for sewer laterals beyond the right-of-way to the building will be the responsibility of the property owner. The 8-inch gravity pipe was estimated based on the proposed sewer route from the needs area to the existing collection system connection point, manholes every 300 feet and/or at intersections, and the costs for the trench and pavement, assuming road widths of 20 feet.

The unit costs were estimated using information from previous collection system projects. The estimate does not include the cost of any household interior plumbing rearrangements or septic system abandonment, as all of the parcels are undeveloped. As there are no proposed pump stations required, O&M costs were assumed to be zero. The revenue that the Town would receive from charging a user connection fee was not included in the analysis.

For the wastewater collection system extension, the present worth value was calculated assuming 5% inflation and 5% interest. A summary comparing all the different alternatives' capital costs, O&M costs, and total present worth costs is presented in Table 2-4.

Table 2-3 Present Worth Cost of Wastewater Collection System Extension

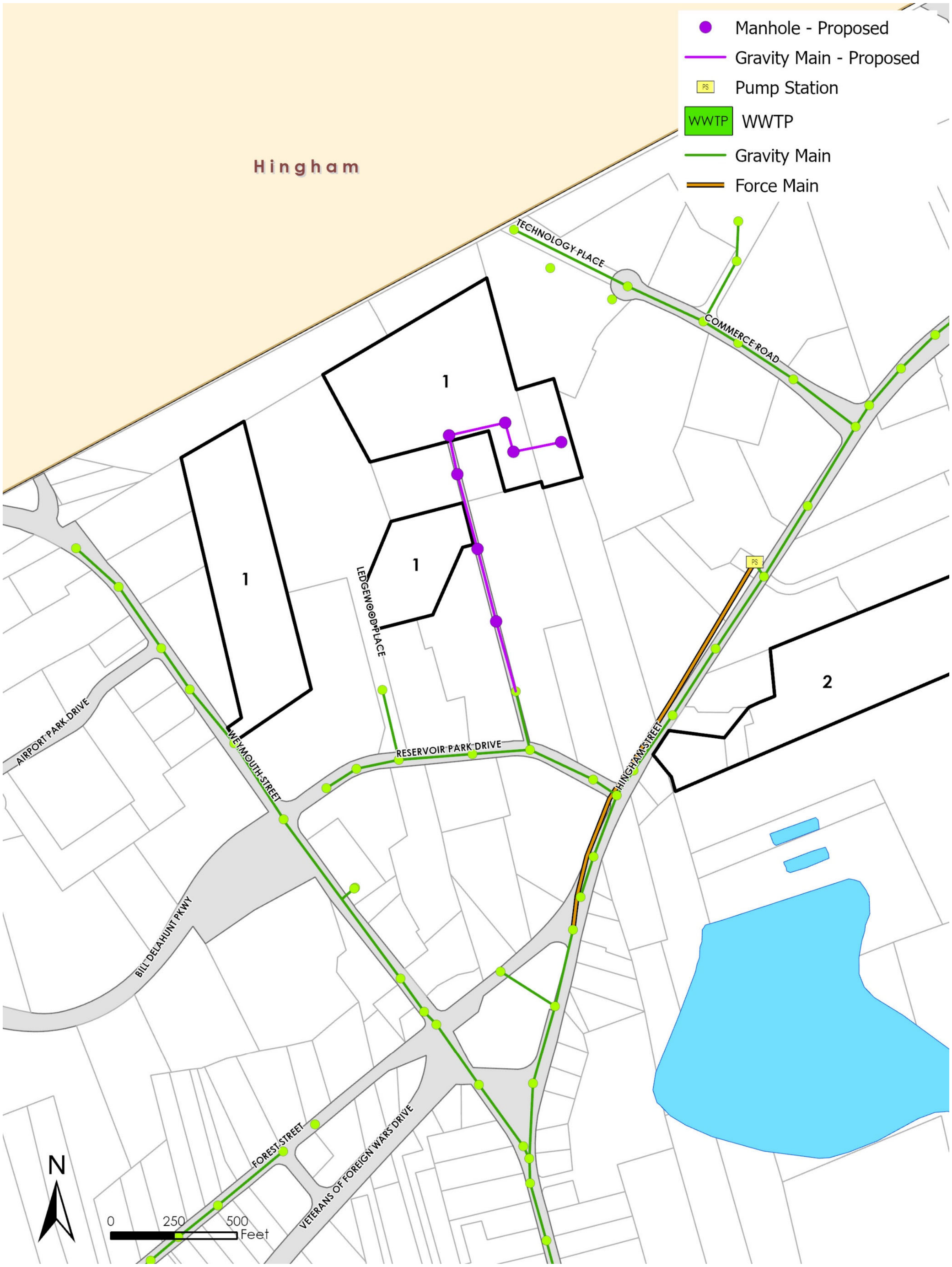
Cost Estimate	Wastewater Collection System Extension
Initial Capital Cost	$1,560,000
Present Worth O&M Costs	$0
Total Present Worth	$1,560,000

2.2.3.1 Estimated Betterment Fee

The betterment fee for the wastewater collection system extension for Needs Area 1 is estimated to be approximately $260,000. The betterment fee includes the developable parcels. The betterment fee is the cost the homeowners would pay the Town for the installation of the sewer extension. It can be treated like a loan and can be paid through the homeowner’s real estate tax bill or paid all at once separate from the tax bill.

The betterment fee was calculated by taking the estimated capital costs for the proposed sewer route and dividing by the parcels in Needs Areas 1 that are developable as commercial buildings. Due to the proximity of existing sewer, it is likely that the betterment would be less than presented, depending on how much 8-inch sewer main and new paving would be required to tie-in the parcels.

Figure 2-1 Needs Area 1 – Collection System Extension



2.2.4 Decentralized WWTF

For the decentralized WWTF alternative, a new decentralized WWTF with groundwater effluent disposal would be used to dispose of wastewater from the needs area. This is discussed in a later section of this report as the area is in close proximity to the existing collection system and proposed effluent disposal and WWTF areas at Union Point.

2.2.5 Summary of Cost Estimates

As shown in Table 2-4 below, septic systems appear to be the most cost-effective wastewater treatment alternative for Needs Area 1. I/A Systems are often used in locations with strict nutrient limits, which is not currently applicable in Rockland. In the future, if strict nutrient limits were implemented in this area, then I/A Systems should be reinvestigated. At this time, with flow capacity being an issue for the existing WWTP, the sewer moratorium being in place, and the cost prohibitive estimated betterment fee, it is not recommended to extend sewer to this Needs Area. However, should capacity become available, sewer extension is a viable option.

Table 2-4 Summary of Cost Estimates for Needs Area 1

Cost Estimate	Treatment Alternatives		
	Septic System	Innovative/Alternative System	Extension of the Collection System
Initial Capital Cost	$0	$0	$1,560,000
Present Worth of Future Capital Costs	$309,000	$380,000	-
Present Worth of O&M Costs	$20,000	$190,000	$0
Total Present Worth	$329,000	$570,000	$1,560,000

2.3 Environmental Analysis

The alternatives for Needs Area 1 were screened for potential direct and indirect environmental impacts in accordance with DEP's 1996 CWMP Guidelines. A brief discussion of how each one of the environmental factors may be impacted by each treatment alternative is presented in the following sections. A summary of the impacts is shown in Table 2-5.

2.3.1 Direct Impacts

The following discusses the direct impacts that may arise from septic systems, I/A systems, and extension of the Rockland Wastewater Collection System.

2.3.1.1 Historical, Archaeological, Cultural, Conservation, and Recreation

The construction of any of the proposed treatment methods would have no impact on the historical, archaeological, or cultural aspects of the Town. As described in detail in Phase 1, there are no known historical places within Needs Area 1.

2.3.1.2 Wetlands, Flood Plains, Agricultural Lands, and Environmentally Sensitive Areas

Each of the proposed wastewater treatment alternatives, if constructed, would have a temporary impact on wetlands, which takes up a large portion of each parcel. There is no impact to flood plains, agricultural lands, and/or environmentally sensitive areas. During the construction of the wastewater extension option, best management practices would be used to help minimize any disturbances to wetlands and potential priority habitats for rare species.

Also, there would be one stream crossing associated with the sewer extension option, which could be accomplished by directional drilling. Prior to construction, a Notice-of-Intent would be developed and submitted to the Town's Conservation Commission for approval.

Septic and I/A systems in this area would be sited such that buffer zones to wetlands would be followed. However, collection system extension would provide better protection to these wetland areas than a typical septic system.

2.3.1.3 Zones of Contribution of Existing and Proposed Water Supply Sources

The entire needs area is located inside Surface Water Protection Zones for the Hingham Street Reservoir. Therefore, extension of the existing collection system provides better treatment but would remove potential recharge for groundwater in the area. As the parcels in this area are currently undeveloped, the recharge of groundwater is a nonfactor.

2.3.1.4 Surface and Groundwater Resources

Properly functioning septic and I/A systems would provide some level of wastewater treatment if selected for future use in this needs area. A septage management plan where property owners are required to pump out their septic tank once every two years would help to maintain proper operation. Septic and I/A systems would keep effluent disposal systems onsite, which would help to recharge the local groundwater. The wastewater collection system extension would send flow to the Rockland WWTP, which discharges to the French Stream, which is an impaired water body. Due to the local surface water supply for the Abington Rockland Joint Water Works, sewer extension provides a better solution to protect the supply.

2.3.1.5 Displacement of Households, Businesses, and Services

Each of the wastewater treatment alternatives would result in only a minimal and temporary impact on residents or businesses during construction activities. None of the construction activity should result in the complete displacement of households, businesses, or other services. In addition, one lane of traffic would remain open during sewer construction to help minimize any inconvenience.

2.3.1.6 Noise Pollution, Air Pollution, Odor, and Public Health Issues

The I/A system option has pumps and/or blowers, and these may cause minimal noise pollution. Brief odor emission can occur during septic tank pump outs for the septic system or I/A option. A typical septic system does not contain any mechanical equipment; therefore, it should not cause any form of noise or air pollution. Any of the wastewater options would provide for proper handling of sewage, minimizing the potential public health issues associated with any failing septic systems.

2.3.1.7 Violation of Federal, State, or Local Environmental and Land Use Statutes

All the alternatives would be designed, constructed, and operated in accordance with all federal, state, and local environmental and land-use statutes, regulations, and plans.

2.3.2 Indirect Impacts

For this analysis, it has been determined that the wastewater alternatives will result in minimal indirect impacts. Based on the surrounding area, which is primarily commercial property, there are no impacts or changes to the land use patterns in the needs area. For the sewer extension option, there may be minimal population growth on parcels that meet the Town's residential zoning requirements.

Table 2-5 Environmental Impacts for Shortlisted Alternatives for Needs Area 1 – Weymouth Street

Treatment Alternatives	Environmental Impacts							
	Direct							Indirect
	Historical & Archeological	Wetlands, Floodplains & Habitats	Water Supply Protection	Surface & Groundwater Resources	Displacement of Households	Noise & Air Pollution	Violation of Statutes	Population Growth and Land Use Changes
Septic Systems	N	T	N	M	N	N	N	N
I/A Systems	N	T	N	M	N	M	N	N
Collection System Extension	N	T	N	M	N	N	N	M

Legend:

M= Minimal

N= None

T= Temporary

2.4 Institutional Arrangements

The use of new septic systems would require the approval of the Town's Board of Health. If I/A systems are selected, it may require the Board of Health to review DEP mandated annual inspection reports for these types of systems. The wastewater collection system extension option would require additional labor from the Town's WWTP personnel to maintain the collection system.

2.5 Flow and Waste Reduction

Several types of flow and waste reduction methods were discussed in Phase 2 of the CWMP. Some specific examples of flow and waste reduction measures include the following:

- Reducing I/I into the collection system
- Water Conservation
- Land use and development regulations
- Industrial reuse, recycling, and pretreatment programs
- Use of onsite facilities (Septic and I/A Systems)
- Pollution Prevention Initiatives

The reduction in wastewater volume allows for minimized collection, treatment, and effluent disposal processes. Water and thereby wastewater use habits start at the source with each individual property owner. In order to realize significant water use reductions, it is the responsibility of the community and should be taken on as a Town-wide initiative. Infiltration can be reduced through collection system rehabilitation and replacement, which are significant projects that must be undertaken by the Town. Private sources of inflow can be reduced and removed by a concerted effort of everyone in the Town by investigating any illicit connections such as roof leaders and sump pumps and disconnecting them from the sanitary sewer system.

Regarding the pollution prevention initiatives, the Town of Rockland should consider the implementation of a Septage Management Plan (SMP) for the management of onsite septic systems. The general intent of the SMP is to implement appropriate regulations, controls, and/or guidelines to ensure the proper operation of systems in areas where onsite treatment and disposal methods are recommended as a long-term solution. In addition, a program to investigate private illicit connections can be implemented. If needed, the Town and Sewer Department can implement programs to assist homeowners with removing these connections by conducting the investigations and assisting in part or whole of the costs to remove the connections.

2.6 Residuals Disposal

For onsite systems (Septic and I/A), the residuals are typically pumped out of the septic tanks or equalization tanks on a bi-annual basis. The septage is then transported and disposed of at a DEP-approved septage treatment facility or area WWTF.

2.7 Location of Facilities

The Town's WWTP would treat the wastewater from the proposed sewer extension. No new pump stations are needed for the sewer extension.

2.8 Revision of Waste Load Allocation

A waste load allocation (WLA) is the portion of a receiving water's assimilative capacity that is allocated to one of its existing or future point sources of pollution. Water quality based effluent limits (WQBEL) for discharge permits are determined by the WLA. Individually, not including other needs areas or expansion within already sewered areas, the addition of wastewater flows from Needs Area 1, estimated at 1,450 to 34,800 gpd during Phase 2, would require the Town to increase their permitted average daily flow of 2.5 MGD. The Town continues to work on I/I removal as part of the existing capacity issues at the plant. This is discussed later in the report. It is unlikely that a permit increase would occur as the French Stream is already impaired.

2.9 Phased Construction

If septic systems or I/A systems are selected for future wastewater treatment, then individual systems should be replaced as existing septic systems fail over the 20-year planning period. Prior to property owners being able to connect to the proposed wastewater collection system extension option, it would be necessary for the sewer transmission pipes to be constructed, tested, and approved to accept wastewater.

2.10 Flexibility and Reliability

The wastewater management alternatives would be designed to be flexible and reliable so that any unforeseen circumstances could be accommodated in a timely manner. All infrastructure and wastewater treatment would be designed in accordance with the New England Interstate Water Pollution Control Commission's (TR-16) Guide for the Design of Wastewater Treatment Works.

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Section 3 Groundwater Discharge Evaluation

3.1 Introduction

This section of the Phase 3 report continues the discussion and analysis for potential groundwater discharge sites within the Town of Rockland. The evaluation was conducted for Rockland due to the EPA Order and general need for alternative solutions for connecting new sewer users to the existing collection system due to flow and capacity issues at the existing WWTP. Groundwater disposal was investigated for discharge of wastewater from Needs Area 1, potentially shedding flow from the existing collection system, and potentially to add an option for WWTP effluent discharge other than the existing surface water discharge.

The analysis in this Phase of the CWMP further develops the desktop evaluation in Phase 2 and shortlists the potential groundwater locations based on feedback from key stakeholders and members of the Town. The shortlisted sites were be evaluated for effluent disposal from the existing WWTP and a combination of a new decentralized WWTF plus effluent disposal. Cost estimates are provided for each option as well as preliminary flow estimates for effluent disposal. To confirm the suitability of an effluent disposal site, mapping and subsurface investigations and modeling of groundwater flow are required. These additional investigations and analyses are not included in the scope of this CWMP. The basis for each location and shortlisting of options is discussed in detail below.

3.2 Summary of Shortlisted Alternatives

The evaluated locations for alternative groundwater discharge sites in Phase 2 of the CWMP included the following seven locations:

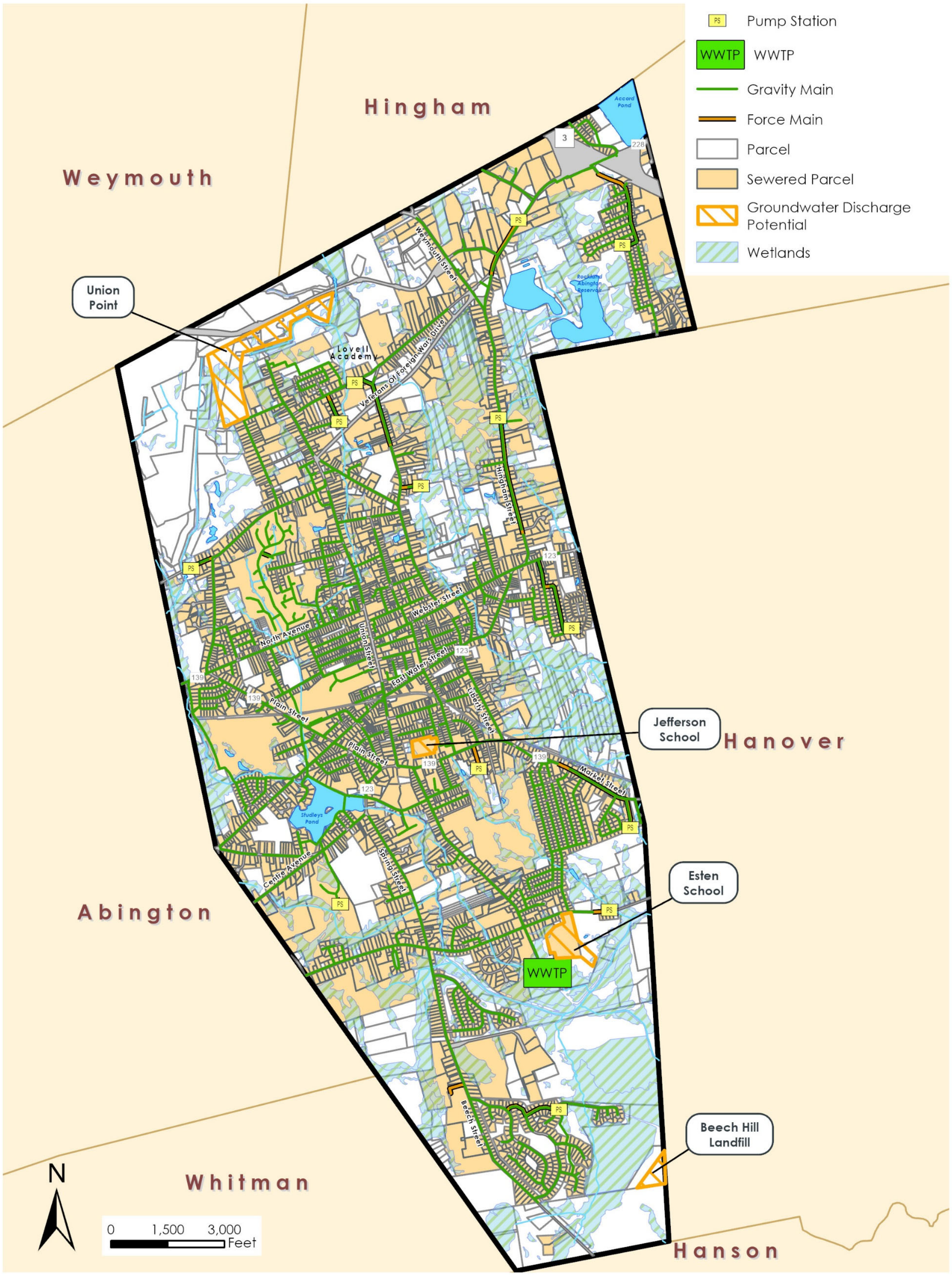
- Union Point
- Rockland Golf Course
- Harmon Golf and Fitness Club
- WWTP Land
- Esten School Land
- Southern Lands
- McCarthy Farm

Upon communication with the Town and key stakeholders, five sites were removed as suitable locations and an additional two sites were added to the final shortlisted sites including the following locations:

- Union Point (reduced in size)
- Jefferson School
- Esten School Land
- Beech Hill Landfill

It was determined that most of the Union Point area is planned for development, the golf courses are encumbered by unsuitable soil and high groundwater, the Southern Lands and McCarthy Farm Open Space would likely not pass public approval, and the WWTP land had unsuitable soils and high groundwater. It appears a portion of the Beech Hill Landfill land is adequate for effluent disposal and the Jefferson School land could be re-purposed for effluent disposal. Figure 3-1 shows the shortlisted disposal areas identified.

Figure 3-1 Groundwater Disposal Locations



3.3 Flow Estimates

Several scenarios were analyzed as part of the groundwater discharge evaluation. These include effluent disposal from the existing WWTP and new decentralized WWTF with effluent disposal for Needs Area 1 and potential flow shedding from the existing collection system. For effluent disposal from the existing WWTP, the evaluation included improvements needed at the existing WWTP to meet a groundwater discharge permit (total nitrogen and nitrate of 10 mg/L) and infrastructure to convey wastewater from the WWTP to the disposal site. This will involve a pump station and piping to convey wastewater to each site. The amount of flow to each site is based on the usable area of the site for groundwater disposal. This would provide an option for the Town to reduce the amount of flow to the French Stream with minimal impacts to the existing system and avoids constructing a new WWTF. The second scenario evaluates constructing a new decentralized WWTF with effluent disposal. The only site that would accommodate a new WWTF and have remaining room for effluent disposal would be Union Point. The Union Point area includes receiving flow from Needs Area 1 and portions of the existing northern collection system to "shed flow" to alleviate capacity issues at the WWTP. In addition, it is likely that the development at Union Point would be interested in using a part of this facility as a solution to their wastewater management needs in the future, potentially sharing in capital and operating costs. Flow estimates and the portions of the collection system and Needs Area 1 are provided in each section below.

3.3.1 Needs Area 1

Flows were estimated based on MassDEP Title 5 design and TR-16 Guidelines. Future build-out flows were calculated based on the number of undeveloped parcels and the quantity of commercial or residential buildings that could be developed on the parcel. For residential flow, four three-bedroom homes were assumed as the potential future residential development. For commercial flow, four offices and one hotel were assumed as the potential future commercial development. Peak daily flows were estimated using 110 gpd/bedroom for the residential homes and hotel, and 75 gpd/1,000 square feet were used for the offices. Table 3-1 summarizes the wastewater flows from Needs Area 1 for potential residential and commercial build-out of the undeveloped parcels.

Table 3-1 Wastewater Flows from Needs Area 1

Building Use	Unit	Quantity	MassDEP Title V Flow (gal)	Flow (gpd)
Residential				
Single Family Home	Bedroom	12	110	1,320
Commercial				
Hotel	Rooms	300	110	33,000
Office	1,000 SF	23.6	75	1,770
Total				34,770

3.3.2 Flow Shedding

Reducing flows to the Rockland WWTP can alleviate capacity issues at the facility. By adding additional effluent disposal or a new decentralized WWTF, flow can be "shed" from the existing collection system. Flows from the northern portion of the existing collection system can be redistributed to a new decentralized WWTF and effluent disposal at the Union Point site, reducing flow to the Rockland WWTP.

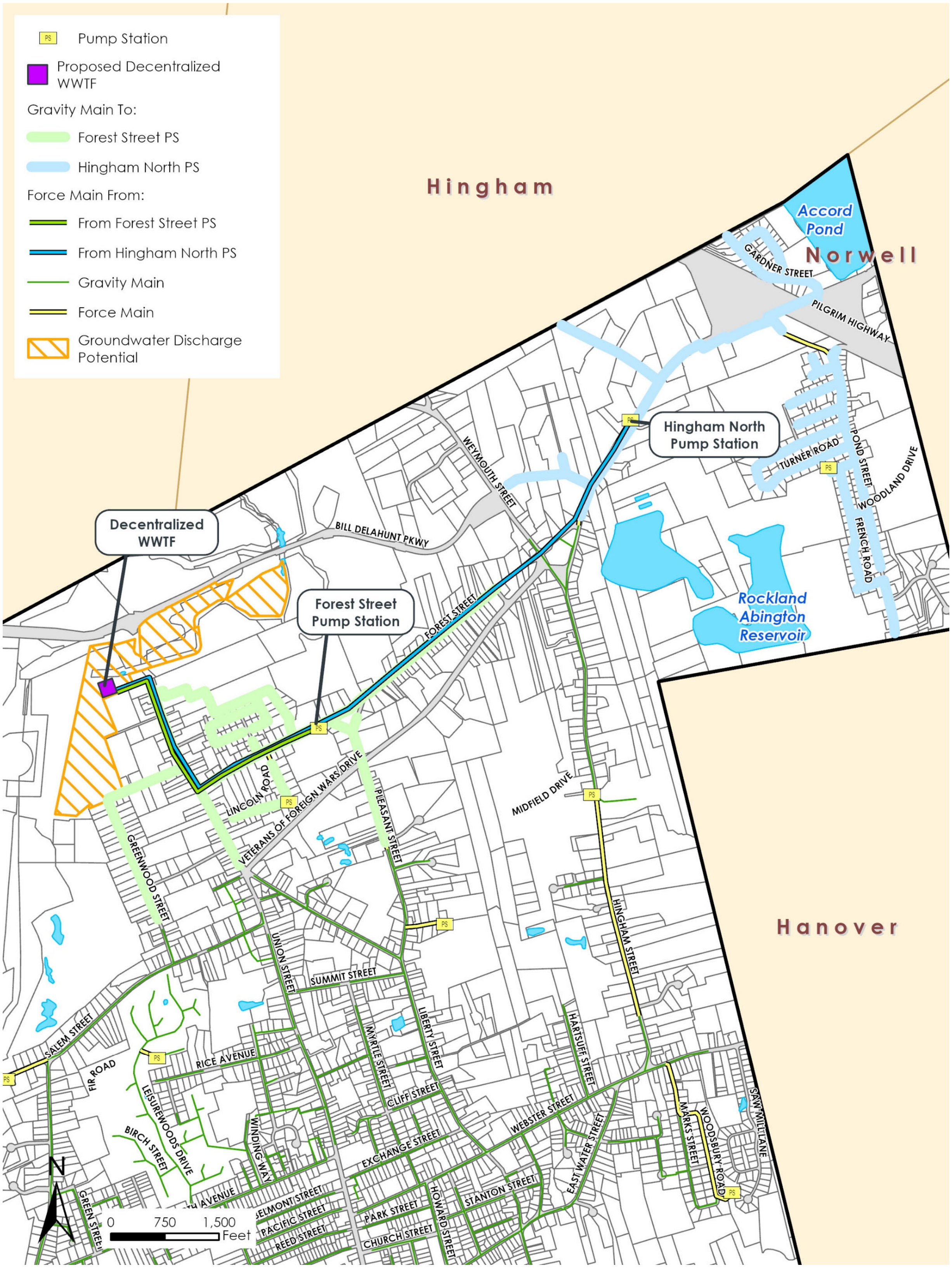
3.3.2.1 Northern Collection System

Flow from the northern collection system of Rockland can be redirected via the existing Forest Street Pump Station and/or the Hingham Street North Pump Station to the Union Point site to a potential decentralized WWTF for groundwater discharge. The Forest Street Pump Station has a rated capacity of 400 gpm, which equates to 576,000 gpd. The Hingham Street North Pump Station has a rated capacity of 1,000 gpm which equates to 1,440,000 gpd. These can be considered peak daily flows.

Forest Street Pump Station collects flow from parcels along Greenwood Street, Oregon Avenue, Lincoln Road, Pleasant Street, Forest Street and Union Street. Redirecting flow from this pump station to the Union Point discharge site would reduce the flow in the existing collection system by approximately 240,000 gpd on an average daily basis assuming a peaking factor of 2.4 per TR-16 guidelines. For Hingham Street North Pump Station, flow is collected from the Old Country Way Pump Station and from parcels along Reservoir Park Drive, Commerce Road, Gardner Street, Wilson Street, Colby Street, Turner Road, French Road, Pond Street, Nelson Road, and Hingham Street. This could potentially direct approximately 686,000 gpd of flow on a daily average basis to the Union Point effluent disposal site assuming a peaking factor of 2.4. If both pump stations were redirected to Union Point, a combined 926,000 gpd could be shed from the existing collection system. Based on usage and current buildout, flows would likely be less, but would still result in a significant flow reduction to the existing WWTP. If Needs Area 1 were also directed to Union Point, additional flow between 1,000 and 35,000 gpd would be added.

Redirecting flow to Union Point would require the rerouting of the force main of the Forest Street Pump Station and/or the Hingham Street North Pump Station to the decentralized WWTF and disposal site. Figure 3-2 shows the routing of the northern collection system to a decentralized WWTF with effluent disposal at the Union Point site.

Figure 3-2 Union Point Disposal Site Sewer Routing



3.4 Effluent Disposal Capacity

Four sites were evaluated for groundwater discharge, including Union Point, the Jefferson and Esten Schools, and the Beech Hill Landfill. Based on soil conditions, wetlands, required setbacks from wetlands and surface waters, and groundwater elevation, the usable disposal areas were reduced in size, shown in Figure 3-1. These areas were further reviewed to determine likely required dimensions/constructability of effluent disposal area. Estimated usable disposal area is summarized in Table 3-2 below. Additionally, based on a minimum loading rate of 1.5 gpd/square foot and a maximum loading rate of 4 gpd/square foot, disposal capacities are summarized in the table.

Table 3-2 Capacity of Effluent Disposal Sites

Site Name	Parcel Size (acres)	Usable Disposable Area (acres)	Disposal Capacity (gpd)	
			1.5 gpd/sq ft	4 gpd/sq ft
Beech Hill Landfill	16	1.9	124,100	331,100
Esten School	19	13	849,400	2,265,100
Jefferson School	6.5	3.8	248,300	662,100
Union Point	63	42	2,744,300	7,318,100

The values listed in the above table are peak daily flows. This is also based on a desktop evaluation and further study is required to determine the actual disposal capacity of each site. Refer to discussion below.

3.5 Sewer Routing to Effluent Disposal Sites

In order to alleviate effluent disposal capacity issues at the existing Rockland WWTP, a portion of final effluent could be pumped to the effluent disposal sites discussed above, limited by the capacity of each. This would not address average and peak flows processed through the facility, but would reduce flows discharged to the French Stream, which would bring the plant into compliance with its current NPDES permit.

In order to discharge treated effluent from the existing WWTP to groundwater, nitrate and total nitrogen must be reduced. Typical groundwater discharge permits contain limits for both parameters of 10 mg/L. In 2021, Wright-Pierce completed a WWTP evaluation for the Town of Rockland and provided several recommendations for improvements to the Rockland WWTP. To provide nitrogen removal, improvements to the secondary system of the Rockland WWTP would be required. This would include new equipment, upgrades to existing equipment/systems, and modifications of the existing secondary treatment process to convert to an A_20 process to achieve biological nitrogen and phosphorus removal. Upgrades highlighted by the 2021 evaluation are discussed in more detail in Section 6 of this report. The report concludes that with the proposed upgrades, total nitrogen levels in the effluent could be 8 mg/L. With these upgrades, a portion of the WWTP effluent could be conveyed to one or more effluent disposal sites identified. The below section discusses how flow could be conveyed to each site.

3.5.1 Union Point

As discussed above, Union Point appears to have ample area for effluent disposal. It is understood that this site is likely going to be used by the current developer for some or all of their own wastewater disposal needs. However, it is possible that a partnership between the developer and the Town could occur. For this reason, the site is continued for analysis. A new pump station at the WWTP would pump flow through approximately 15,300 feet of force main along Concord Street, north to the intersection of Union Street and Veterans of Foreign Wars Drive where piping would transition to approximately 2,900 feet of new gravity sewer, discharging effluent to the Union Point site for disposal. Figure 3-3 shows the potential sewer routing from the Rockland WWTP to the Union Point site for groundwater discharge.

3.5.2 Jefferson School

Jefferson School is an old public elementary school that is no longer in use. The school is currently slated for re-development into open space and/or a park. The parcel is suitable for effluent disposal. Flow would be delivered to Jefferson School via a new pump station at the WWTP via approximately 7,200 feet of force main along Concord Street and Market Street. Figure 3-4 shows the potential sewer routing from the Rockland WWTP to the Jefferson School site for groundwater discharge. Based on the size of this parcel, it is likely that an additional site would be required to reduce flows meaningfully at the WWTP.

3.5.3 Esten School

The R. Stewart Esten School is an elementary school with a large open field and abutting vacant land. The site is situated near the Rockland WWTP. The field and undeveloped area is suitable for groundwater discharge. Flow would be delivered to the potential site from the Rockland WWTP with a new pump station and approximately 1,300 feet of force main routing treated effluent across the WWTP property to the Esten School site for disposal via a cross-country easement. Figure 3-5 shows the potential sewer routing from the Rockland WWTP to the Esten School site for groundwater discharge.

3.5.4 Beech Hill Landfill

The Beech Hill Landfill has area of vacant land on the north part of the site, away from the landfill itself. Flow would be delivered from the Rockland WWTP via a new pump station and approximately 9,000 feet of force main routing treated effluent along Summer Street and Spring Street, transitioning to approximately 5,600 feet of new gravity sewer, which can convey the effluent to the final destination at the Beech Hill Landfill for effluent disposal. A cross-country easement is not likely due to crossing through conservation land. Figure 3-7 shows the potential sewer routing from the Rockland WWTP to the Beech Hill Landfill site for groundwater discharge. Based on the size of this parcel, it is likely that an additional site would be required to reduce flows meaningfully at the WWTP.

3.5.5 Effluent Disposal Technologies

Effluent disposal technologies that could be utilized at these sites were discussed in Phase 2. Detailed hydrogeological field investigations, infiltrative capacity of the soil, depth to groundwater, groundwater modeling, MassDEP regulatory setbacks and aesthetics will all play a role in the final selection of the most advantageous disposal technology for each disposal site. Conventional disposal technologies with relatively high allowable loading rates include open sand beds, subsurface leaching systems and subsurface leaching chambers. The allowable loading rate for drip dispersal is a maximum of 1.5 gpd/sf and although land requirements are at least twice that of conventional disposal, drip disposal can be used to alleviate high groundwater issues and would reduce clearing. Wicks can offer a lower cost solution with reduced area disturbance in at sites with very permeable soils and deep groundwater, or where semi-permeable lenses impede downward effluent flow as determined during detailed hydrogeological investigations. Spray irrigation has similar advantages and disadvantages and the main unique disadvantage for Rockland is that spray systems are only suitable for seasonal use and require full conventional disposal redundancy for winter operations.

Figure 3-3 Sewer Routing from Rockland WWTP to Union Point

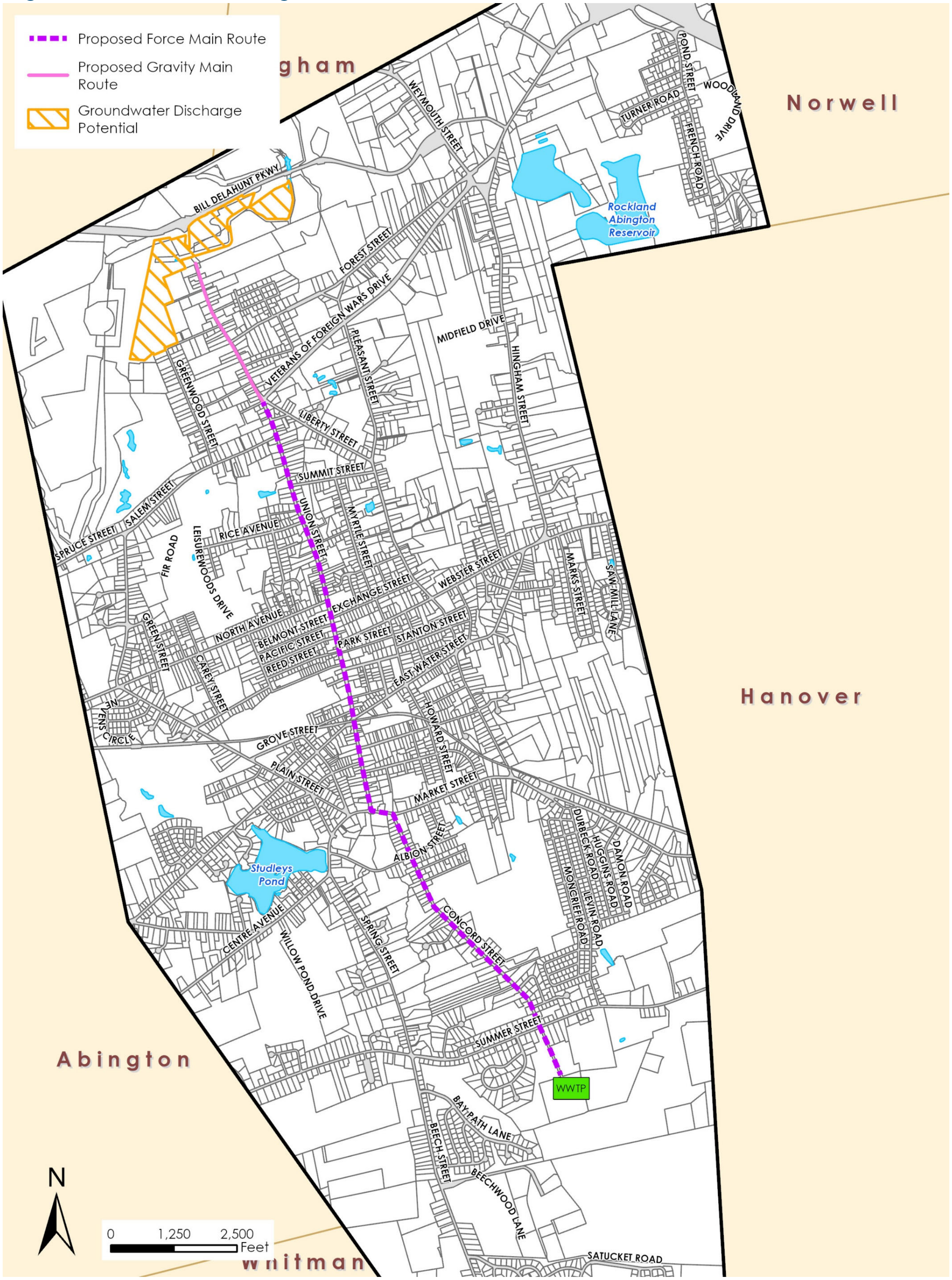


Figure 3-4 Sewer Routing from Rockland WWTP to Jefferson School

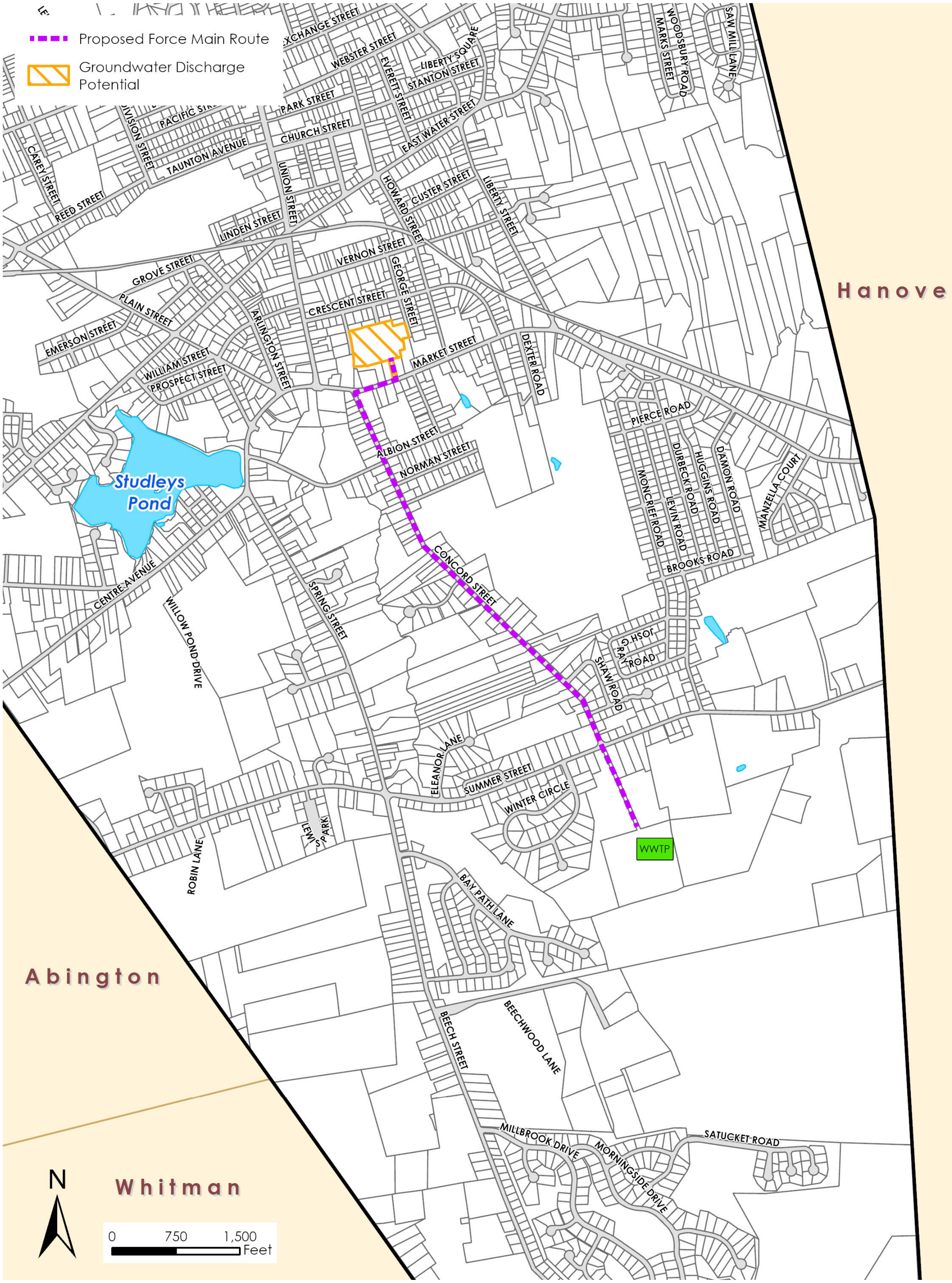


Figure 3-5 Sewer Routing from Rockland WWTP to Esten School

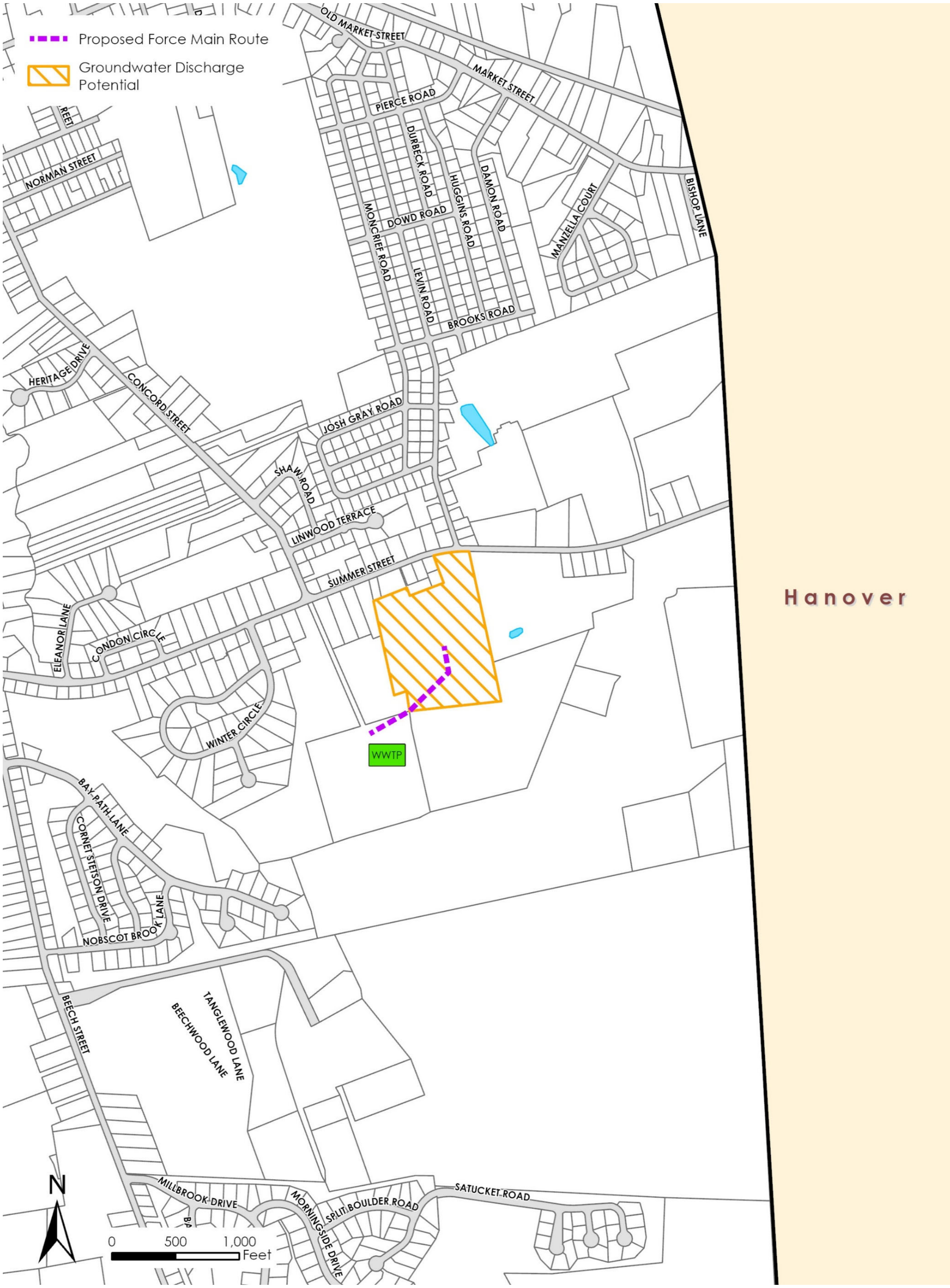
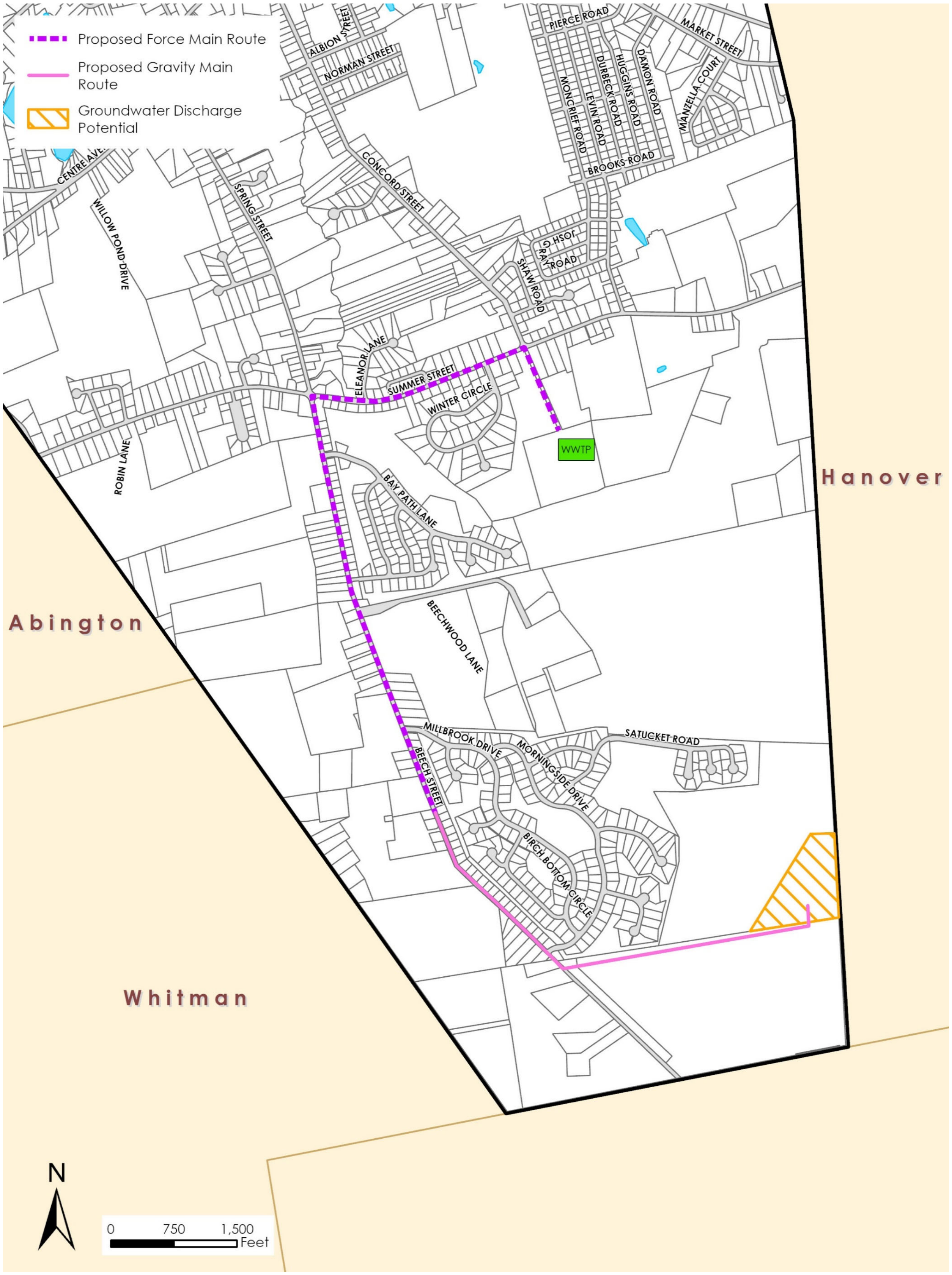


Figure 3-6 Sewer Routing from Rockland WWTP to Beech Hill Landfill



3.6 Decentralized WWTF

As discussed above, the Union Point Site can provide an area for effluent disposal. In addition to receiving flow from the existing WWTP, a new decentralized WWTF could be constructed on the site. A new WWTF at this site could receive flow from the existing northern collection system identified above, Needs Area 1, and be used by the developer of Union Point. Based on a WWTF sized to treat between 0.5 and 1.0 MGD (would need to be larger to accommodate developer's wastewater flow), an approximate area of 1 acre would be used for the WWTF. The Union Point site has a maximum effluent disposal capacity of between 2.7 and 7.3 MGD based on loading rates from 1.5 to 4 gpd/square foot. Utilizing 1 acre for the WWTF would provide ample disposal capacity for the purposes outlined above. The decentralized facility would include flow equalization receiving tanks, screening, biological treatment tanks, and likely effluent pumping. Biological treatment could be various technologies, as discussed in Phase 2, such as Membrane Bioreactors (MBR), Sequencing Batch Reactors (SBR), or Amphidrome®.

3.7 Cost Estimates

Several scenarios were considered to provide wastewater solutions for the Town. Cost analysis was performed for connecting the Needs Area and northern portion of the existing collection system to a new decentralized WWTF and to provide WWTP flow shedding via an additional groundwater effluent disposal site. The cost analysis was based on accepted engineering economic principles as stated in MassDEP Guidelines.

Effluent disposal costs can be highly variable and as such, has a large range of cost implications. Because of the variables, these costs are for planning purposes only. A hydrogeological investigation and evaluation will need to be performed on a potential site to determine if the site is favorable for effluent disposal. This type of evaluation can be very straightforward with basic field investigations and hydraulic modeling. If results are favorable, the cost for the investigation can be in the range of $50,000. However, if initial results are not favorable, costs can significantly increase to conduct additional evaluations. In addition, the larger the site to be investigated, the more expensive the evaluation becomes. For this reason, a cost has not been included in the tables below.

Once the hydrogeological results are favorable, the process of DEP approval and engineering design of the disposal system can begin. Based on recent projects, a general dollar/square foot of disposal area was used to estimate the construction cost for each disposal system.

In order to dispose of treated wastewater from the existing WWTP to a new disposal site, secondary system upgrades would be required as summarized in the 2021 WWTP evaluation. The construction costs for these improvements were ENR'd forward to today's dollars.

Sewer routing construction costs were based on construction of a new pump station, force main and gravity sewers from the WWTP to the respective effluent disposal sites.

Table 3-3 summarizes the estimated construction costs of adding effluent disposal at various sites and conveying flow from the Rockland WWTP to each disposal site discussed in prior sections. The effluent disposal costs are based on the 2 gpd/square foot loading rate, which will be a higher cost based on the increased amount of land required.

Table 3-3 Estimated Cost of Additional Groundwater Disposal for Rockland WWTP: ENR 13175

Site	1.1 MGD Capacity	2.7 MGD Capacity	0.12 MGD Capacity	0.25 MGD Capacity	0.85 MGD Capacity
	Union Point		Beech Hill Landfill	Jefferson School	Esten School
Effluent Disposal Cost ($)	$10,700,000	$25,700,000	$1,800,000	$2,900,000	$8,400,000
Rockland WWTP Secondary Upgrades Costs ($)	$16,000,000	$16,000,000	$16,000,000	$16,000,000	$16,000,000
Sewer Routing Cost ($)	$18,500,000	$18,500,000	$15,000,000	$6,100,000	$1,900,000
Total Costs	$45,200,000	$60,200,000	$32,800,000	$25,000,000	$26,300,000

The costs presented above are estimated construction costs, only. They do not include the hydrogeological evaluation, engineering fees, legal, and/or typical project financing fees. These are also planning level costs for comparison, only.

In addition to shedding flow from the existing WWTP, a new decentralized WWTF could be constructed at Union Point to shed flow from the northern collection system and Needs Area 1. Construction costs for a new WWTF are based on previous experience with other decentralized facilities. Effluent disposal and sewer routing costs are based on the same method listed above. A hydrogeological investigation/evaluation will need to be performed to determine if the site is favorable for effluent disposal, however, based on variability in the evaluations, a cost has not been presented in the table below. Sewer routing construction costs consider routing sewer from either Forest Street Pump Station or Hingham Street North Pump Station or both stations to the decentralized WWTF at Union Point. Table 3-4 summarizes the estimated construction costs for a new decentralized WWTF and groundwater disposal at Union Point. The Needs Area 1 costs are negligible as they would also flow to Hingham Street North Pump Station. For this study, it is assumed that a decentralized facility would be on a 1-acre portion of the parcel, sized for 1.2 MGD and not have a partnership with the developers.

Table 3-4 Estimated Cost of New Decentralized WWTF and Effluent Disposal at Union Point: ENR 13175

Collection System Routing	Forest Street Pump Station	Hingham Street North Pump Station	Both Pump Stations
Decentralized WWTF Cost ($)[1]	$26,500,000	$46,300,000	$56,500,000
Effluent Disposal Cost ($)	$5,900,000	$22,200,000	$31,100,000
Existing Sewer Rerouting Cost ($)	$3,300,000	$6,700,000	$10,000,000
Total Costs	$35,700,000	$75,200,000	$97,500,000

In addition to capital costs, a new facility would require significant operation and maintenance costs, including additional operators to run the facility.

Several options were analyzed for groundwater discharge of treated wastewater above. These options have impacts on Needs Area 1, the existing collection system, and plans for the WWTP and required improvements.

The first set of alternatives evaluated consists of utilizing effluent disposal sites for treated effluent at the WWTP. To complete this, nitrogen removal upgrades would be required at the WWTP. Should these be implemented, a pump station can be constructed at the plant, which would pump treated wastewater, prior to effluent flow metering and surface water discharge, to a groundwater disposal site. This would not alleviate average and peak flow issues for the WWTP processes but would reduce flow to the French Stream and alleviate permit compliance issues related to flow. The analysis completed for effluent disposal sites is desktop only at this time. Based on the analysis, it appears that constructing effluent disposal at the Esten School is the most viable option at this time. The site potentially has good disposal capacity and sewer routing from the WWTP can be accomplished cross-country, which would reduce construction costs (reduced pavement and utility disturbance, for example). It is also the closest site to the WWTP of the four options evaluated. The Town should consider this as a viable option for alleviating WWTP flow concerns if long-term I/I reduction does not adequately address the issue.

In addition to pumping treated effluent from the WWTP to satellite groundwater disposal locations, decentralized WWTFs were evaluated for viability to treat wastewater from Needs Area 1 and shedding flow from the existing collection system. Flow “shedding” would help to reduce influent flow to the existing WWTP, which would alleviate concerns of average and peak flow capacity. The Union Point area has the largest available land area for effluent disposal. With such a large available area, a WWTF could be constructed on 1-acre of site area and still allow room for effluent disposal. In addition, the site is located in the northern part of town, which is where the highest flow in the existing collection system is pumped and conveyed. Three options were reviewed to send flow from the existing collection system to a new decentralized WWTF at Union Point. The Forest Street pump station, Hingham Street North pump station, and a combination of both stations could have new force mains constructed to re-direct flow from the existing collection system to a new decentralized WWTF. Based on the pump station capacities, it appears that re-routing Hingham Street North or a combination of both stations would be the most viable option to fully utilize the Union Point area and to address flow issues at the existing WWTP. Due to the high cost of constructing a new facility and disposal area, it is likely that this option would only be viable if the developers of Union Point partnered with the Town. In addition, part of the area is sited as Open Space, which may lead to conflicts with public opinion on the best use of this land area.

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4

Section 4 Evaluation of Wastewater Collection System and I/I Control Plan

4.1 Introduction

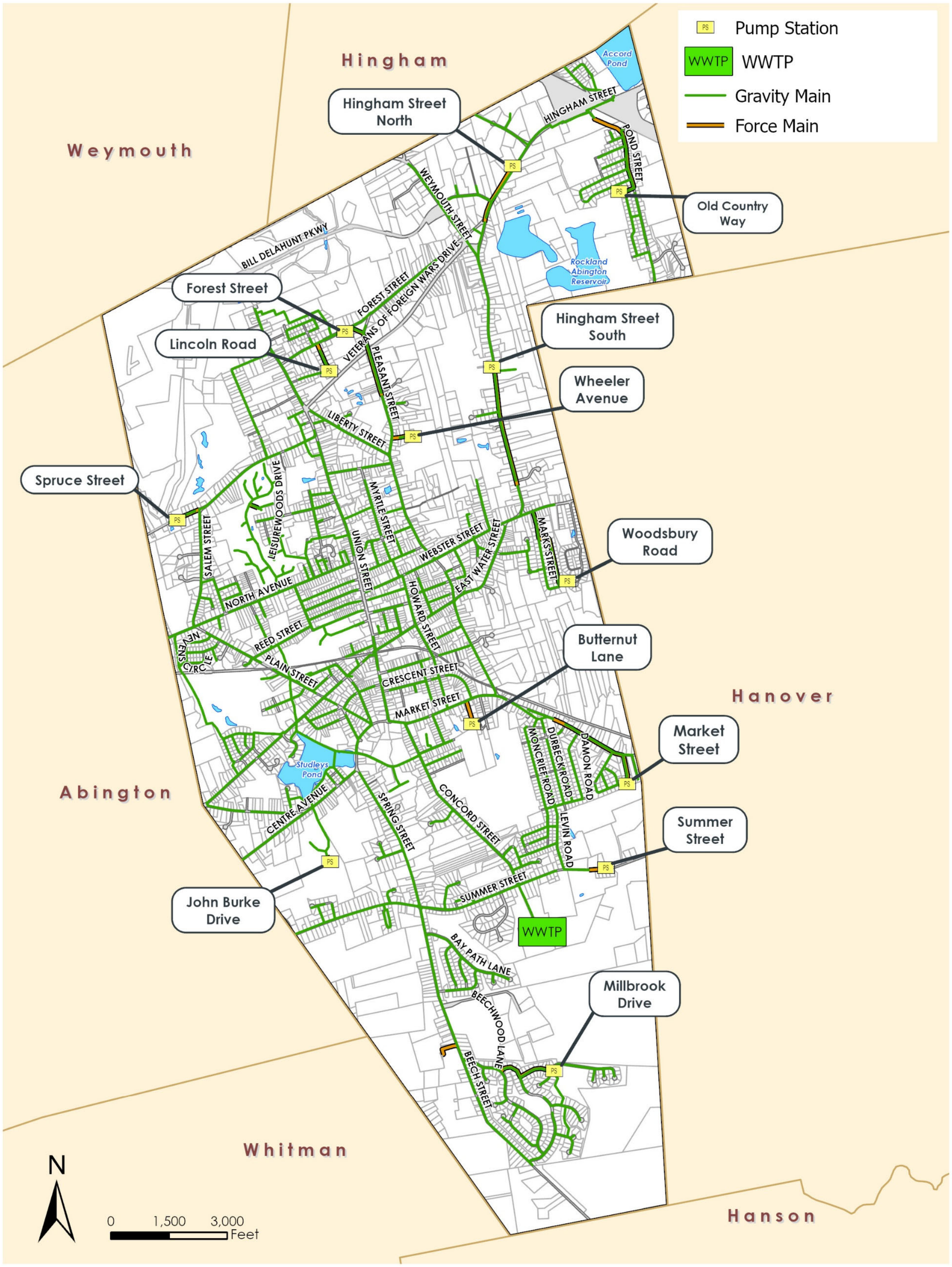
The Town of Rockland's wastewater collection system consists of 57 miles of gravity sewer and 1,600 manholes. Figure 4-1 shows the collection system map. The Town faces a serious problem in the collection system through the entry of clean water through infiltration and inflow (I/I). Infiltration is considered to be groundwater entering the system through pipes and manholes. Inflow is considered to be groundwater and surface water such as runoff and rain that enters the collection system through sump pumps, roof leaders, and catch basins that should not be connected to the sewer system. Based on continuing investigative work in the collection system, it is thought that over 50% of the average flow to the Rockland WWTP is from I/I. This is clean water that does not need to be treated at the WWTP and limits the capacity of the overall system from collection, through pumping stations, and at the wastewater treatment facility itself. The collection system is conveying so much I/I to the WWTP that it is routinely at or over its permitted flow capacity. During wet weather, the facility had to put in place a treatment bypass due to the amount of flow at the WWTP. Operational strategies for these scenarios are included in the High Flow Management Plan, discussed further in Section 6. In addition, the Sewer Department issued a sewer moratorium that barred new connections to the sewer system due to the flow capacity issues at the WWTP. Finally, due to flow capacity concerns, EPA and MassDEP have become involved, and EPA issued an Order in Summer 2022 with a major focus being flow capacity and I/I control. With aging infrastructure at the WWTP and new permit limits for phosphorus that require upgrades to the WWTP, I/I removal and flow capacity are high priorities for the Town in the 20-year planning period.

The collection system was originally constructed from the mid-60s to the early 90s. From the mid-60s to mid-70s, the primary material of construction for the sewer pipes is Vitrified Clay (majority of the collection system). There is some cast iron and reinforced concrete, but the pipes are predominantly clay. In 1980 and beyond, the new sewers constructed were predominantly PVC (plastic). As clay pipe ages and as soils shift, the pipes routinely crack and/or break, which allows groundwater infiltration into the system. Joint separation between pipe segments can also occur over time. In clay pipe, joints are only separated by 2-to-3-foot segments. Newer pipe materials have longer spacing between joints. In addition, groundwater infiltration occurs in manholes as they age and soils settle, which causes the pipe connections to separate from the manhole structure and the seams between manhole sections widen. Without regular investigation and routine replacement of this pipe, the issues compound. Similar issues occur with PVC pipe over time, but clay and concrete pipe are much more likely to fail. Capital expenditure is required to rehabilitate and/or replace the aging pipes and manholes on a continuous basis. To understand where best to spend capital, studies are required to identify trouble areas in the system.

The Town has been investigating I/I issues since 1999. Multiple Sewer System Evaluation Surveys (SSES) have been conducted to investigate sources of I/I in the sewer system in 2008, 2013, and 2021. In addition, the Sewer Department issues an annual I/I report.

Collection system capacity, prior I/I work, and recommended future I/I work is described below.

Figure 4-1 Wastewater Collection System



4.2 Wastewater Collection System

This section of the report discusses the existing wastewater collection system, capacity of the pipes, strategies and options for reducing peak flow volumes to the WWTP through the collection system, and I/I control work.

4.2.1 Summary of Past I/I Work

As mentioned above, the Town has been investigating I/I in the collection system since 1999. In 2021 AECOM developed an SSES Report for the Town. The SSES Report provided recommendations to reduce sources of I/I from the sewer system. The SSES work involved flow isolations and camera inspections of 8-inch diameter and larger sewer piping in the Town's sewer system. The evaluation found that there were 140 infiltration sources from main pipelines, manholes, and lateral connections that were cost-effective to remove. These sources are estimated to contribute approximately 219,300 gallons per day of I/I. The cost for rehabilitation of the identified manholes and main pipeline sections was estimated in September 2021 at $134,500.

The AECOM SSES found that there is more infiltration entering the sewer system from lateral service connections rather than from the main pipelines. AECOM recommended lining 69 lateral service connections that are contributing to infiltration to the system. These service connections contribute an estimated 153,100 gpd of infiltration to the sewer system and would cost approximately $674,900 to rehabilitate. The main concern with addressing service connections is who owns the pipe, individual homeowner or the Sewer Department, and who pays for the rehabilitation work. In Rockland, the homeowner owns the lateral service connection from the building connection to the main (entire pipe for the service connection).

AECOM also recommended further investigation of five pipe segments located near Memorial Park School to receive CCTV inspection during a high groundwater period to determine the pipe condition and any sources of infiltration. The report can be found in Appendix B.

The Town has also taken other measures to reduce I/I from the system. During the construction of the new elementary school, the main piping of an abandoned sewer system previously connected to a combined sewer overflow (CSO) was plugged. Another source of infiltration was removed on West Water Street by repairing the breaks in the sewer line that were discovered from camera inspections. Additionally, repair of various mainline breaks in the collection system was conducted that assisted in removing infiltration.

During Fall 2022, the Sewer Department developed a bid package to complete the recommended work from the 2021 SSES that involves 78 infiltration sources in existing sewer manholes and main pipelines that are estimated to contribute approximately 68,000 gallons per day of infiltration. Green Mountain was awarded the project in early March 2023 and plans to complete the work between April and August of 2023, which will involve manhole and pipeline lining.

In December 2022 the Sewer Department developed a letter of intent regarding an I/I control plan that was submitted to MassDEP. The letter is attached in Appendix B. The purpose of the letter was to outline prior SSES, and I/I control work and to provide the plan and schedule for future work. Future work is indicated to start in Spring 2023, which will involve a Town-wide flow monitoring program to better define problem areas and baseline I/I in the system. The data will be used to further develop the Annual I/I Control Program, which will consist of inspection, private inflow removal program, television inspection, manhole inspections, and smoke testing. The program is planned to be phased into 3 projects over 4 years, with rehabilitation projects occurring after each study phase. The engineer for the first phase has been selected and awarded the contract in early March 2023. The flow monitoring is slated to begin in conjunction with the rehabilitation work in Summer 2023. 15 flow meters are currently proposed to be installed throughout the system. The flow monitoring data will be used to evaluate removal of I/I after rehabilitation/replacement projects are complete.

The annual program is summarized in a table in the letter to MassDEP, included as Table 4-1 below.

Table 4-1 Annual I/I Program Summary Table, Created by Weston & Sampson

Fiscal Year	Calendar Year/Month	Project Name	Scope	Subarea(s)	Sewer Length (lf)	Manholes	Estimated Cost[2]
FY 2023	Spring 2023	Year 1 Program	Town-wide meeting program and GIS-based Depth-to-Groundwater Analysis	-	-	-	$150,000
Phase 1							
FY 2024	Spring 2024	Year 2 Infiltration	Manhole inspections and television inspections	-	34,000	170	$150,000
FY 2025	Spring 2025	Year 3 Infiltration	Manhole inspections and television inspections	-	34,000	170	$155,000
FY 2026	Spring 2026	Year 4 Infiltration	Manhole inspections and television inspections	-	34,000	170	$160,000
FY 2027	Summer 2026 – Spring 2027	Year 2 to 4 Inflow	Smoke testing, dye testing/flooding with TV, and building inspections	-	102,000	-	$200,000
FY 2028	Design – Summer 2027 Bid – Fall/Winter 2027 Construction – Spring 2028	Year 2 to 4 Rehabilitation	Sewer System Rehabilitation – cost effective and structural defective rehabilitation	-	TBD	TBD	$1,500,000[1]
Phase 2							
FY 2029	Spring 2029	Year 5 Infiltration	Manhole inspections and television inspections	-	34,000	170	$170,000
FY 2030	Spring 2030	Year 6 Infiltration	Manhole inspections and television inspections	-	34,000	170	$175,000
FY 2031	Spring 2031	Year 7 Infiltration	Manhole inspections and television inspections	-	34,000	170	$180,000
FY 2032	Summer 2031 – Spring 2032	Year 5 to 7 Inflow	Smoke testing, dye testing/flooding with TV, and building inspections	-	102,000	-	$220,000
FY 2033	Design – Summer 2032 Bid – Fall/Winter 2032 Construction – Spring 2033	Year 5 to 7 Rehabilitation	Sewer System Rehabilitation – cost effective and structural defective rehabilitation	-	TBD	TBD	$1,500,000[1]
Phase 3							
FY 2034	Spring 2034	Year 8 Infiltration	Manhole inspections and television inspections	-	34,000	170	$191,000
FY 2035	Spring 2035	Year 9 Infiltration	Manhole inspections and television inspections	-	34,000	170	$197,000
FY 2036	Spring 2036	Year 10 Infiltration	Manhole inspections and television inspections	-	34,000	170	$203,000
FY 2037	Summer 2036 -Spring 2037	Year 8 to 10 Inflow	Smoke testing, dye testing/flooding with TV, and building inspections	-	102,000	-	$240,000
FY 2038	Design – Summer 2037 Bid – Fall/Winter 2037 Construction – Spring 2038	Year 8 to 10 Rehabilitation	Sewer System Rehabilitation – cost effective and structural defective rehabilitation	-	TBD	TBD	$1,500,000[1]

1. Estimated costs includes construction and engineering
2. Estimated unit cost is based on 3-4% increase from previous year

	Infiltration
	Inflow
	Rehab/Construction

After rehabilitation work, it is important to perform post-construction flow-monitoring to establish how much I/I was successfully reduced from the system and if the WWTP has seen a reduction in flow or whether groundwater has migrated and entered at another location in the collection system. The steps outlined above will help to identify and remove I/I within the existing system. Further studies beyond those noted above are not envisioned as necessary at this time, as the previous work and proposed work encompasses typical methods to identify and remove I/I. The Town is committed to addressing I/I removal in the system.

4.2.2 Existing System Capacity Analysis

For some communities, during a CWMP, it becomes apparent that a hydraulic model or capacity analysis is required for their collection system piping. This is typically triggered by a documented history of Sanitary Sewer Overflows (SSOs) or feedback from the Sewer Department that there are repeated issues in certain parts of the collection system during high flows. This is not the case for Rockland. Good design practice and guidance documents such as TR-16 suggest a pipe should be replaced with a larger diameter pipe when average flows reach 80% full pipe capacity. Rockland has a GIS database with pipe size, pipe slope, and other metrics that would populate a model to determine this. However, they do not have good flow data for their system. After the flow monitoring program, this should be rectified. It is recommended that after the flow monitoring program is conducted, the Town should consider building a hydraulic model for their system. This will assist in identifying trouble areas and also help determine where new connections could be made and whether pipes would need to be replaced to accept new connections. A hydraulic model for the overall collection system was not part of the scope of this evaluation.

4.3 Peak Flow Reduction Strategy

In 1999, the Town developed a High Flows Management Plan (HFMP), last updated in 2016, to identify actions that need to be taken at the WWTP and associated pump stations in the event of high flows. The HFMP outlines procedures to process high flows at the WWTP by diverting flows above 6 MGD to offline process tanks and when the storage capacity of the tanks is exceeded, flow is diverted to the outfall.

The EPA Order requires the CWMP evaluation to review strategies to reduce peak flow at the WWTP. The evaluation reviews inline storage options, such as a large pipe or box culvert placed in the collection system, and offline storage, such as above-ground holding tanks at the WWTP. In order to reduce or eliminate bypass events, flow equalization options were analyzed.

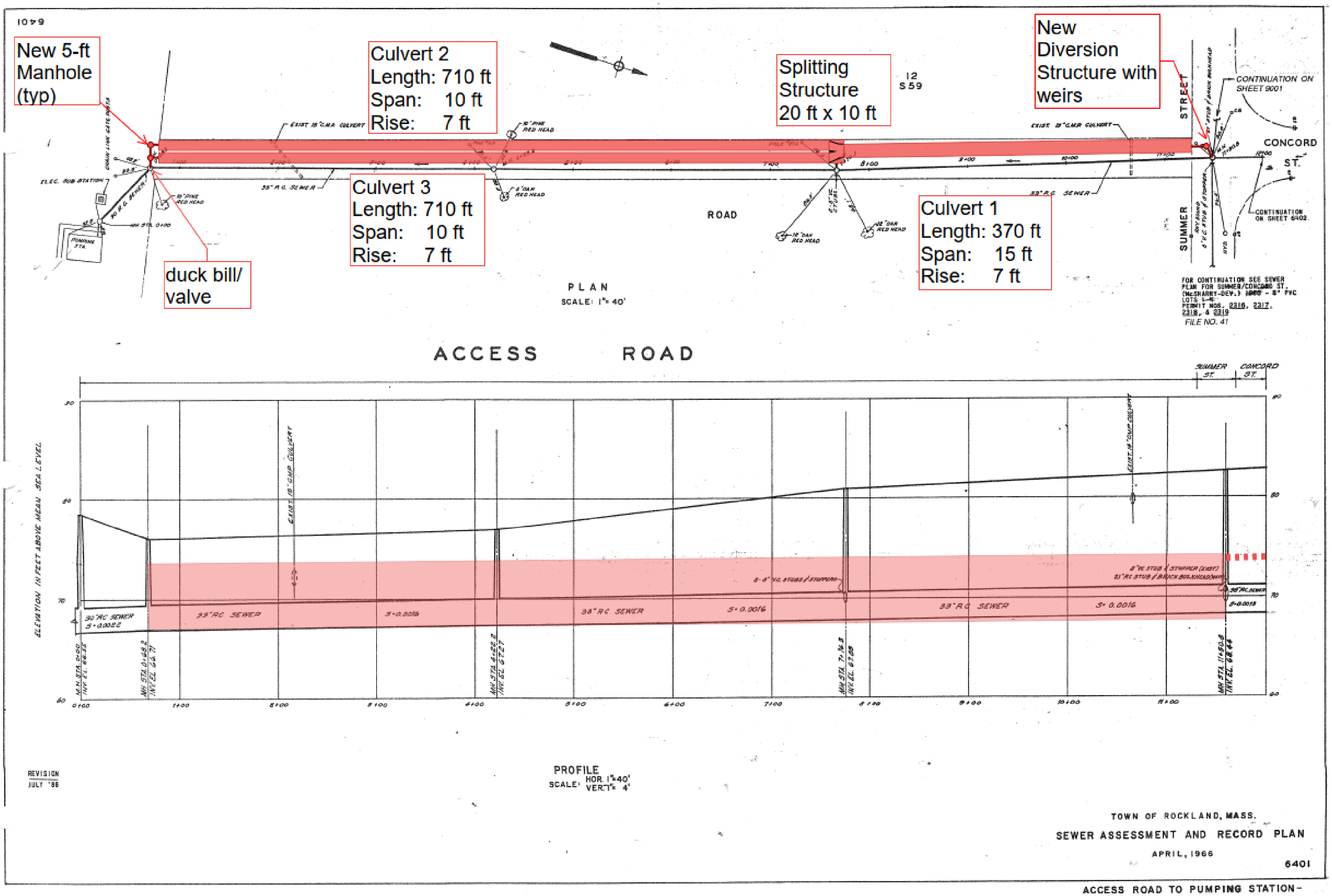
4.3.1 Storage Options

4.3.1.1 Inline Storage

The first option analyzed is inline storage, or storage within the piping network of the collection system. The existing collection system is widespread throughout Rockland and is predominantly made up of small diameter pipe. There is a large interceptor pipe that runs from Hingham Street to the WWTP that conveys the majority of flow in Rockland to the treatment facility. This 33-inch diameter interceptor, shown on Figure 4-1, runs along an access road to the WWTP from the intersection of Concord and Summer Streets. This access road could be an ideal location to construct a new inline storage system. The interceptor buried in the access road conveys all of the flow from the collection system to the WWTP and the access road only services the facility, meaning there are no homes and/or businesses that would be affected by construction of a new inline storage system.

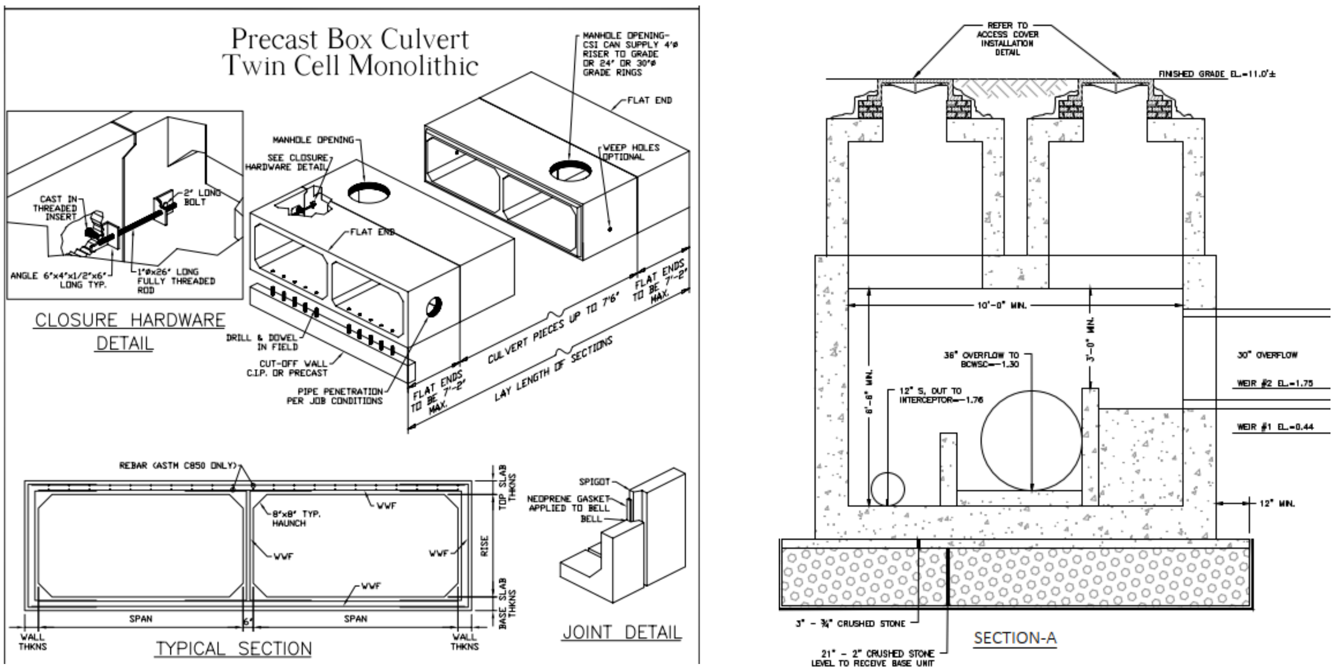
Inline storage typically consists of large diameter pipe or a box culvert, which creates a "wide-point" in the collection system. There is typically a structure constructed at the inlet and outlet of the wide point that ties the new structure into the existing collection system. The structures also typically consist of weirs, gates, and/or valves to control when flow is diverted to and from the wide point. This allows excess flow to be stored in the wide point during high flow events and then metered out once flows drop. For the location in the access road, a series of box culverts is the most logical option for inline storage. The access road is 1,100 feet long and 25-feet wide. The existing pipe runs in the center of the road from the Summer Street intersection to a point 370 feet towards the WWTP to a manhole. At this point, the pipe is directed toward the east edge of the road, which allows for more space between the outside wall of the pipe and the west edge of the road. Figure 4-3 illustrates a potential system of box culverts that could be constructed to provide inline storage for Rockland to reduce peak flows to the WWTP.

Figure 4-2 Inline Storage Layout



Currently, the culverts shown in Figure 4-3 assume there are no utilities that would interfere with placing the new culverts. This is likely not the case. Figure 4-3 illustrates a single culvert for the first 370 feet, which has less space available due to the existing sewer pipe running in the center of the road. This culvert would be 15-feet wide and 7-feet deep. At the outlet, a new splitting structure would be placed. This structure could divert flow to one of two or both culverts for the last 700 feet to the WWTP. The two 700-foot culverts would be placed side-by-side and be 10-feet wide and 7-feet deep. Two culverts are required as one wide culvert would be significantly more expensive to construct (thicker concrete walls required). Figure 4-4 shows the typical box culvert detail. Figure 4-4 shows a diversion structure designed for another community. The outlet of the two box culverts would enter into a new manhole and then flow to the existing WWTP headworks. A duckbill valve could be placed to ensure backflow does not occur during normal operations. This system of box culverts would provide 1 million gallons of storage volume.

Figure 4-3 Typical Box Culvert and Access/Diversion Structure Details

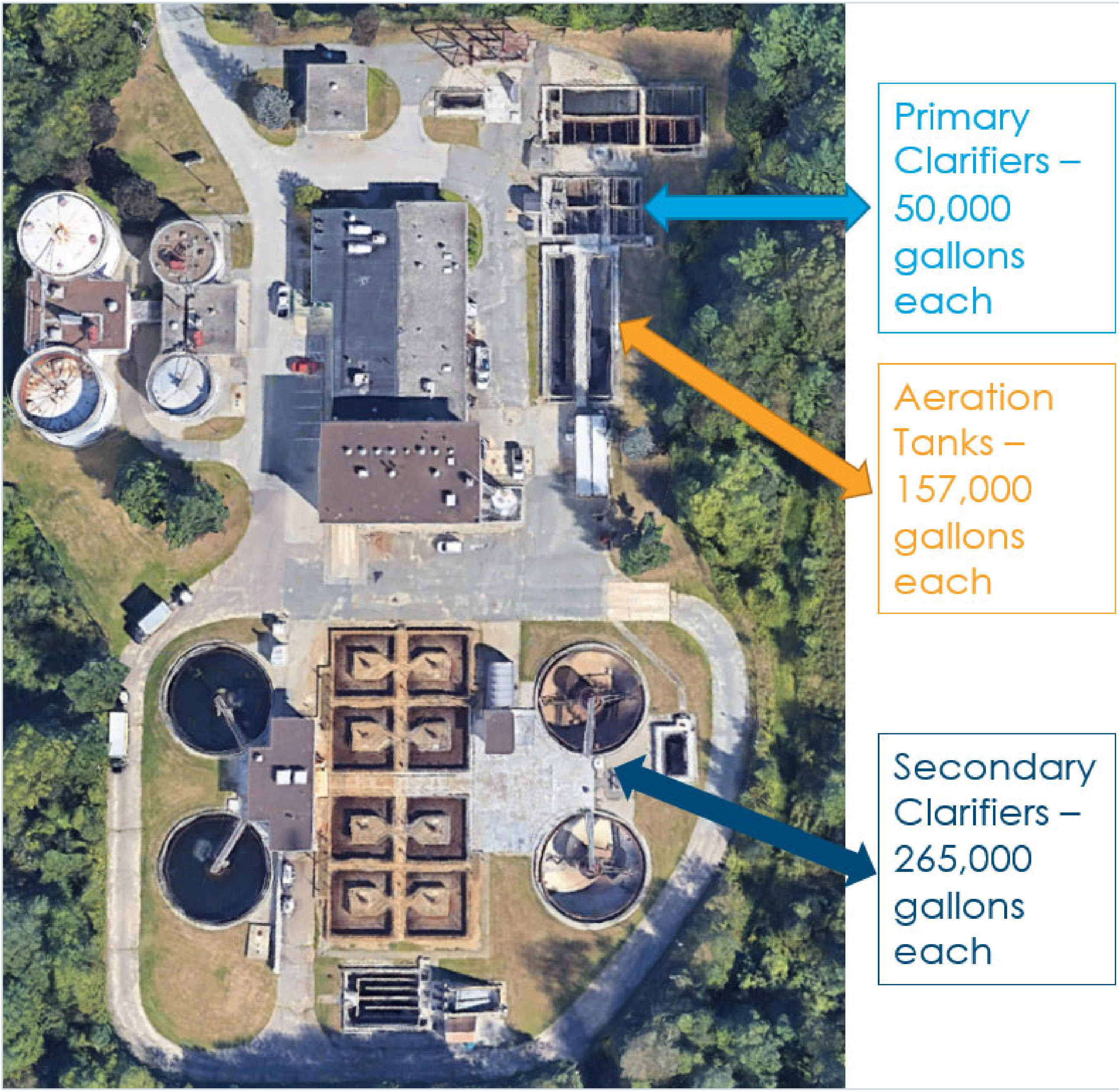


4.3.1.2 Offline Storage

The Rockland WWTP was originally constructed in 1964 with primary and secondary treatment. The tanks constructed during this phase consisted of two primary settling tanks, two aeration basins, and two secondary settling tanks. The facility was expanded in 1977. During the expansion, two additional primary settling tanks, aeration basins, and secondary settling tanks were constructed. In 1984, the 1964 tanks were taken offline. During subsequent years, the offline 1964 tanks were re-purposed for equalization storage tanks for high flow management. Figure 4-5 shows the tanks that are currently used for equalization and their volumes. In total, there is 950,000 gallons of available offline storage at the existing WWTP. The evaluation in 2021 concluded that the secondary settling tanks could be re-purposed for a new secondary treatment system designed to remove nutrients. In addition, one of the aeration basins was proposed to be used for sludge storage. If these tanks are repurposed, additional tankage could be constructed onsite for flow equalization. There is adequate space available for new tankage to be constructed. It would likely require being pumped to and pumped out of based on existing facility hydraulics and where the tanks could be located. If there is only 250,000 gallons of flow equalization volume remaining from old offline tanks after the WWTP upgrade, additional volume of 750,000 gallons could be added to equal the proposed inline storage noted in the above section. The area next to the old aeration tanks could be used for a large equalization tank. For budgetary purposes, an 80-foot by 80-foot by 20-foot tank will be assumed, which would provide approximately 950,000 gallons of storage volume. There would also be pumps, piping, and valves and electrical and instrumentation requirements for the new tank. 1 million gallons of storage volume is a good target for the flow equalization needs as the existing WWTP is only designed to treat up to 6 MGD and the future maximum daily flow in the facility evaluation is stated to be 7 MGD. 1 MG of storage volume would allow for fewer bypasses at the WWTP.

Offline storage can also be constructed in the collection system, such as at pump stations. This option was not investigated as the amount of land required, and the remote nature of any system constructed is less favorable to constructing tankage at the WWTP site.

Figure 4-4 Offline Storage Available at WWTP



4.3.2 Cost Estimate

In order to compare the inline and offline storage options, budgetary costs were prepared for both scenarios. These costs utilize conceptual layouts and sizing of tanks and equipment and include many assumptions that would need to be confirmed during design of either project, should they be undertaken. These costs are for comparison, only. Table 4-2 summarizes the construction costs for each option.

Table 4-2 Storage Option Conceptual Cost Comparison

Option	Construction Cost
Inline Storage Box Culverts	$6.5 million
Offline Storage Equalization Tank	$3.4 million

Table 4-2 shows that the offline storage tank option is more cost effective to undertake. Because there is room at the WWTP to construct the tankage, which requires much less excavation and paving than the inline storage box culvert option, this option is more favorable for flow equalization needs. Recommendations are discussed in Section 7.

5

Section 5 Evaluation of Wastewater Pump Stations

5.1 Introduction

There are 13 pump stations located throughout Rockland's wastewater collection system as shown in Figure 5-1. The pump stations were evaluated during Phase 1. The following sections summarize the evaluation, recommended upgrades, cost estimates, and implementation schedule. It should be noted that the implementation plan presented is one option, but the Town and Sewer Commission have WWTP upgrades, and I/I reduction work that are higher priority, which may result in pump station upgrades deviating from the implementation plan as noted below.

5.2 Pump Station Evaluations

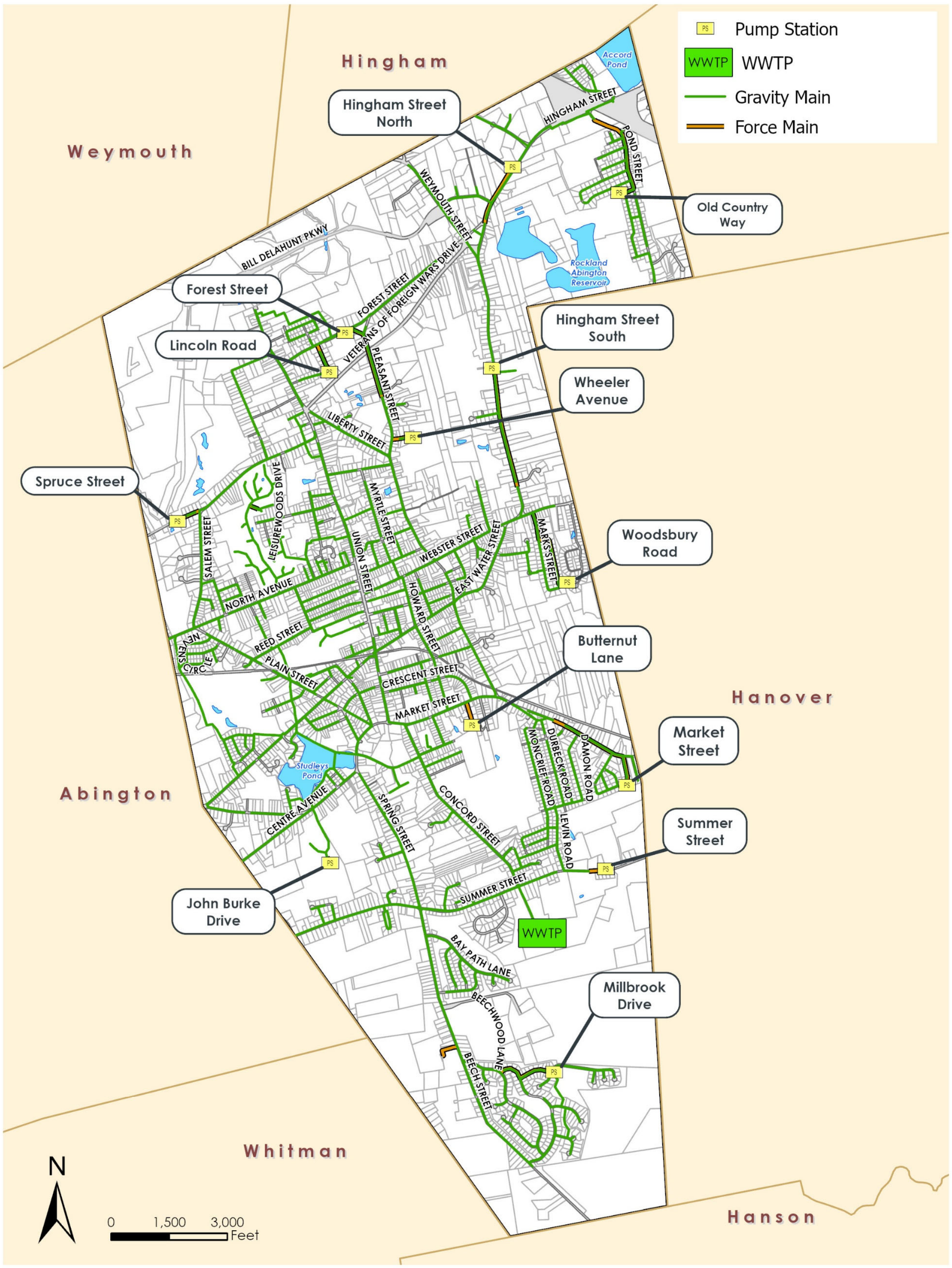
The condition assessments of the pump station assets were performed through the review of available information and field inspections. The field inspections were primarily based on visual and auditory observations, as it was limited to accessible area. The wet wells were not emptied and entered for inspection, only a visual inspection from above was conducted.

After the condition assessments, which were summarized with the design information for each station in Phase 1, a list of recommended improvements for each pump station was compiled along with a cost estimate. The following section summarizes each pump station and the recommendations. The recommendations are divided into normal and high priority items based on criticality. It is important to note that many of the stations and equipment are original and past their useful life, requiring replacement. Veolia, the contract operator for the WWTP and pump stations replaces equipment at each station as it fails under current practice.

It is important to note that drawdown tests were not conducted as part of the scope of this project. Most pump stations in Town are assumed to be fully "built out", as their service area is not likely to grow. Therefore, the original pumping capacity designed is assumed to be adequate for the future. The two exceptions to this are the pump stations on Hingham Street (North and South), as they are in a commercial area. Both stations would be affected by High Needs Areas 1 connecting to Town sewer (should that occur). Because of the existing flow capacity issues at the WWTP, it is not recommended at this time to connect additional sewer, and as such, the Hingham Street pump stations were assumed to have adequate capacity for the existing system. Each station should be evaluated during any preliminary design for upgrades/replacements.

In addition, there are scenarios presented in Section 3 discussing potential collection system flow shedding in the northern collection system and sending wastewater to a new decentralized WWTF at Union Point. Should this actually occur, pump station designs would need to be re-visited.

Figure 5-1 Pump Station Locations



5.3 Pump Station Descriptions and Recommendations

Field inspections occurred in the summer of 2022. The data collected on the pump station's individual assets was then used to determine overall condition and criticality to replace/upgrade. Recommendations were identified for each station and a capital improvement plan was developed for the next twenty years. Costs are presented in February 2023 dollars, ENR Index 13175.

Each cost estimate assumes a 4% inflation rate per year and a midpoint to construction based on the implementation schedule. The cost estimates also assume construction factors, such as general contractor overhead and profit, bonds and insurances at 22%. Engineering services consist of design, bidding, construction administration, and resident project representation and have been estimated based on similar projects. Legal and administrative fees are assumed to be 2%. Materials testing and Conservation Commission allowances for work within wetlands and/or waterfronts have been made on a case-by-case basis. A project contingency of 25% has been included for unknowns to the project.

5.3.1 Forest Street Pump Station

The Forest Street Pump Station is a submersible type station that was built in 1999. The pump station consists of a wet well, valve vault, and building. It is located across from 184 Forest Street and behind the Boxberry Lane condominiums. The pump station has a rated capacity of 400 gallons per minute (gpm) with 29 horsepower (hp) motors and an indoor natural gas generator to supply backup power.

The wet well interior, hatch, and concrete are in average condition and the piping is in fair condition due to corrosion. The access hatch does not have fall protection. It was noted that the level transmitter had broken conduit and appeared to be misaligned. Heavy grease buildup was noted. The davit crane base was in poor condition and should be replaced. The valve vault hatch is in average to fair condition but does not have fall protection. The valves and piping in the valve vault are in average to fair condition due to some corrosion. The building exterior was in fair to poor condition, specifically the roof trim being poor. The generator exhaust is not extended past the roof line, which was causing staining issues on the building. The building interior was in fair condition, but the paint was flaking and in generally poor condition. The interior equipment, which includes HVAC, instrumentation, electrical starters, fire alarm devices and controls, and the generator are all in fair condition but past their useful life.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. The HVAC and architectural improvements are normal priority recommended improvements. Table 5-1 summarizes the costs for the recommended improvements to the pump station. Table 5-2 summarizes the full project costs.

Table 5-1 Recommended Improvements for Forest Street Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Pump Replacement Valves and Piping Instrumentation and Controls Electrical Equipment and Motor Starters	Interior Painting Roof Trim replacement Hatch fall protection Davit Crane Base Building HVAC replacement	$245,000	$46,000	$291,000

Table 5-2 Forest Street Estimated Total Project Costs

Item	High Priority	Normal Priority	Total
Bare Costs	$245,000	$46,000	$291,000
Construction Factors	$54,000	$10,100	$64,000
Utility Allowance	$10,000	-	$10,000
Engineering Services	$200,000	$75,000	$275,000
Legal/Administrative	$6,200	$1,100	$7,300
Inflation to Midpoint	$124,000	$32,000	$155,000
Contingency	$129,000	$33,000	$162,000
Total Project Cost	$768,200	$197,200	$964,300

The total project costs are carried in the implementation schedule below.

5.3.2 Lincoln Road Pump Station

The Lincoln Pump Station is a submersible type station that was built in 1999. The pump station consists of a wet well, valve vault, and control panel with enclosure. It is located across from 109 Lincoln Road. The pump station has a rated capacity of 100 gallons per minute (gpm) with 7.5 horsepower (hp) motors. The station does not have permanent backup power but does have the ability to have a portable generator provide power as needed.

The wet well interior, hatch, piping and concrete are in good condition. The access hatch does not have fall protection. The valve vault hatch is in good condition but does not have fall protection. The valves and piping in the valve vault are in good condition. The enclosure interior equipment, which includes instrumentation and electrical gear, are all in good condition but past their useful life. The perimeter fencing is in fair condition.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. The fencing improvements are normal priority recommended improvements. Table 5-3 summarizes the costs for the recommended improvements to the pump station. Table 5-4 summarizes the full project costs.

Table 5-3 Recommended Improvements for Lincoln Road Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Pump Replacement Instrumentation and Controls Electrical Equipment	Hatch fall protection Perimeter Fencing	$125,000	$12,000	$137,000

Table 5-4 Lincoln Road Estimated Total Project Costs

Item	High Priority	Normal Priority	Total
Bare Costs	$125,000	$12,000	$137,000
Construction Factors	$27,500	$2,600	$30,100
Utility Allowance	$10,000	$-	$10,000
Conservation Commission Allowance	$2,000	$2,000	$4,000
Engineering Services	$200,000	$30,000	$230,000
Legal/Administrative	$3,300	$500	$3,800
Inflation to Midpoint	$88,300	$11,300	$99,600
Contingency	$92,000	$11,800	$103,800
Total Project Cost	$548,100	$70,200	$618,300

5.3.3 Wheeler Avenue Pump Station

The Wheeler Avenue Pump Station is a submersible type station that was built in 1999. The pump station consists of a fiberglass wet well and a control panel with enclosure. It is located across from 46 Wheeler Avenue. The pump station has a rated capacity of 30 gallons per minute with 2 horsepower motors. There is a generator hookup available for backup power but no permanent source.

Although the station is in overall fair to good condition, the equipment is past its useful life, there is no valve vault, and the fiberglass wet well is recommended to be replaced with a new precast concrete wet well. A new valve vault is recommended as well as replacement of the control panel and electrical equipment. There are several other stations similar to this that are discussed below and recommended to be replaced at the same time as part of one contract, as shown in the implementation schedule.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. Table 5-5 summarizes the costs for the recommended improvements to the pump station. Table 5-6 summarizes the full project costs.

Table 5-5 Recommended Improvements for Wheeler Avenue Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Station Overhaul - New precast wet well New valve vault New pumps New Instrumentation and electrical equipment	N/A	$391,000	-	$391,000

Table 5-6 Wheeler Avenue Estimated Total Project Costs

Item	High Priority
Bare Costs	$391,000
Construction Factors	$86,000
Utility Allowance	$10,000
Engineering Services	$300,000
Materials Testing	$5,000
Legal/Administrative	$9,700
Inflation to Midpoint	$160,400
Contingency	$200,500
Total Project Cost	$1,162,600

5.3.4 Summer Street Pump Station

The Summer Street Pump Station is a submersible type station that was built in 1999. The pump station consists of a fiberglass wet well and a control panel with enclosure. It is located across from 839 Summer Street. The pump station has a rated capacity of 40 gallons per minute with 2 horsepower motors. There is a generator hookup available for backup power but no permanent source.

Although the station is in overall fair to good condition, the equipment is past its useful life, there is no valve vault, and the fiberglass wet well is recommended to be replaced with a new precast concrete wet well. A new valve vault is recommended as well as replacement of the control panel and electrical equipment. There are several other stations similar to this that are discussed below and recommended to be replaced at the same time as part of one contract, as shown in the implementation schedule.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. Table 5-7 summarizes the costs for the recommended improvements to the pump station. Table 5-8 summarizes the full project costs.

Table 5-7 Recommended Improvements for Summer Street Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Station Overhaul - New precast wet well New valve vault New pumps New Instrumentation and electrical equipment	N/A	$391,000	-	$391,000

Table 5-8 Summer Street Estimated Total Project Costs

Item	High Priority
Bare Costs	$391,000
Construction Factors	$86,000
Utility Allowance	$10,000
Traffic Control Allowance	$5,000
Engineering Services	$300,000
Materials Testing	$5,000
Legal/Administrative	$9,800
Inflation to Midpoint	$161,400
Contingency	$202,000
Total Project Cost	$1,170,200

5.3.5 John Burke Drive Pump Station

The John Burke Drive Pump Station is a submersible type station that was built in 1999. The pump station consists of a fiberglass wet well and a control panel with enclosure. It is located in front of 47 John Burke Drive in the middle of a cul-de-sac. The pump station has a rated capacity of 40 gallons per minute with 2 horsepower motors. There is a generator hookup available for backup power but no permanent source.

Although the station is in overall fair to good condition, the equipment is past its useful life, there is no valve vault, and the fiberglass wet well is recommended to be replaced with a new precast concrete wet well. A new valve vault is recommended as well as replacement of the control panel and electrical equipment. There are several other stations similar to this that are discussed below and recommended to be replaced at the same time as part of one contract, as shown in the implementation schedule.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. Table 5-9 summarizes the costs for the recommended improvements to the pump station. Table 5-10 summarizes the full project costs.

Table 5-9 Recommended Improvements for John Burke Drive Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Station Overhaul - New precast wet well New valve vault New pumps New Instrumentation and electrical equipment	N/A	$391,000	-	$391,000

Table 5-10 John Burke Drive Estimated Total Project Costs

Item	High Priority
Bare Costs	$391,000
Construction Factors	$86,000
Utility Allowance	$10,000
Engineering Services	$300,000
Materials Testing	$5,000
Legal/Administrative	$9,700
Inflation to Midpoint	$160,400
Contingency	$200,500
Total Project Cost	$1,162,600

5.3.6 Hingham Street North Pump Station

The Hingham Street North Pump Station is a submersible type station that underwent a major upgrade in 2002. It is located across from the Best Western. It receives flow from the Old Country Way Pump Station and pumps to the Hingham Street South Pump Station. The pump station has a rated capacity of 1,000 gpm with 20 hp motors and an indoor diesel generator for backup power. The pump station consists of a wet well, valve vault, and building. Additionally, suction-lift pumps were added as backup to the submersible pumps.

The wet well concrete is in good condition with the interior concrete being in average condition. The hatch is in poor condition and does not have fall protection. The wet well has a lot of ragging build up. The wet well piping is in poor condition. The valve vault interior, hatch, and concrete are in good condition. The valve vault piping is in average condition. The exterior building brick façade is in good condition, but the trim is in fair condition. The building lighting and louver are in poor condition, otherwise the interior of the building is in good condition. The instruments are in good condition, but past their useful life. The generator is in fair to poor condition. The suction lift pumps and associated control panel are in good condition but past their useful life. During design of an upgrade, it should be determined if these pumps are still required. It is unclear why they were added to the station originally. The diesel fuel tank is located inside the building, which should be removed and located outside with containment.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. The HVAC and architectural improvements are normal priority recommended improvements. Table 5-11 summarizes the costs for the recommended improvements to the pump station. Table 5-12 summarizes the full project costs.

Table 5-12 Recommended Improvements for Hingham Street North Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	Normal Priority	High Priority	Normal Priority	Total
Pump Replacement Valves and Piping Instrumentation and Controls Electrical Equipment and Motor Starters New Generator	Interior Painting Hatch fall protection Wet well hatch replacement Building HVAC replacement Fuel tank replacement and containment	$515,000	$62,000	$577,000

Table 5-12 Hingham Street North Estimated Total Project Costs

Item	High Priority	Normal Priority	Total
Bare Costs	$515,000	$62,000	$577,000
Construction Factors	$113,000	$13,600	$126,600
Utility Allowance	$20,000	-	$20,000
Engineering Services	$250,000	$75,000	$325,000
Legal/Administrative	$13,000	$1,500	$14,500
Inflation to Midpoint	$255,100	$42,800	$297,900
Contingency	$227,800	$38,300	$266,100
Total Project Cost	$1,393,900	$233,200	$1,627,100

The total project costs are carried in the implementation schedule below.

5.3.7 Hingham Street South Pump Station

The Hingham Street South Pump Station is a submersible type station that underwent a major upgrade in 2002. It is located across from 497 Hingham Street. It receives flow from the Hingham Street North Pump Station. The pump station has a rated capacity of 1,800 gpm with 100 hp motors and an indoor natural gas generator for backup power. The pump station consists of a wet well, valve vault, and building. Additionally, suction-lift pumps were added as backup to the submersible pumps.

The wet well concrete, hatch, and interior are in good condition and the piping is in fair condition. The valve vault hatch and interior are in good condition and the concrete is in average condition. The valve vault piping is in fair condition and one of the valves looks like it may be leaking. There is no fall protection in either structure.

For the exterior building, the brick façade is in good condition, but the roof and trim are in poor to fair condition. For the interior of the building, the ceiling is in good condition, the walls are in fair condition, and the concrete slab is in average condition. The controls are past their useful life. The fence is in average condition with some vine growth. There is odor control at this station and it is only used during the summer.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. The odor control, HVAC and architectural improvements (new roof) are normal priority recommended improvements. Based on age, the generator should be replaced but it is currently in working condition and not a high priority. Table 5-13 summarizes the costs for the recommended improvements to the pump station. Table 5-14 summarizes the full project costs.

Table 5-33 Recommended Improvements for Hingham Street South Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Pump Replacement Valves and Piping Instrumentation and Controls Electrical Equipment and Motor Starters	Replace roof Hatch fall protection Building HVAC replacement Odor control New Generator	$400,000	$267,000	$667,000

Table 5-14 Hingham Street South Estimated Total Project Costs

Item	High Priority	Normal Priority	Total
Bare Costs	$400,000	$267,000	$667,000
Construction Factors	$88,000	$58,700	$146,700
Utility Allowance	$10,000	-	$10,000
Engineering Services	$250,000	$75,000	$325,000
Legal/Administrative	$10,000	$6,500	$16,500
Inflation to Midpoint	$212,200	$114,200	$326,400
Contingency	$189,500	$102,000	$291,500
Total Project Cost	$1,159,700	$623,400	$1,783,100

The total project costs are carried in the implementation schedule below.

5.3.8 Market Street Pump Station

The Market Street Pump Station is a submersible type station that was built in 1994. It is located behind the Rockland Highway Department. The station consists of a wet well, vault, and building. The pump station has a rated capacity of 250 gpm with 7.5 hp motors and an indoor propane generator for backup power.

The propane tank is located outside but has no containment. The wet well concrete, hatch, and interior are in good condition, but the hatch has no fall protection. The wet well piping and cable are in fair condition due to corrosion. The valve vault hatch, concrete, interior, and piping are in good condition, but there is no fall protection. The brick façade of the building is in good condition and the roof and trim are in fair condition. The interior of the building is in fair condition. The equipment is past its useful life, including the generator.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. The HVAC and architectural improvements are normal priority recommended improvements. Table 5-15 summarizes the costs for the recommended improvements to the pump station. Table 5-16 summarizes the full project costs.

Table 5-45 Recommended Improvements for Market Street Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Pump Replacement Instrumentation and Controls Electrical Equipment and Motor Starters Replace Generator	Perimeter fencing Replace roof and trim Hatch fall protection Propane tank containment Building HVAC replacement	$205,000	$73,000	$278,000

Table 5-16 Market Street Estimated Total Project Costs

Item	High Priority	Normal Priority	Total
Bare Costs	$205,000	$73,000	$278,000
Construction Factors	$45,100	$16,100	$61,200
Utility Allowance	$10,000	-	$10,000
Engineering Services	$200,000	$75,000	$275,000
Legal/Administrative	$5,200	$1,800	$7,000
Inflation to Midpoint	$55,800	$19,900	$75,700
Contingency	$116,300	$41,500	$157,800
Total Project Cost	$637,400	$227,300	$864,700

The total project costs are carried in the implementation schedule below.

5.3.9 Woodsbury Road Pump Station

The Woodsbury Road Pump Station is a submersible type station that was built in 1994. It is located behind 25 Corn Mill Way. The pump station has a rated capacity of 300 gpm with 15 hp motors and an indoor propane generator for backup power. The station consists of a wet well, valve vault, and building.

The wet well hatch and concrete are in good condition. The interior of the wet well is in fair condition and the piping is old and corroded. The valve vault piping and interior are in good condition and the hatch and concrete are in fair condition. The wood trim and building foundation are in good condition. The roof is in fair condition and the brick façade is in fair condition with some vines growing along the side. One of the louvers is in poor condition. The building interior is in good condition. The equipment is past its useful life. The perimeter fencing is in fair to poor condition. The valve vault and wet well hatches do not have fall protection. The propane tank does not have containment.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. The HVAC and architectural improvements are normal priority recommended improvements. Table 5-17 summarizes the costs for the recommended improvements to the pump station. Table 5-18 summarizes the full project costs.

Table 5-57 Recommended Improvements for Woodsbury Road Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Pump Replacement Instrumentation and Controls Electrical Equipment and Motor Starters	Fence replacement Hatch fall protection Building HVAC replacement Propane tank containment	$185,000	$47,000	$232,000

Table 5-18 Woodsbury Road Estimated Total Project Costs

Item	High Priority	Normal Priority	Total
Bare Costs	$185,000	$47,000	$232,000
Construction Factors	$40,700	$10,300	$51,000
Utility Allowance	$10,000	-	$10,000
Engineering Services	$200,000	$75,000	$275,000
Legal/Administrative	$4,700	$1,100	$5,800
Inflation to Midpoint	$52,900	$16,000	$68,900
Contingency	$110,300	$33,300	$143,600
Total Project Cost	$603,600	$182,700	$786,300

The total project costs are carried in the implementation schedule below.

5.3.10 Millbrook Drive Pump Station

The Millbrook Pump Station is a submersible type station that was built in 2000. It is located across from 11 Millbrook Drive. The pump station has a rated capacity of 180 gpm with 15 hp motors and an indoor natural gas generator for backup power. The pump station consists of a wet well, valve vault, and building.

The wet well concrete, interior, and hatch are in good condition. The discharge piping of the wet well is in fair condition to due to corrosion. The valve vault hatch, interior, and concrete are in good condition. There is water at the bottom of the valve vault causing some corrosion that should be pumped out. The water is likely coming through the precast concrete sections of the valve vault at the joints, which should be sealed. Neither hatch has fall protection. The wood trim and concrete foundation are in fair condition. The interior of the building is in good condition. The equipment is past its useful life.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, and process equipment is recommended to be replaced as a high priority. The HVAC and architectural improvements are normal priority recommended improvements. Table 5-19 summarizes the costs for the recommended improvements to the pump station. Table 5-20 summarizes the full project costs.

Table 5-69 Recommended Improvements for Millbrook Drive Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Pump Replacement Valves and Piping Instrumentation and Controls Electrical Equipment and Motor Starters	Roof Trim replacement Hatch fall protection Davit Crane Base Building HVAC replacement Replace generator	$132,000	$102,500	$234,500

Table 5-20 Millbrook Drive Estimated Total Project Costs

Item	High Priority	Normal Priority	Total
Bare Costs	$132,000	$102,500	$234,500
Construction Factors	$29,000	$22,700	$51,700
Utility Allowance	$10,000	-	$10,000
Traffic Control Allowance	$5,000	-	$5,000
Engineering Services	$200,000	$75,000	$275,000
Legal/Administrative	$3,500	$2,500	$6,000
Inflation to Midpoint	$91,200	$49,000	$140,200
Contingency	$95,000	$51,000	$146,000
Total Project Cost	$565,700	$302,700	$868,400

The total project costs are carried in the implementation schedule below.

5.3.11 Old Country Way Pump Station

The Old Country Way Pump Station is a submersible type station with a valve vault and building and was built in 1980. It is the oldest station in the current system. It is located next to 33 Old Country Way. The pump station has a rated capacity of 350 gpm with 7.5 hp motors and an outdoor natural gas generator for backup power.

The wet well hatch, interior, and piping are in good condition. The concrete is in fair condition. There is a new mixer (2021) installed in the wet well and it is working well. The valve vault hatch and concrete are in good condition. Neither structure has fall protection. The valve vault is a raised structure and there are makeshift wooden stairs that are in poor condition and not up to code. The vinyl siding of the building is in fair to poor condition. The roof is in poor condition. The interior of the building is old and in fair condition. The ceiling and slab are in good condition and the walls are in fair condition. The generator was recently replaced and located outside on a concrete equipment bad behind the building. The other station equipment is past its useful life.

Based on the condition assessment and the age of critical equipment, the electrical, instrumentation, architectural, and process equipment is recommended to be replaced as a high priority. The HVAC improvements are normal priority recommended improvements. Table 5-21 summarizes the costs for the recommended improvements to the pump station. Table 5-22 summarizes the full project costs.

Table 5-27 Recommended Improvements for Old Country Way Pump Station

Recommendations		Estimated Cost for Improvements		
High Priority	**Normal Priority**	**High Priority**	**Normal Priority**	**Total**
Pump Replacement Instrumentation and Controls Electrical Equipment and Motor Starters Roof and siding replacement Valve stair replacement	Hatch fall protection Building HVAC replacement	$206,000	$27,000	$233,000

Table 5-22 Old Country Way Estimated Total Project Costs

Item	High Priority	Normal Priority	Total
Bare Costs	$206,000	$27,000	$233,000
Construction Factors	$45,300	$5,900	$51,200
Utility Allowance	$10,000	-	$10,000
Engineering Services	$200,000	$75,000	$275,000
Legal/Administrative	$5,200	$700	$5,900
Inflation to Midpoint	$37,300	$8,700	$46,000
Contingency	$116,500	$27,300	$143,800
Total Project Cost	$620,300	$144,600	$764,900

The total project costs are carried in the implementation schedule below.

5.3.12 Spruce Street Pump Station

The Spruce Street Pump Station is planned to be upgraded into a submersible type pump station in 2023. It is located next to 76 Spruce Street and is next to the Rockland Town Forest. It was built in 1980 as a pneumatic ejector station with outdoor controls.

The station has been designed and is just waiting to bid and construct. As this will be a brand new station, there are no recommendations for the 20-year planning period. However, at the end of the planning period, the pumps and control panel will likely need to be replaced. As such, a cost of $615,000 has been used in the implementation schedule below. It is important to note that the majority of the project is inflation and engineering fees, which would likely be less when the project actually occurs.

5.3.13 Butternut Lane Pump Station

The Butternut Lane Pump Station was completely replaced in 2022. It is located in the driveway of 55 Butternut Lane. The upgrade included the installation of two Tsurumi 5 Hp pumps rated for 100 gpm, above-grade control cabinet, and 4-inch discharge pipe, gate, and check valves. The existing system was retrofitted with a duplex submersible pump station with the metal vault being used as the new wet well. The electrical equipment was moved out of the vault and a duplex control panel along with an automatic transfer switch and generator hookup for backup power was mounted above ground.

As this is a brand new station, there are no recommendations for the 20-year planning period. However, at the end of the planning period, the pumps and control panel will likely need to be replaced. As such, a cost of $618,000 has been used in the implementation schedule below. It is important to note that the majority of the project is inflation and engineering fees, which would likely be less when the project actually occurs.

5.3.14 Pump Station Summary

Table 5-23 summarizes the pump station recommendations.

Table 5-23 Pump Station Recommendation Summary

Pump Station Name	Type	Capacity (ea.)	Pump Horsepower	Year Constructed/Upgraded	Recommended Project Cost
Forest Street	Submersible	400 gpm	29	1999	$964,000
Lincoln Road	Submersible	100 gpm	7.5	1999	$618,000
Wheeler Avenue	Submersible	30 gpm	3	1999	$1,163,000
Summer Street	Submersible	40 gpm	2	1999	$1,170,000
John Burke Drive	Submersible	40 gpm	2	1999	$1,163,000
Hingham Street – North	Submersible	1,000 gpm	20	2002	$1,628,000
Hingham Street – South	Submersible	1,800 gpm	100	2002	$1,784,000
Market Street	Submersible	250 gpm	7.5	1994	$864,000
Woodsbury Road	Submersible	300 gpm	15	1994	$786,000
Millbrook Drive	Submersible	180 gpm	15	2000	$765,000
Old Country Way	Submersible	350 gpm	7.5	1980	$765,000
Spruce Street	Submersible[1]	100 gpm	5	2023	$615,000
Butternut Lane	Submersible	100 gpm	5	2022	$618,000

5.4 Proposed Schedule and Capital Improvement Plan

A capital improvement plan with implementation schedule has been developed for each of the 13 pump stations in Rockland through the 20-year planning period from 2023 to 2043. It is important to note that many of the pump stations are original and the equipment is well past its useful life. In addition, the Town is faced with a large WWTP upgrade and is working to remove I/I from the collection system, both of which are higher priorities than pump station upgrades. This plan was developed based on similarity of stations, age of stations, and grouping some station upgrades together to save on engineering and construction costs. The schedule assumes most upgrade designs would take approximately 1 year and construction would take 1 to 2 years, depending on the size of the project. Pump station upgrades similar to those outlined above typically take a year or less. However, the current construction climate has shown long lead times for many aspects of the projects, especially for electrical equipment and generators. This has pushed many simple upgrade projects to take closer to 1.5 to 2 years based on the lead times. The schedule assumes Old Country Way would begin design in year 2024. Table 5-24 is the capital improvement plan for the pump stations. Currently, the Town is planning to reserve $50,000 per year to address equipment as it fails.

Table 5-24 Pumping Stations Capital Improvement Plan

Pumping Station	Total Est. Costs Per Station	Plan Year																			
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
		2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044
Forest Street	$964,000				$964,000																
Lincoln Road	$618,000				$618,000																
Wheeler Avenue	$1,163,000			$1,163,000																	
Summer Street	$1,170,000			$1,170,000																	
John Burke Drive	$1,163,000			$1,163,000																	
Hingham Street – North	$1,628,000					$1,628,000															
Hingham Street – South	$1,784,000					$1,784,000															
Market Street	$864,000		$864,000																		
Woodsbury Road	$786,000		$786,000																		
Millbrook Drive	$765,000				$765,000																
Old Country Way	$765,000	$765,000																			
Spruce Street	$615,000																			$615,000	
Butternut Lane	$618,000																			$618,000	
Total for Year	$13,015,000	$765,000	$1,650,000	$3,496,000	$2,452,000	$3,412,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,240,000	$0

The average cost per year is $981,300.

5.5 Pump Station Operations

As has been mentioned previously in this report, the Town received an Order from the EPA in mid-2022. Part of the Order requires the CWMP to review potential inline and offline storage for flow equalization during high flow periods. Part of inline storage can be “holding back” flow in the collection system to the amount practical during a storm. This involves altering pump station operations to allow the wet well and potentially the collection system piping to back up and hold additional flow. The limiting factor to how much volume can be held back is making sure basements/homes and manholes are not overflowed. This analysis is summarized further below.

5.5.1 Existing Pump Station Control

Veolia, the contract operator for the WWTP and pump stations, provided the level control for each station for this analysis. Table 5-25 summarizes the controls.

Table 5-25 Pump Station Level Control Summary

Pump Station	Pump On & Off Wet Well Levels	Wet Well Alarm Levels
Forest Street	On - 4.5’ Off – 3.0’	High – 5.2’ Low – 2.5’
Hingham Street - North	On – 5.6’ Off – 3.4’	High – 8.0’ Low – 3.0’
Hingham Street - South	On – 11.0’ Off – 5.2’	High – 12.0’ Low – 4.5’
John Burke Drive	On – 3.2’ Off – 1.9’	High – 6.0’ Low – 1.0’
Lincoln Road	On - 4.5’ Off – 2.4’	High – 6.0’ Low – 2.0’
Market Street	On - 4.0’ Off – 2.4’	High – 4.5’ Low – 2.0’
Millbrook Drive	On – 2.0’ Off – 0.6’	High – 2.8’ Low – 0.2’
Old Country Way	On - 4.3’ Off – 2.9’	High – 4.8’ Low – 2.0’
Summer Street	On – 1.2’ Off – 0.9’	High – 3.4’ Low – 0.5’
Wheeler Avenue	On - 2.5’ Off – 1.6’	High – 3.0’ Low – 1.3’
Woodsbury Road	On - 4.0’ Off – 2.9’	High – 5.1’ Low – 2.0’
Butternut Lane	On – 2.5’ Off – 1.9’	High – 3.0’ Low – 1.5’
Spruce Street	N/A	N/A

Table 5-26 summarizes the station wet well floor elevations, pump on level, influent sewer invert level, and wet well diameters, which is used to calculate additional volume that could be held during storm/high flows.

Table 5-26 Pump Station Volume Summary

Pump Station	Wet Well Floor Elevation	Pump On Elevation	Influent Invert Elevation	Wet Well Diameter	Volume Available (gallons)
Forest Street	110	114.5	117.7	8x10	1,915
Hingham Street -North	118.9	124.5	127.97	10	2,039
Hingham Street -South	106.35	117.35	118.79	10	846
John Burke Drive	89.8	93	92.8	6	-42
Lincoln Road	119	123.5	124.2	6	148
Market Street	65.79	69.79	71	8	455
Millbrook Drive	63.5	65.5	68	8	940
Old Country Way	114.13	118.43	121.63	8	1,203
Summer Street	61.6	62.8	64.67	6	395
Wheeler Avenue	121.7	124.2	124.93	6	154
Woodsbury Road	78.13	82.13	83.63	8	564
Butternut Lane					
Spruce Street	114.4	119.34	119	6	-72

The control elevations listed are the normal operating setpoints. However, Veolia indicated that during wet weather months, they increase the set points. These elevations were not readily available. Based on the analysis, it appears there is an opportunity for Forest Street, Hingham Street North, and Old Country Way to hold back additional flow to reduce peak flows at the WWTP. However, Veolia has indicated that when flows are high, the amount of flow going through the stations limits how much they can alter operations safely. This is not a recommended solution. If peak flows are required to be reduced to limit bypass events at the WWTP, equalization is a better alternative.

6

Section 6 Evaluation of Wastewater Treatment Plant

6.1 Introduction

The Town of Rockland owns a Wastewater Treatment Plant (WWTP) which serves the Town of Rockland and parts of the Town of Abington. The WWTP is located down an access road near 587 Summer Street. The WWTP is operated by Veolia. The WWTP was originally constructed in the mid-1960s, and the plant was upgraded in the late 1970's to a two-stage nitrification activated-sludge plant. The WWTP was designed for an annual average flow of 2.5 MGD and a peak hourly flow of 6.0 MGD. The plant operates under a NPDES Permit (No. MA0101923) and a Medium WWTP General Permit (No. MAG590038). The NPDES permit was finalized and reissued in November 2021 and the General Permit was received in 2022, which supersedes the NPDES permit. The permits are in Appendix C.

6.2 WWTP Evaluation Report Summary

In 2021, Wright-Pierce completed a WWTP evaluation for the Town of Rockland. A comprehensive evaluation had not been completed since the upgrade in 1977. The purpose of the evaluation was to identify and plan for needed improvements at the WWTP. Wright-Pierce evaluated the unit processes, structures, buildings, building systems, instrumentation and controls, electrical service and distribution, and site conditions to develop recommendations for needed upgrades.

Overall, the evaluation report goals were as follows:

- Calculating the current flows and loads received by the facility and assessing the expected growth in flows and loads over the next 20-year planning period.
- Assessing key permit issues facing the WWTP and conduct an alternatives evaluation of the improvements needed to meet current and potential future permitting/regulations (discharge limits, etc.). This included a pending effluent total phosphorus (TP) limit and likely a future total nitrogen (TN) limit.
- A comprehensive assessment of existing equipment and unit processes at the WWTP; conducting a condition assessment of existing process and building systems; and developing a capital improvement plan (CIP) to address the condition, age, useful life and efficiency of each unit process and associated equipment currently installed at the wastewater treatment plant.
- Conducting a screenings analysis of potential alternatives to provide influent pumping, flow measurement, screening, and grit removal at the WWTP to accommodate planned future growth, ease of operation and maintenance activities versus cost implications.
- Conducting a screenings analysis of potential alternatives to provide biological phosphorus and nitrogen removal.
- Conducting a screenings analysis of alternative tertiary treatment processes for low level phosphorus removal.
- Conducting a screenings analysis of the existing anaerobic digestion process. Included an evaluation of the economics associated with rehabilitating the existing digestion system and/or enhancements to the digestion process.
- Conducting a screenings analysis of potential sludge dewatering alternatives.
- Compilation of overall recommended improvements into a capital improvements plan based on current and anticipated future needs over the 20-year planning period.

6.2.1 Upgrade History

The original Rockland WWTP, as it was constructed in 1964, consisted of an influent pumping facility, two primary clarifiers, two aeration tanks, two secondary clarifiers, and an anaerobic digestion system. The WWTP was upgraded in 1977 to a two-stage nitrification activated-sludge process for ammonia removal. The two-stage process was abandoned shortly after this upgrade to a single sludge nitrification activated sludge process and, in 2000, the Administration Building was expanded.

In general, most of the wastewater equipment currently in use at the facility consists of items that were installed as part of the 1977 upgrade. The existing infrastructure (i.e., structures, tanks, buildings, etc.) currently being used date from the original 1964 construction and the 1977 upgrade. A brief description of plant improvements since its original construction in 1964 is provided below.

Improvements constructed in **1964** (Sewage Treatment Facilities, Contract 64-1, Metcalf and Eddy) include:

- Influent screening and pump station with process equipment, electrical, and HVAC equipment
- Two primary clarifier tanks (currently not used)
- Two aeration tanks (currently used for wet weather flow diversion)
- Two secondary clarifiers (have since been demolished)
- Administration Building
- Two-stage anaerobic digestion process
- Chlorine contact tanks
- Site piping to accommodate the new structures and tanks constructed
- Site electrical distribution system

Improvements constructed in **1977** (Water Pollution Control Facilities, Contract 77-1, Metcalf and Eddy) include:

- Two new Primary Settling Tanks
- Two new Secondary Settling Tanks
- Two Nitrification Reactors
- Two Nitrification Settling Tanks
- New Chlorine Contact Tank, Effluent Pumping, and post Aeration Structure
- Expansion of the Administration Building
- Two additional anaerobic digestion tanks
- New Electrical Building
- Replacement of existing pumping systems and equipment throughout the facility
- New site piping to accommodate the new buildings and structures constructed.
- New site electrical distribution and stand-by generator
- Other improvements to electrical, HVAC, and Instrumentation.

Improvements constructed in **2000** (2000 Expansion Program of the Administration Building R.A.D. Jones Architects, Inc.) include:

- Expansion of the Administration Building including new:
  - Laboratory Facilities
  - Conference and reception area

- Break Room
- Shower and locker area

Improvements constructed in 2013 (WWTP Digester Mixing System Replacement, HTA) include:

- New mixing system for Primary Digester No.2

The Town began several upgrades in 2022, including installing a new effluent flow meter and improvements to the anaerobic digesters. The flow meter project has been completed.

As part of developing the CWMP, representatives of Wright-Pierce toured the WWTP along with the Town and Veolia, the Town's contract operator, in order to update the CIP recommendations based on completed and upcoming projects and the final NPDES permit received (with TP limit of 0.1 mg/L during the growing season). In addition, several items were evaluated as required in the EPA's Order issued in 2022, as discussed below.

The EPA Order and plant evaluation are included in the Phase 1 appendices.

6.2.2 WWTP Flows and Loads

Section 2 of the plant evaluation and Section 3 of Phase 1 of the CWMP discuss current and future flows and loads for the plant. Phase 1 served as a cursory update to the original evaluation, with Table 2-5 Design Year Flows and Loads from the evaluation remaining the design condition. The annual average flow was maintained at the permitted level of 2.5 MGD for the 20-year planning period and the peak flow capacity was recommended to be increased from 6.0 MGD to 7.0 MGD as can be seen in Table 6-1 below, which is a copy of Table 2-5 from the 2021 evaluation. For the last several years, the plant has been operating at or above its permitted average flow limit of 2.5 MGD. In addition, peak flows at the plant have surpassed 6 MGD and the bypass has been necessary.

Table 6-1 Design Year Flows and Loads

Parameter	Flow		BOD_5			TSS		
	MGD	P.F.	mg/L	lbs./day	P.F.	mg/L	lbs./day	P.F.
Minimum Day	1.15	0.46	121	1,159	0.25	159	1,521	0.24
Minimum Month	1.36	0.54	192	2,176	0.47	310	3,507	0.56
Annual Average	2.50	-	221	4,600	-	301	6,266	-
Maximum Month[1]	4.35	1.74	188	6,832	1.49	314	11,368	1.81
Maximum Month Loading[2]	3.44	1.38	238	6,832	1.49	395	11,342	1.81
Maximum Day[3] (98th %)	4.76	1.91	211	8,400	1.83	1347	53,511	8.54
Maximum Day[4] (100th %)	7.00	2.80	283	16,530	3.59	548	31,982	5.10
Parameter	**Temperature**		**NH3-N**			**Total Phosphorus**		
	C	P.F.	mg/L	lbs./day	P.F.	mg/L	lbs./day	P.F.
Minimum Day	8.89	0.56	37.04	355	0.60	2.01	19	0.21
Minimum Month	9.80	0.62			-			-
Annual Average	15.76	-	28.23	589	-	4.44	93	-
Maximum Month[1]	9.80	0.62	21.73	788	1.34	3.75	136	1.47
Maximum Month Loading[2]	9.80	0.62						
Maximum Day[3] (98th %)	22.22	1.41						
Maximum Day[4] (100th %)	23.33	1.48						

6.2.3 Recommended Improvement Summary

The Rockland WWTP needs to be upgraded to address aging infrastructure and provide capacity to meet growth needs and permit modifications. It is important to note that the majority of the existing equipment was installed as part of the 1977 upgrade and is now almost 40 years old and is well beyond the end of its useful life. Most WWTPs undergo comprehensive upgrades every 25 years to address worn out equipment and systems. Furthermore, the existing WWTP infrastructure (tanks, buildings, electrical systems) have not been addressed since the 1977 upgrade and are also in need of being addressed. This includes significant corrosion and concrete damage, inoperable mechanical HVAC systems, leaking roofs, water intrusion in the underground electrical duct banks, and various building and life safety code compliance issues. It should be noted that Veolia has replaced various high priority pieces of equipment at the WWTP to maintain successful operation of the facility. While certainly beneficial and something that should be continued moving forward, these equipment replacements do not eliminate or delay the need for a comprehensive upgrade.

It is recommended that the Town of Rockland undertake a comprehensive upgrade of the WWTP which should commence near-term. Based on the scope of needs at the WWTP, a comprehensive upgrade will be a multi-year process, resulting in further strain on the existing systems and equipment.

The plant evaluation recommended the following improvements:

- Screening and Grit Facility
  - Provide a new facility located upstream of the influent pump station
  - One new mechanical screen and associated wash press
  - One new vortex style grit removal system and associated grit washer
  - One new grit and screenings receiving roll off
- Influent Pump Station Modifications
  - Replace existing pumps and piping
  - Address structural issues in lower wet well
  - Address architectural, electrical and mechanical/HVAC associated with the existing building
- Primary Clarifier Modifications
  - Replace clarifier sludge removal mechanisms
  - Address tank structural issues
- Secondary System Modifications
  - Modify the secondary treatment process to an A2O process to achieve additional treatment capacity and biological nitrogen and phosphorus removal
  - Repurpose the existing secondary settling tanks to activated sludge tanks (selector zones)
  - Provide a new flow distribution structure
  - Provide new mixing system for anaerobic and anoxic zones
  - Provide new mechanical mixer/aerators for the oxic zones
  - Provide new blowers and associated blower building
  - Provide new internal recycle system
  - Provide new instrumentation and control system
  - Address secondary settling tank and nitrification tank structural issues
  - Provide new return and waste activated sludge pumps, piping and valves
  - Provide new mechanical/HVAC system for lower gallery

- Secondary Clarifier Modifications
  - Modify the effluent weirs to raise the tank water surface by three feet
  - Provide new sludge removal mechanisms
  - Address tank structural issues
- Tertiary Building
  - Provide a new tertiary treatment process for phosphorus removal
  - Tertiary treatment process will include two ballasted flocculation units complete with associated pumps, mixers, hydrocylcones, chemical feed and polymer system
  - Provide a new ferric chloride storage and feed system
- Chemical Building
  - Provide a new chemical building
  - New magnesium hydroxide storage and feed system for supplemental alkalinity
  - New sodium hypochlorite storage and feed system
  - New sodium bisulfite storage and feed system
- Chlorine Contact Tanks and Effluent Pump Station
  - Address tank structural issues
- Sludge Storage tanks
  - Repurpose the ex. aeration tank to two new sludge storage tanks
  - Provide aeration and mixing devices
  - Provide a tank cover and associated odor control unit
  - Address tank structural issues
- Administration Building
  - Provide new primary sludge piping and valves
  - Provide new dewatering and sludge transfer pumps
  - Provide new blower for sludge tank mixing
  - Demolish existing lime system
  - Demolish existing lower-level chemical systems
  - Provide two new screw presses for sludge dewatering
  - Provide new polymer system
  - Provide new sludge transfer conveyor, truck loading system and odor control unit
  - Address architectural, electrical and mechanical/HVAC associated with the existing building
- Garage and Electrical Building
  - Provide a new electrical building with additional garage space
  - Provide a new generator
  - Provide a new main switch gear
- General
  - Provide a new electrical distribution system
  - Provide new site piping as required
  - Replace all existing motor control centers throughout the facility
  - Provide a new fiberoptic network and plant SCADA system
  - Address existing site lighting

The evaluation recommended abandoning the existing anaerobic digestion process. The Sewer Commission did not favor this option at the time and should be re-evaluated during preliminary design.

6.2.4 Estimated Project Cost

Planning level project costs were estimated for the recommended facilities upgrades/improvements. Total project costs by major unit processes are presented in Table 6-2. The total project cost estimate for the comprehensive upgrade is presented in Table 6-3. The project cost estimate includes project costs related to the installation of a tertiary process (ballasted floc basis). These planning-level costs were developed using standard cost estimating procedures consistent with industry standards utilizing concept layouts, unit cost information, and planning-level cost curves, as necessary. Total project capital costs include estimated construction costs to account for construction contingency, design, and construction engineering, permitting, as well as financing, administrative and legal expenses. The original project costs were based on an ENR Construction Cost Index of 11625 (December 2020). The costs have been brought forward to today's dollars in the tables below. The costs assume one large project. Phasing and additional design approaches are discussed in the following section.

Many factors arise during preliminary and final design phases (e.g., foundation conditions, owner selected features and amenities, code issues, etc.) that cannot be definitively identified and estimated at this time. These factors are typically covered by the allowances described above; however, this allowance may not be adequate for all circumstances.

For planning level cost estimation, the following assumptions were made:

- **Administrative and Legal Costs** – The administrative and legal costs are estimated to be approximately 1% of the total construction cost. This includes Town costs such as bond council and accounting services that are associated with the project.
- **Financing** – The Town will likely incur interim financing costs until the final loan is closed. 1.5% of the total project cost has been carried for interim financing costs.
- **Engineering Services** – The engineering services cost is estimated to be approximately 20% of the construction cost and is for all phases of engineering services associated with the project. The services include design, permitting, bidding, construction administration, onsite field observation (resident project representative), development of record drawings, development of the operation and maintenance manual, and commissioning phase services.
- **Contingency Costs** – There are two contingency costs – construction contingency (5%) to account for unexpected conditions in the field identified once construction starts, and design contingency (20%) to account for potential design changes necessary to address unforeseen or unaccounted for items. The contingency costs are a percentage of the total construction cost associated with the project.
- **Materials Testing Costs** – The materials testing costs are estimated to be approximately 0.5% of the total construction cost. This cost is for miscellaneous materials testing such as soils and concrete testing associated with the project.
- **Midpoint Inflation** – Assumes an inflation rate of 4% per year and a construction start of June 2026 and ending of December 2028.

Table 6-2 Project Cost Estimate by Unit Process

Project Component	Cost
Civil	$1,379,000
Architectural	$2,993,000
Structural	$2,767,000
Process	$11,063,000
HVAC/Plumbing	$1,057,000
Instrumentation	$1,085,000
Electrical	$5,416,000
Specials	$370,000
Construction Factors	$4,727,000
Subtotal	**$30,858,000**
Design Contingency	$6,172,000
Construction Contingency	$2,190,000
Inflation To Midpoint of Construction	$6,728,000
Estimated Construction Cost	**$45,948,000**
Engineering Services	$8,752,000
Materials Testing	$219,000
Legal/Administrative	$428,000
Financing	$837,000
Total Project Cost	**$56,163,000**

Notes:

1. Cost estimate is based on ENR INDEX 11625, 12/2020
2. Cost estimate is based on eliminating the anaerobic digestion process in favor of an alternative solids handing scheme. Refurbishing the existing anaerobic digestion process would add an additional $3.0M to $5.0M to the total project cost.

Using the current ENR Index of 13175 (March 2023), the new project cost in today's dollars is $63,675,000. Based on the recent bidding climate, inflation variations over the last 2 years, and supply chain issues, a conservative planning total project cost is realistically $72 million.

6.2.5 Project Schedule

A typical project schedule for an upgrade of this size is presented below in Table 6-3. The schedule was developed based on one single, large scale project that utilizes SRF funding and the milestones required by MassDEP and the Trust for that funding. Phasing is discussed in the following section.

Table 6-3 Potential Upgrade Schedule

Milestone	Timeline*
Appropriate Engineering Funds for Design	Annual Town Meeting, May 2023
Preliminary Design (30%)	**8 months, following Notice-to-Proceed**
Preliminary Design Begins	August 2023
MassDEP SRF Project Evaluation Form (PEF) Submitted	July 2023
MassDEP SRF Intended Use Plan (IUP) Notification Draft	January 2024
Final IUP	1 month
Final Design & Permitting	**12-14 months, beginning after Preliminary Design**
Appropriate Construction Funds	Annual Town Meeting, May 2024
SRF Application Submission (90% Design)	By October 15, 2024
MassDEP Project Approval Certificate (PAC)	By December 31, 2024
100% Design and Permitting Complete	December 2024
Bidding	**4 months, after 100% Design complete**
Prequalification of GCs and Subs	January 2025 (2 months)
Filed Sub-bids	March 2025 (4 weeks)
GC Bids	April 2025 (6 weeks)
Construction*	**30 months, beginning after GC selected and NTP**
Contractor Notice-to-Proceed	By June 30, 2025
Substantial Completion	December 2027
Final Completion	February 2028
One-Year Warranty Period	December 2028

*Extended construction period expected based on lead times for equipment such as generator, MCCs, switchgear, etc.

The NPDES permit compliance schedule for phosphorus requires the facility to be in compliance by February 2025. Based on the schedule outlined above, a time extension would be required from the regulators.

6.2.6 Design-Build Phased Approach

Discussions with the Town of Rockland are ongoing to complete necessary capital improvements at the WWTP on a design-build basis under an amendment to Veolia's current operating agreement. Design-build is an alternative approach to the more common design-bid-build approach. Most municipal projects are conducted as follows:

- Town/Department hires design engineer
- Design engineer creates plans (drawings) and specifications for the upgrade to 100% level
- Engineer puts plans and specifications out to public bid for contractors
- Bids are received and lowest responsible bidder is selected for the project
- Contractor and Town enter into agreement and the upgrades are constructed

The design-build approach differs from the above, mainly by streamlining the design stage and by removing the bidding stage. Veolia has used this approach on a vast number of projects across the country and several in Massachusetts. Wright-Pierce has worked on several of these projects with Veolia in the past. The design-build approach is summarized below:

- Veolia directly hires engineer and contractor under two separate contracts
- Engineer develops plans and specifications to 60% level
- Project is value-engineered by Town, Veolia, Engineer, and Contractor
- Contractor develops a Guaranteed Maximum Price (GMP) based on the revised 60% documents
- Engineer finalizes plans and specifications to 100%
- Contractor constructs facility upgrades

The Town, Veolia, and Wright-Pierce are currently working to review the recommendations included in the April 2021 WWTP Evaluation and identify and develop design packages to obtain a GMP for each package from Veolia's general contractor. Wright-Pierce has prepared a proposed approach to developing these bid packages and prioritizing implementation so that the Town of Rockland can complete phased improvements to the WWTP. The packages are identified below. Figure 6-1 shows the contracts on the site plan.

Contract No. 1 – Tertiary Treatment

The Town of Rockland is required to upgrade their WWTP to meet more stringent effluent phosphorus requirements by early 2024 and optimize the process and come into compliance with new total phosphorus limits by February 1, 2025. As recommended in the April 2021 WWTP Evaluation, a new tertiary process is required to meet the new effluent limit of 0.1 mg/L, reliably. Either a cloth disk filter or ballasted flocculation system may be able to meet these limits. To determine which alternative is more cost effective, Veolia is collecting effluent samples from the secondary clarifiers for testing by Aqua Aerobics, who manufactures a cloth disk filter, and Krüger, who manufactures a ballasted flocculation system. The bench top testing is needed to assess the ability of each process to meet the required effluent limits as well as to understand the potential chemical dosing that may be required. Further pilot testing may be conducted before or during preliminary design.

In addition to tertiary phosphorus removal, the plant electrical equipment is in need of replacement. The equipment is served from an outdoor main switchboard that was installed in the mid-1970s. Power is distributed at 480 volts to seven different MCCs throughout the WWTP. The main switchboard also includes the automatic transfer switch served by a 500-kW generator. Based on the age and condition of the power distribution equipment, the April 2021 WWTP Evaluation recommended complete replacement of the main switchboard, MCCs, and duct banks/feeders.

As part of this tertiary treatment contract, it is recommended that the main switchboard be replaced with a new indoor main switchboard to provide service to the new tertiary treatment facilities. As part of this contract, new duct bank, conduit, and wiring would be run to refeed the existing MCCs at other locations throughout the WWTP. As noted in the April 2021 WWTP Evaluation, the existing duct banks are subjected to groundwater intrusion which may cause equipment/system failures and other problems at the facility. Upgrading the electrical distribution system to address these issues and replacing aging feeders should be included in this contract as a high priority item. The remaining existing MCCs would then be replaced under subsequent projects as those process areas are upgraded.

A summary of the improvements included under Contract No. 1 is presented below.

- Selection of tertiary treatment process (ballasted flocculation or cloth disk filtration) including ancillary equipment and building to house electrical, pumps, and chemical storage and feed equipment. Chemical building would also be sized to house sodium hypochlorite and sodium bisulfite for effluent disinfection. Space would also be left for chemical storage and metering pumps for alkalinity addition.
- Design of tertiary process around a pre-selected manufacturer's equipment.
- Design of secondary effluent or tertiary effluent pump station.
- Replacement of the electrical service entrance and main switchboard for the WWTP.
- Provide new duct bank, conduit, and electrical feeders from new main switchboard to new Tertiary Building Electrical Room.
- Provide new duct bank, conduit, and electrical feeders from new main switchboard to existing MCCs throughout the WWTP.
- Structural rehabilitation of the existing Chlorine Contact Tanks.

Depending on the results of the hydraulic evaluation, the Town may also elect to construct a new UV disinfection system.

Contract No. 2 – Hydraulic Capacity

One critical issue facing the Rockland WWTP is hydraulic capacity. The WWTP has a permitted flow rate of 2.5 MGD and a design peak hour flow rate of 6.0 MGD. When flows exceed 6 MGD, plant staff utilize portable bypass pumps to convey excess flow into offline tanks for storage until the flows drop. As part of the April 2021 WWTP Evaluation, it was recommended to increase the design peak hour capacity of the WWTP to 7.0 MGD.

To accommodate peak flows up to 7.0 MGD, hydraulic restrictions at the headworks facility need to be addressed. Several alternatives could be considered. A summary of alternatives that could be considered is presented below. A more detailed evaluation of Alternative Nos. 1 & 2 is required to verify that they can be feasible and achieve the desired benefits for the Town. In addition, a hydraulic profile of the entire WWTP needs to be developed to determine if there are any other hydraulic bottlenecks associated with passing the revised peak hour flow rate of 7.0 MGD.

Alternative No. 1 – Modifications to Existing Facilities

Our understanding is that the existing mechanical bar screen has a peak flow capacity of approximately 4 MGD. Flows over 4 MGD can pass through the Auger Monster in the channel next to the bar screen. A third channel is available for a manually-cleaned bar rack. To provide additional screening capacity, it may be possible to demolish the channel wall between the mechanical bar screen and the Auger Monster and install a new larger bar screen capable of passing 7 MGD in the larger channel. The Auger Monster could potentially be relocated to the channel with the manual bar rack. As part of this alternative, the following improvements are anticipated:

- Demolition within the existing bar screen channel and installation of a larger mechanical bar screen. A structural evaluation of the building would be conducted to determine if an extended bar screen could be provided that discharges to a screenings washer/compactor located in a separate room of the existing building at grade.
- Rehabilitation of the influent pump station including building improvements, construction of a separate electrical room to address code requirements, structural rehabilitation of the existing wet well, and complete replacement of the influent pumps, piping, and ancillary equipment.
- Construction of a second aerated grit tank to accommodate higher flows. Consider potential for utilizing the space occupied by the unused septage receiving facility.
- Potential modifications to the influent weir splitter box to accommodate higher peak flows.

Alternative No. 2 – New Screening Facility

Because of the hydraulic limitations and space restrictions in the existing wet well screenings channel, this alternative would include a new structure upstream of the existing influent pump station to accommodate a new screenings facility. A below grade structure with two parallel channels would be provided. One channel would be equipped with a mechanical bar screen and the second channel would include a manually-cleaned bar rack. The mechanical bar screen would be designed to discharge at grade into a screenings washer/compactor. A heated enclosure would be constructed at grade to enclose the washer/compactor and screenings container as well as stairs to the lower level of the structure. These improvements would include the following:

- Demolition of the existing bar screen and Auger Monster.
- Construction of a new screenings channel and installation of a larger mechanical bar screen with a parallel manual bar rack channel. Provide a heated enclosure at grade to house the screen, washer/compactor, screenings container, and stairs to the lower level.
- Rehabilitation of the influent pump station including building improvements, construction of a separate electrical room to address code requirements, structural rehabilitation of the existing wet well, and complete replacement of the influent pumps, piping, and ancillary equipment.
- Construction of a second aerated grit tank to accommodate higher flows. Consider potential for utilizing the space occupied by the unused septage receiving facility.
- Potential modifications to the influent weir splitter box to accommodate higher peak flows.

Alternative No. 3 – New Screening and Grit Facility

This alternative is based on the recommendations in the April 2021 WWTP Evaluation Report. This alternative is similar to Alternative No. 2 but includes a new structure for both screenings and grit removal upstream of the influent pump station. Providing grit removal upstream of the influent pumps will provide additional protection of the pumps. A below grade structure with two parallel channels would be provided. One channel would be equipped with a mechanical bar screen and the second channel would include a manual bar rack. A new vortex grit removal tank would be constructed downstream of the new bar screen. The mechanical bar screen would be designed to discharge at grade into a screenings washer/compactor. A pump would be used to pump grit up to a new grit classifier located at grade. A building would be constructed at grade to enclose the washer/compactor, grit classifier, and screenings and grit container(s) as well as stairs to the lower level of the structure. These improvements would include the following:

- Demolition of the existing bar screen and Auger Monster.
- Construction of new below grade screenings and grit removal structures including a larger mechanical bar screen with a parallel manual bar rack channel and a vortex grit removal system with bypass bar channel. Provide a building at grade to house the screen, washer/compactor, grit classifier, screenings and grit container(s), and stairs to the lower level.
- Rehabilitation of the influent pump station including building improvements, construction of a separate electrical room to address code requirements, structural rehabilitation of the existing wet well, and complete replacement of the influent pumps, piping, and ancillary equipment.
- Elimination of the existing aerated grit tank and piping modifications to direct flow to the influent weir splitter box.
- Potential modifications to the influent weir splitter box to accommodate higher peak flows.

Contract No. 3 – Miscellaneous Equipment and System Improvements

There are a number of items identified in the April 2021 WWTP Evaluation that should be addressed in the near future rather than as a future comprehensive project under a phased capital improvement plan. In addition, the April 2021 WWTP Evaluation recommended improvements to the secondary treatment process to allow for compliance with a future anticipated effluent total nitrogen limit of 8 mg/L. Three alternatives for scope to be included in Contract No. 3 is presented below.

Alternative No. 1 – Immediate Improvement Needs

Much of the equipment, systems, and structures at the Rockland WWTP are aging and are in need of replacement and/or rehabilitation. Alternative No. 1 would address some of the more immediate needs. The scope items presented below are for discussion purposes. A workshop would be held with Town and Veolia staff to further refine these items.

- Replacement of the primary clarifier sludge and scum removal mechanisms and rehabilitation of the concrete tanks.
- Misc. concrete and gate repairs to the aeration tanks and below-grade equipment spaces.
- Replacement or rehabilitation of some or all of the existing mechanical surface aerators and provision of spare parts (spare motor and gear box) to allow for continued operation.
- Replacement of the mixing system in the small primary digester and other miscellaneous improvements to maintain this tank in operation for the near term.
- Replacement of the sludge recirculation pumps in the Digester Building basement.
- Replacement of the large sludge transfer pumps.

Alternative No. 2 – Process Improvement and Rehabilitation Needs

Alternative No. 2 would include most of the items identified under Alternative No. 1, however, rather than upgrading the existing aerators, a new diffused aeration system and new aeration blowers would be installed. This will provide better D.O. control and reduced power consumption versus the existing mechanical aerators. In addition, it will be possible to raise the water surface elevation in the aeration tanks and gain additional treatment capacity. The specific items to be included in Alternative No. 2 include:

- Replacement of the primary clarifier sludge and scum removal mechanisms and rehabilitation of the concrete tanks.
- Conversion of the existing mechanical surface aeration system to a more energy efficient aeration system including new energy efficient aeration blowers and the use of either membrane disk fine bubble diffusers or hyperbolic mixers with air sparge rings. A new blower building would be required to house the blowers, an electrical room, and control panels.
- Misc. concrete and gate repairs to the aeration tanks and below-grade equipment spaces. These improvements would include modifications to the effluent weirs to allow for the water surface elevation to be raised by two to three feet.
- Replacement of the mixing system in the small primary digester and other miscellaneous improvements to maintain this tank in operation for the near term.
- Replacement of the sludge recirculation pumps in the Digester Building basement.
- Replacement of the large sludge transfer pumps.

Alternative No. 3 – Nitrogen Removal Process Improvement and Rehabilitation Needs

Alternative No. 3 would include the items identified under Alternative No. 2. In addition, as recommended in the April 2021 WWTP Evaluation, the existing intermediate clarifiers would be modified to be part of the activated sludge process and the secondary treatment process would be converted to operate in an anaerobic-anoxic-oxic (A2O) process to achieve an effluent total nitrogen of 8 mg/L. This alternative offers additional benefits over Alternative No. 2 including additional secondary treatment capacity and the use of biological phosphorus removal to minimize the amount of ferric chloride that would be needed for phosphorus reduction. The specific items to be included in Alternative No. 3 include:

- Replacement of the primary clarifier sludge and scum removal mechanisms and rehabilitation of the concrete tanks.
- Conversion of the existing mechanical surface aeration system to a more energy efficient aeration system including new energy efficient aeration blowers and the use of either membrane disk fine bubble diffusers or hyperbolic mixers with air sparge rings. A new blower building would be required to house the blowers, an electrical room, and control panels.
- Miscellaneous concrete and gate repairs to the aeration tanks and below-grade equipment spaces. These improvements would include modifications to the effluent weirs to allow for the water surface elevation to be raised by two to three feet.
- Modifying the secondary treatment process to the A2O process including:
- New primary effluent flow distribution structure.
- Convert the existing unused secondary clarifiers to activated sludge tanks with new mixing systems for the anaerobic and anoxic zones.
- New internal nitrate recycle system.
- Replace the mechanisms in the existing secondary (nitrification) clarifiers and raise the effluent weir to provide increased side water depth.
- Replacement of the mixing system in the small primary digester and other miscellaneous improvements to maintain this tank in operation for the near term.
- Replacement of the sludge recirculation pumps in the Digester Building basement.

- Replacement of the large sludge transfer pumps.

Contract No. 4 – Solids Handling Improvements

The work under Contract No. 4 would be primarily located in the Administration Building and associated with the solids handling systems. As part of the April 2021 WWTP Evaluation, Wright-Pierce recommended that the anaerobic digestion process be eliminated. The capital costs necessary to rehabilitation the digestion process equipment, systems, and structures was estimated to exceed the annual cost savings associated with reducing the mass of solids to be disposed of offsite at current disposal costs. Prior to beginning design of solids handling improvements, the cost-effectiveness of the anaerobic digestion process should be reconsidered.

At this time, the Contract No. 4 improvements are based on the elimination of the anaerobic digestion process. In general, this contract would likely include:

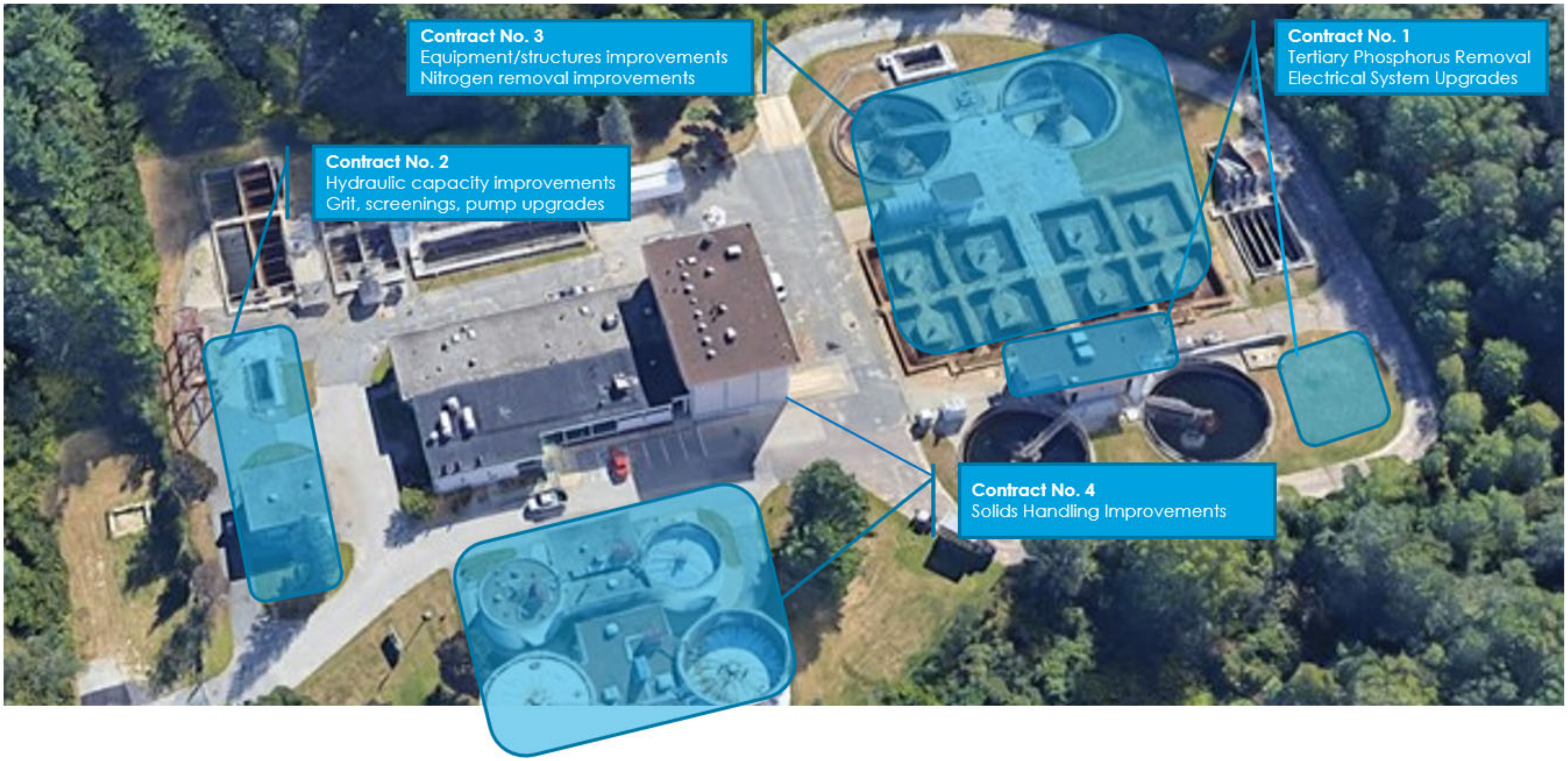
- New dewatering and sludge transfer pumps
- New blower for sludge tank mixing
- Two new screw presses for sludge dewatering and new sludge transfer conveyors and truck loading system.
- New sludge dewatering polymer system.
- Miscellaneous architectural, electrical, and mechanical/HVAC improvements.

If after reconsidering anaerobic digestion the Town would like to maintain this process, Wright-Pierce will develop a separate scope and fee for this work. Alternatively, if the Town decides not to maintain the anaerobic digestion process, Wright-Pierce can develop a separate scope and fee to either mothball the existing facilities, demolish the existing facilities, or repurpose the existing building and structures. Figure 6-1 shows the WWTP site layout and proposed contracts outlined on the buildings/structures at the WWTP.

6.2.6.1 Schedule

Implementing the design-build approach would allow the Town to prioritize immediate needs, such as the permit-required total phosphorus upgrade, and delay less critical upgrades for the facility. There is flexibility in the design-build approach, whereby the Town can elect to do one contract at a time, or several contracts can be designed and constructed at the same time. Due to the high cost associated with one large upgrade project, the design-build approach and contract development is proposed to spread out upgrades over a longer period of time. This approach would likely take 10-to-12 years to complete all of the contracts and would depend on how the Town wants to approach the upgrades. The first contract would be undertaken in order to try to meet the phosphorus compliance schedule in the permits but would likely still need an extension.

Figure 6-1 WWTP Upgrade Site Layout



6.3 Construction Permitting

The following discusses potential permits that may be required for the construction of the WWTP.

6.3.1 Federal Permits and Approvals

- NPDES Stormwater Permit for Construction:
    - Construction sites greater than one acre are subject to a National Pollutant Discharge Elimination System (NPDES) Stormwater Permit for construction. It is expected the disturbed area will be greater than one acre and it will be necessary to apply for a NPDES Stormwater Permit.
- NPDES Dewatering Permit for Construction:
    - Construction dewatering activities in Massachusetts are subject to a NPDES permit. The depth of excavation is expected to be as much as 20-feet below grade for building footings, underground piping, and utilities. At this depth, construction dewatering will likely be necessary
- Army Corps of Engineers:
    - Likely not required.

6.3.2 State Permits and Approvals

- MEPA:

    Our review of the MEPA thresholds indicates that an Environmental Notification Form (ENF) and/or Environmental Impact Report (EIR) will not be required for this upgrade project. The triggers for MEPA review would not be surpassed.
- Massachusetts Historical Commission (MHC) Approval:
    - The construction of the project will take place within the existing limits of the WWTP. The Town will need to file a Project Notification Form (PNF) with the MHC if SRF financing is pursued, as this is a requirement in the construction loan application.
- Wetlands:
    - Site disturbances have the potential to fall under the wetland regulations 100-foot buffer zone. A detailed site investigation, including updated wetland boundary delineation, will be required as part of the filing of a Notice-of-Intent (NOI) with the Conservation Commission.
- Flood Plain:
    - The WWTP was constructed in compliance with the flood plain data that was available at the time. An investigation into plant compliance with the floodproofing requirements of the National Flood Insurance Program should be completed during design.
- MassDEP Plan Approval:
    - The proposed project will be subject to plan approval for modifications to a treatment plant. The submittal process will be in accordance with DEP Form # WM-16. This typically involves submitting the Preliminary Design Report and plans and specifications submittal to DEP for review and comment.
- Operator Certification:
    - The Town will submit a process flow schematic to the Wastewater Operators Certification Board at the completion of the design phase to determine if any change in the level of operator skills will be mandated. It is anticipated that the level of skill mandated will not change. Since 2008, the WWTP has been classified as a 7-C operator grade.

6.3.3 Other Permits and Approvals

The project will require building, plumbing, electrical, and demolition permits. The permits cannot be applied for until General Contractor and Subcontractors have been awarded the project for each category. The specifications will require the Contractors to apply for and obtain the permits prior to construction.

Filed sub-bids would apply to relevant sub-trades, such as electrical and HVAC, based on the size of the project.

6.4 State Revolving Fund (SRF) Loan Financing

The Town plans to seek low-interest financing from the State Revolving Fund for the project. This would require filing a Project Evaluation Form (PEF) when they become available during the first design year (which is typically the beginning of July). The typical due date for PEFs is in mid-August, and a draft Intended Use Plan (IUP) is issued by the beginning of the next year. If selected on the IUP, the full SRF construction loan application is due by October 15th prior to going out to bid the following year. The construction project must be awarded to the General Contractor by June 30th the year after the loan application is submitted in order to qualify for principal forgiveness.

In addition to low-interest loan financing, it is possible that a portion of the project may qualify for 0% interest loan financing through the nutrient removal program that is part of the SRF program. In addition to an approved Comprehensive Wastewater Management Plan (CWMP), there are several requirements the Town will need to complete to potentially qualify for 0% loan financing. The requirements are:

- The project is primarily intended to remediate or prevent nutrient enrichment of a surface water body or a source of water supply;
- The applicant is not currently subject, due to a violation of a nutrient-related total maximum daily load standard or other nutrient based standard, to a MassDEP enforcement order, administrative consent order or unilateral administrative order, enforcement action by the United States Environmental Protection Agency or subject to a state or federal court order relative to the proposed project;
- The project has been deemed consistent with the regional water resources management plans if one exists;
- The applicant has adopted land use controls, subject to the review and approval of MassDEP in consultation with the Department of Housing and Economic Development and, where applicable, any regional land use regulatory entity, intended to limit wastewater flows to the amount authorized under the land use controls that were in effect on the date the Secretary of the Executive Office of Energy and Environmental Affairs issued a certificate for the CWMP pursuant to the Massachusetts Environmental Policy Act, M.G.L. c. 30, §§ 61-62H, and the MEPA regulations at 301 CMR 11.00.

6.5 Alternative Surface Water Discharge

As part of the EPA Order, the Town is required to review alternative surface water discharge options for the WWTP. Currently, the WWTP discharges to the French Stream, which is an impaired water body with a Total Maximum Daily Load (TMDL) issued by MassDEP. As part of this requirement, the surface waters in the Town of Rockland and abutting Towns of Weymouth, Abington, Whitman, Hanson, Pembroke, and Hanover were analyzed for suitability for a new WWTP surface water discharge.

Historically, ponds and lakes have more stringent effluent limits than rivers and oceans. This is also true for rivers and streams that flow into a pond or lake. As can be seen in Figure 6-2, the surface waters surrounding Rockland are impaired, similar to the French Stream. After reviewing the published TMDLs from MassDEP through 2018, the North River in Hanover/Norwell appeared to be the only viable surface water discharge. Figure 6-3 shows the proposed path for flow to be pumped from the Rockland WWTP to the point of discharge in the North River. After reviewing the 2022 Draft TMDLs issued by MassDEP, it was noted that the North River has been added to the TMDL list for Enterococcus and Fecal Coliform. As such, there are no viable surface waters for the Town of Rockland to discharge to in the area. Regardless, a cost estimate was prepared for the proposed sewer route to the North River. Table 6-4 summarizes the costs. Two pump stations would be required to pump flow to the new discharge point. It is important to note that historically, obtaining new surface water discharge permits is unlikely to occur. In addition, the Town would require Hanover and Norwell to agree to the new sewer route, with the majority of the construction and infrastructure being located in the Town of Hanover. This is also unlikely to occur as Hanover would not see a benefit from the infrastructure. Intermunicipal Agreements would be required for both communities.

Figure 6-2 Impaired Waters Surrounding Rockland

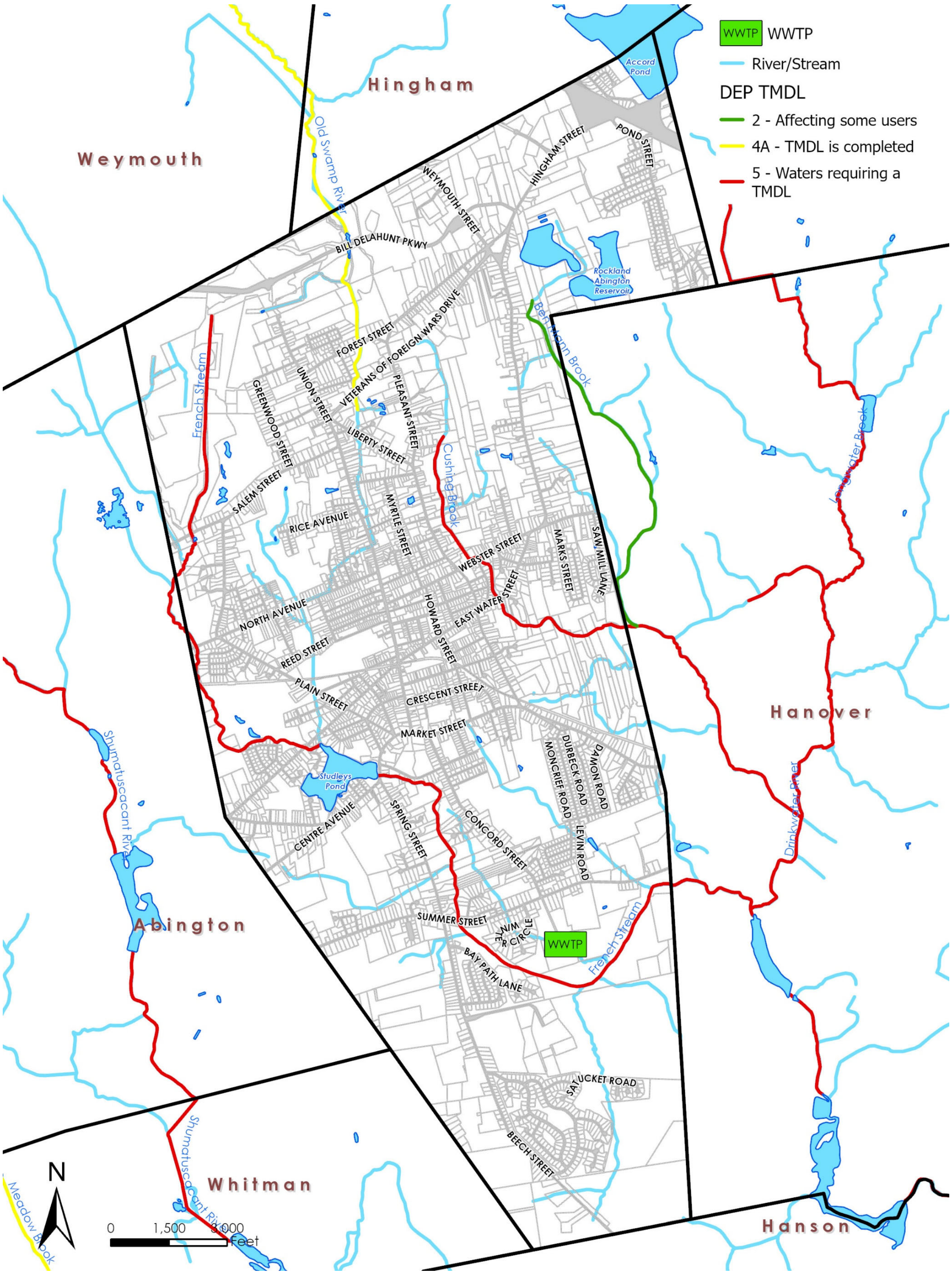


Figure 6-3 Sewer Route, Alternative Surface Water Discharge

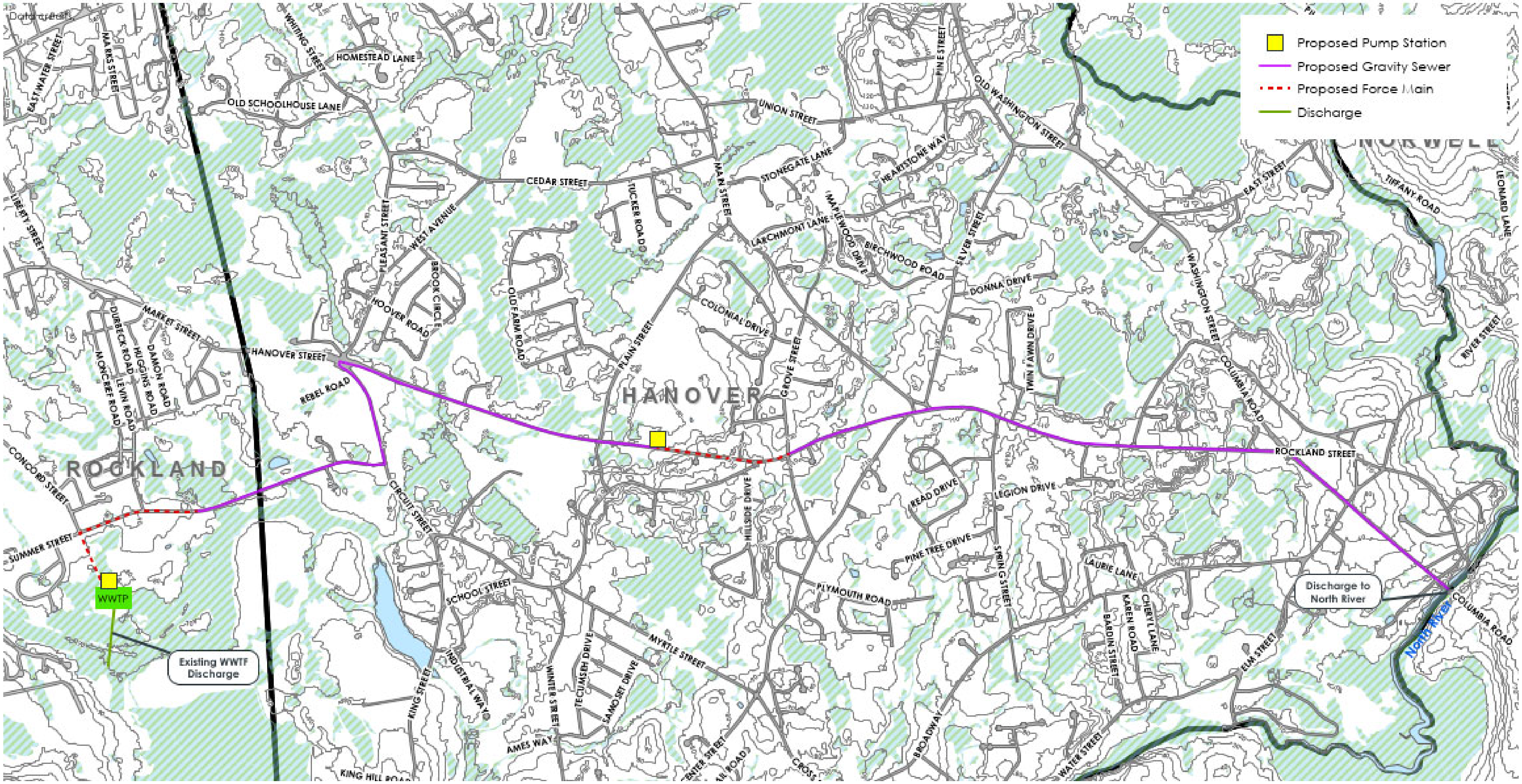


Table 6-4 Cost Estimate for Proposed Alternative Surface Water Discharge

Project Component	Cost
Gravity Sewer	$11,321,000
Manholes and Cleanouts	$843,000
Pump Stations	$1,500,000
Force Main	$1,348,000
Air Release Structures	$14,000
Ledge Allowance	$104,000
Paving	$3,126,000
Erosion Control Allowance	$50,000
Subtotal	**$18,306,000**
Construction Factors	$3,478,000
Design Contingency	$4,357,000
Inflation To Midpoint of Construction	$1,307,000
Construction Contingency	$2,740,000
Estimated Construction Cost	**$30,188,000**
Engineering Services	$4,117,000
Police Detail / Traffic Control Allowance	$250,000
Materials Testing	$137,000
Land Acquisition / Easements	$1,000,000
Legal/Administrative	$1,372,000
Financing	$274,000
Total Project Cost	$37,340,000

In addition to the impaired waters and unlikelihood of receiving a NPDES permit and public acceptance for the project, the cost for constructing new sewer and pumping stations is not economical. This approach is not recommended for the WWTP.

7

WRIGHT-PIERCE
Engineering a Better Environment

Section 7 Recommended Wastewater Management Plan

7.1 Introduction

The recommendations presented in this section of the CWMP were developed from a review of potential environmental impacts, conceptual design criteria, economic factors, regulatory compliance, and an implementation schedule that is appropriately suited for the Town of Rockland. Further, a comprehensive set of criteria were developed and evaluated, as presented in each Phase, to ensure the most appropriate wastewater management system was selected; including the protection of public health, water supply, surface water, and to preserve community character. It is important to note that economic factors are important, but they are not the only part of the evaluation process for recommending the appropriate wastewater management plan. A recommendation for each part of the wastewater system in Rockland is summarized below for the 20-year planning period.

7.2 Unsewered Areas Recommended Plan

In Section 2 of this report, the potential environmental impacts for the shortlisted alternatives for the High Needs Area were summarized. Other conditions, which factored into the final ranking, included implementation, institutional, monetary, and other impacts as presented in the following sections. Based on the analysis, the final ranking of the shortlisted alternatives for High Needs Area 1 is summarized in Tables 7-1 through 7-4, respectively.

7.2.1 Environmental Impacts

As shown in the following tables, onsite wastewater treatment alternatives (septic and I/A systems) for Needs Area 1 will have a minimal impact on the environment, assuming the treatment systems are properly designed, installed, and operated. The septic systems and I/A systems would not promote population growth or changes in the land use pattern.

For wastewater collection system extension, there are likely to be no environmental impacts after construction, assuming the proposed sewer pipes are properly installed. The sewer extension alternative may promote some population growth or commercial development within Needs Area 1, as not all parcels are currently developed.

Table 7-1 Final Ranking of Shortlisted Alternatives for Needs Area 1 – Weymouth Street

Rank	Treatment Alternative	Environmental Impacts		Implementation / Institutional Impacts	Level of Treatment	Total Present Worth Cost
		Direct	Indirect			
1	Septic Systems	M	N	N	M	M
2	I/A Systems	M	N	N	A	E

Legend: A=Adequate, E = Enhanced, M= Minimal, N=None

7.2.2 Implementation and Institutional Impacts

None of the onsite wastewater treatment alternatives (Septic and I/A systems) should result in significant implementation or institutional impacts on the Town. The wastewater collection system extension option would increase the workload of the Town wastewater staff as they would be responsible for maintaining the additional sewer piping.

7.2.3 Monetary Impacts

For the economic analysis, continuing the use of conventional septic systems over the 20-year planning period proved to be the most economical wastewater treatment alternative as shown in Tables 7-1 through 7-4. I/A systems were the second most economical option for the Needs Area. The extension of the municipal collection system to the Needs Area was economically feasible but exacerbates the issue of the existing WWTP flows/capacity. A decentralized treatment facility is a potential solution for this area but would require additional flow from the collection system and potentially a partnership with the Union Point developers to be economically feasible.

7.2.4 Other Impacts and Considerations

As part of providing a complete evaluation for selecting the appropriate wastewater treatment alternative, it is also imperative that the level of treatment obtainable with the proposed systems be considered. As was previously discussed in the CWMP Phase 2 report, septic systems will provide only a minimal level of wastewater treatment. Septic systems will not provide any significant treatment for BOD or other nutrients, such as nitrogen or phosphorus, or bacteria.

Depending on its complexity, an I/A system could produce an improved level of wastewater treatment as compared to a septic system. If the I/A system is designed with a blower and air diffuser system and is properly operated, it could provide an adequate level of wastewater treatment for BOD and some nutrient removal. Any of the wastewater collection system extension alternatives will provide an enhanced level of treatment at the WWTP. The discharge limits at the WWTP are stricter than can be accomplished through septic or I/A systems. Similarly, a decentralized WWTF would provide additional levels of treatment over septic and I/A systems.

7.2.5 Needs Area Flow Impact on Collection System and WWTP

7.2.5.1 WWTP Flow Capacity

The Rockland WWTP is designed and permitted to treat an average daily flow of 2.5 MGD. Currently, the WWTP is faced with flow capacity issues. The estimated residential and/or commercial flows for Needs Area 1 is between 1,000 and 35,000 gpd for maximum daily flows. This additional flow would exacerbate the current permitted flow/capacity issue at the WWTP. Should the flows be reduced at the WWTP, the estimated additional flows from Needs Area 1 would have minimal impact on the facility and the collection system and pump stations.

7.2.5.2 Existing Collection System Capacity Analysis

The existing collection system capacity was not reviewed as part of the scope of this CWMP. It is recommended that the Town create a hydraulic model to better understand the existing system and any pipe segments that may be approaching capacity. This could be done after the flow monitoring being conducted for the I/I investigation and reduction program. The Needs Area 1 flows should have minimal impact on the existing collection system based on the pipe size and pump stations the flow would be conveyed through and the amount of flow estimated.

7.2.6 Recommendations

Needs Area 1 is located in the north central part of Rockland. It is located near the Town of Hingham to the north, Union Point to the west and Study Area 2 to the east. This study area encompasses approximately 20.5 acres and is comprised of 5 parcels. The area has very poorly drained soils and high groundwater around the wetlands, and has a mixture of somewhat poorly drained to well drained soils in the areas away from wetlands. Parcel sizes are typically greater than one acre. The Study Area is within Zone A and Zone B surface water protection areas in the north. During Phase 1 of the CWMP, this area scored a total of 29 points and was identified as a High Needs Area.

The recommendation for High Needs Area 1 is to use septic systems throughout the 20-year planning period, should the parcels be developed into single-family homes. However, should any parcels be developed into commercial properties that would exceed the maximum septic system size, other alternatives could be warranted. Should flow/capacity issues at the WWTP be alleviated, or a decentralized WWTF be constructed at Union Point, undeveloped parcels in this area could look to either option should they be developed. A case-by-case basis is likely warranted for each parcel, depending on how they are developed. These decisions are based on the work performed in each phase of the CWMP, which included engineering evaluation, economic analysis, environmental and institutional impacts evaluation, and plan implementation. Septic systems could serve each parcel well and are the most economical option. I/A systems may be a better option in the future if groundwater quality becomes an issue.

7.2.7 Other Non-Needs Study Areas

At the completion of Phase 1 of the CWMP it was determined that the other 6 Study Areas are not “Needs Areas” and appear to be well-suited for the continued use of septic systems. As described in the following section, the implementation of a Septage Management Plan may be useful to best manage and prolong the life of the existing septic systems. Much of Rockland is currently sewered, and the unsewered parcels are in close proximity to existing sewer system piping. Much of the unsewered areas are also in or near wetlands, which make siting septic systems more difficult. Collection system extension to these areas could be warranted should undeveloped parcels require a solution other than septic systems and the existing WWTP alleviates flow/capacity issues.

7.2.7.1 Septage Management Plan

A Septage Management Plan (SMP) is recommended for the non-sewered Needs Areas where septic systems are being proposed as a long-term onsite wastewater disposal solution. Improper operation and inadequate maintenance of septic systems can cause poor performance and potentially lead to public health issues. The purpose of a SMP is to allow the Town to legally establish the septage management boundaries and to set onsite system management policies.

7.3 Recommendations for Existing Collection System

The existing wastewater collection system in the Town is between 30 and 60 years old. Much of the original system is vitrified clay pipe (VCP), which has a propensity to degrade and break over time. VCP also typically has 2 or 3 foot joints which can be a significant infiltration source. As such, the collection system has severe infiltration and inflow (I/I) problems. As a result, the WWTP has flow/capacity issues and requires bypass during high flow events (typically above 6 mgd), which are becoming more frequent in recent years. The Town has studied I/I since the late 90s and recently has undertaken steps to help reduce I/I in the existing system. I/I removal efforts are summarized below.

7.3.1 I/I Removal

The Town of Rockland has completed several investigations into the wastewater collection system. These efforts are summarized in Section 4 of this report. As a result of prior work, targeted I/I reduction is planned for the Summer of 2023. In addition, the Town is working with engineers to plan for future work to continue reducing I/I in the existing system. Table 7-1 shows a summary table for planned work with a schedule and costs that was produced by Weston & Sampson in late 2022. It is recommended that the Town continue with this planned work and update the plan as each phase is completed. In conjunction with the planned work, it is recommended to develop a hydraulic model of the existing collection system and continue mapping the system in GIS and update the database with as much information as possible for future use.

Table 7-2 Annual I/I Program Summary Table, Prepared by Weston and Sampson

Fiscal Year	Calendar Year/Month	Project Name	Scope	Subarea(s)	Sewer Length (lf)	Manholes	Estimated Cost[2]
FY 2023	Spring 2023	Year 1 Program	Town-wide meeting program and GIS-based Depth-to-Groundwater Analysis	-	-	-	$150,000
Phase 1							
FY 2024	Spring 2024	Year 2 Infiltration	Manhole inspections and television inspections	-	34,000	170	$150,000
FY 2025	Spring 2025	Year 3 Infiltration	Manhole inspections and television inspections	-	34,000	170	$155,000
FY 2026	Spring 2026	Year 4 Infiltration	Manhole inspections and television inspections	-	34,000	170	$160,000
FY 2027	Summer 2026 – Spring 2027	Year 2 to 4 Inflow	Smoke testing, dye testing/flooding with TV, and building inspections	-	102,000	-	$200,000
FY 2028	Design – Summer 2027 Bid – Fall/Winter 2027 Construction – Spring 2028	Year 2 to 4 Rehabilitation	Sewer System Rehabilitation – cost effective and structural defective rehabilitation	-	TBD	TBD	$1,500,000[1]
Phase 2							
FY 2029	Spring 2029	Year 5 Infiltration	Manhole inspections and television inspections	-	34,000	170	$170,000
FY 2030	Spring 2030	Year 6 Infiltration	Manhole inspections and television inspections	-	34,000	170	$175,000
FY 2031	Spring 2031	Year 7 Infiltration	Manhole inspections and television inspections	-	34,000	170	$180,000
FY 2032	Summer 2031 – Spring 2032	Year 5 to 7 Inflow	Smoke testing, dye testing/flooding with TV, and building inspections	-	102,000	-	$220,000
FY 2033	Design – Summer 2032 Bid – Fall/Winter 2032 Construction – Spring 2033	Year 5 to 7 Rehabilitation	Sewer System Rehabilitation – cost effective and structural defective rehabilitation	-	TBD	TBD	$1,500,000[1]
Phase 3							
FY 2034	Spring 2034	Year 8 Infiltration	Manhole inspections and television inspections	-	34,000	170	$191,000
FY 2035	Spring 2035	Year 9 Infiltration	Manhole inspections and television inspections	-	34,000	170	$197,000
FY 2036	Spring 2036	Year 10 Infiltration	Manhole inspections and television inspections	-	34,000	170	$203,000
FY 2037	Summer 2036 -Spring 2037	Year 8 to 10 Inflow	Smoke testing, dye testing/flooding with TV, and building inspections	-	102,000	-	$240,000
FY 2038	Design – Summer 2037 Bid – Fall/Winter 2037 Construction – Spring 2038	Year 8 to 10 Rehabilitation	Sewer System Rehabilitation – cost effective and structural defective rehabilitation	-	TBD	TBD	$1,500,000[1]

1. Estimated costs includes construction and engineering
2. Estimated unit cost is based on 3-4% increase from previous year

	Infiltration
	Inflow
	Rehab/Construction

7.3.2 Peak Flow Storage Recommendations

As part of the EPA Order, inline and offline peak flow storage options were evaluated. Inline storage investigations concluded that a potential box culvert system could be constructed on the access road to the WWTP. This option is cost prohibitive. Offline storage options were analyzed at the existing WWTP site. The WWTP currently utilizes offline tanks for flow equalization during high flow events. Several of the tanks are proposed to be repurposed during recommended WWTP upgrades, including one of the old aeration tanks and both old secondary clarifiers. Should this be done, additional storage tanks could be constructed onsite. Constructing one or multiple aboveground tanks with pumping in and out of, is more economic than the inline option. During WWTP upgrades, the Town should consider constructing additional flow equalization onsite at the WWTP. Storage volumes are recommended to be upwards of 1 million gallons, as the current bypass initiates at 6 MGD and the future peak daily flow proposed in the WWTP evaluation is 7 MGD. Construction costs for additional tankage and pumping is estimated to be in the $3.5 million range.

7.4 Recommendations for Existing Pump Stations

The pump station recommendations are described in Section 5. The 13 pump stations were evaluated in Phase 1 of the CWMP, and recommendations provided in Phase 3, Section 5.

The evaluation consisted of a condition assessment and the development of a capital improvement plan. Butternut Lane was replaced and brought online in 2022. Spruce Street is slated for a similar replacement in 2023 or 2024. Minimal recommendations were made for these 2 stations. Recommendations varied for each station and are often related to the replacement of pumps, valves, safety upgrades, and electrical, instrumentation, and control upgrades, but also included other miscellaneous improvements based on the pump station. It was recommended that pump station upgrades be conducted based on age and several groupings were recommended to address similar age and type of station for improvements. The capital improvement plan with costs and schedule is summarized in the implementation table at the end of this section. It is acknowledged that I/I removal and WWTP improvements are a higher priority than pump station improvements for the Town. The implementation schedule is one option of many for station improvements. Currently, the Town is reserving $50,000 per year to address pump station equipment replacement/upgrades as these systems fail (and continue to age).

7.5 WWTP Upgrade Recommendations

The WWTP Upgrade recommendations are described in Section 6. An evaluation was completed in 2021, which outlined several recommendations for the facility based on age and permit-related improvements needed. The recommended improvements result in a very large upgrade with significant cost associated with such. The Town, Veolia, and Wright-Pierce are currently working together to develop a plan which could result in cost savings for the Town and spread-out improvements over several years. A design-build approach with a Guaranteed Maximum Price (GMP) is currently proposed. A summary of improvements and both approaches are summarized below with costs and typical project schedules for each approach.

The plant evaluation recommended the following improvements:

- Screening and Grit Facility
    - Provide a new facility located upstream of the influent pump station
    - One new mechanical screen and associated wash press
    - One new vortex style grit removal system and associated grit washer
    - One new grit and screenings receiving roll off
- Influent Pump Station Modifications
    - Replace existing pumps and piping
    - Address structural issues in lower wetwell
    - Address architectural, electrical and mechanical/HVAC associated with the existing building
- Primary Clarifier Modifications
    - Replace clarifier sludge removal mechanisms
    - Address tank structural issues
- Secondary System Modifications
    - Modify the secondary treatment process to an A2O process to achieve additional treatment capacity and biological nitrogen and phosphorus removal
    - Repurpose the existing secondary settling tanks to activated sludge tanks (selector zones)
    - Provide a new flow distribution structure
    - Provide new mixing system for anaerobic and anoxic zones
    - Provide new mechanical mixer/aerators for the oxic zones
    - Provide new blowers and associated blower building
    - Provide new internal recycle system
    - Provide new instrumentation and control system
    - Address secondary settling tank and nitrification tank structural issues
    - Provide new return and waste activated sludge pumps, piping and valves
    - Provide new mechanical/HVAC system for lower gallery
- Secondary Clarifier Modifications
    - Modify the effluent weirs to raise the tank water surface by three feet
    - Provide new sludge removal mechanisms
    - Address tank structural issues
- Tertiary Building
    - Provide a new tertiary treatment process for phosphorus removal
    - Tertiary treatment process will include two ballasted flocculation units complete with associated pumps, mixers, hydrocylcones, chemical feed and polymer system
    - Provide a new ferric chloride storage and feed system

- Chemical Building
    - Provide a new chemical building
    - New magnesium hydroxide storage and feed system for supplemental alkalinity
    - New sodium hypochlorite storage and feed system
    - New sodium bisulfite storage and feed system
- Chlorine Contact Tanks and Effluent Pump Station
    - Address tank structural issues
- Sludge Storage tanks
    - Repurpose the ex. aeration tank to two new sludge storage tanks
    - Provide aeration and mixing devices
    - Provide a tank cover and associated odor control unit
    - Address tank structural issues
- Administration Building
    - Provide new primary sludge piping and valves
    - Provide new dewatering and sludge transfer pumps
    - Provide new blower for sludge tank mixing
    - Demolish existing lime system
    - Demolish existing lower-level chemical systems
    - Provide two new screw presses for sludge dewatering
    - Provide new polymer system
    - Provide new sludge transfer conveyor, truck loading system and odor control unit
    - Address architectural, electrical and mechanical/HVAC associated with the existing building
- Garage and Electrical Building
    - Provide a new electrical building with additional garage space
    - Provide a new generator
    - Provide a new main switch gear
- General
    - Provide a new electrical distribution system
    - Provide new site piping as required
    - Replace all existing motor control centers throughout the facility
    - Provide a new fiberoptic network and plant SCADA system
    - Address existing site lighting

The evaluation recommended abandoning the existing anaerobic digestion process. The Town is currently planning to keep the processes in place based on market drivers and flexibility.

Table 7-3 Project Cost Estimate by Unit Process

Project Component	Cost
Civil	$1,379,000
Architectural	$2,993,000
Structural	$2,767,000
Process	$11,063,000
HVAC/Plumbing	$1,057,000
Instrumentation	$1,085,000
Electrical	$5,416,000
Specials	$370,000
Construction Factors	$4,727,000
Subtotal	**$30,858,000**
Design Contingency	$6,172,000
Construction Contingency	$2,190,000
Inflation To Midpoint of Construction	$6,728,000
Estimated Construction Cost	**$45,948,000**
Engineering Services	$8,752,000
Materials Testing	$219,000
Legal/Administrative	$428,000
Financing	**$837,000**
Total Project Cost	$56,163,000

Notes:

1. Cost estimate is based on ENR INDEX 11625 12/2020
2. Cost estimate is based on eliminating the anaerobic digestion process in favor of an alternative solids handing scheme. Refurbishing the existing anaerobic digestion process would add an additional $3.0M to $5.0M to the total project cost.

Using the current ENR Index of 13175 (March 2023), the new project cost in today's dollars is approximately $63,675,000. Based on the recent bidding climate, inflation variations over the last 2 years, and supply chain issues, a conservative planning total project cost is realistically $72 million.

A typical project schedule for an upgrade of this magnitude is presented below in Table 7-4. The schedule is built around a project that utilizes SRF funding and the milestones required by MassDEP and the Trust for that funding. This schedule assumes as a single, large project.

Table 7-4 Potential Upgrade Schedule

Milestone	Timeline*
Appropriate Engineering Funds for Design	Annual Town Meeting, May 2023
Preliminary Design (30%)	**8 months, following Notice-to-Proceed**
Preliminary Design Begins	August 2023
MassDEP SRF Project Evaluation Form (PEF) Submitted	August 2023
MassDEP SRF Intended Use Plan (IUP) Notification Draft	January 2024
Final IUP	1 month
Final Design & Permitting	**12-14 months, beginning after Preliminary Design**
Appropriate Construction Funds	Annual Town Meeting, May 2024
SRF Application Submission (90% Design)	By October 15, 2024
MassDEP Project Approval Certificate (PAC)	By December 31, 2024
100% Design and Permitting Complete	December 2024
Bidding	**4 months, after 100% Design complete**
Prequalification of GCs and Subs	January 2025 (2 months)
Filed Sub-bids	March 2025 (4 weeks)
GC Bids	April 2025 (6 weeks)
Construction*	**30 months, beginning after GC selected and NTP**
Contractor Notice-to-Proceed	By June 30, 2025
Substantial Completion	December 2027
Final Completion	February 2028
One-Year Warranty Period	December 2028

*Extended construction period expected based on lead times for equipment such as generator, MCCs, switchgear, etc.

The NPDES permit compliance schedule for phosphorus requires the facility to be in compliance by February 2025. Based on the schedule outlined above, a time extension will likely be required.

The following list summarizes the proposed design-build approach with the following separate contracts to spread-out improvements to the facility.

- Tertiary Phosphorus Removal
- Address Hydraulic Capacity Issues
- Various Equipment and System Improvements
- Solids Handling Improvements

The tertiary phosphorus removal contract will be completed first, as the EPA compliance schedule requires the new process be in place by February 2025. Based on design and construction scheduling, it is likely an official time extension will be requested from EPA (recent and ongoing verbal discussions with EPA suggest a time extension is achievable). This is especially true as electrical work is proposed in Contract 1, and certain electrical equipment lead times can are currently 1-to-2 years out. The remaining contracts can be undertaken one after the other or spread out depending on priorities and Town preferences. It is possible that all Contracts could be completed within 10-to-12 years.

7.6 Groundwater Discharge Recommendations

Several options were analyzed for groundwater discharge of treated wastewater in Section 3. These options have impacts on Needs Area 1, the existing collection system, and plans for the WWTP and required improvements.

The first set of alternatives evaluated consists of utilizing effluent disposal sites for treated effluent at the WWTP. To complete this, nitrogen removal upgrades would be required at the WWTP. Should these be implemented, a pump station can be constructed at the plant, which would pump treated wastewater, prior to effluent flow metering and surface water discharge, to a groundwater disposal site. This would not alleviate average and peak flow issues for the WWTP processes but would reduce flow to the French Stream and alleviate permit compliance issues related to flow. The analysis completed for effluent disposal sites is desktop only at this time. Based on the analysis, it appears that constructing effluent disposal at the Esten School is the most viable option at this time. The site potentially has good disposal capacity and sewer routing from the WWTP can be accomplished cross-country, which would reduce construction costs (reduced pavement and utility disturbance, for example). It is also the closest site to the WWTP of the four options evaluated. The Town should consider this as a viable option for alleviating WWTP flow concerns if long-term I/I reduction does not adequately address the issue.

In addition to pumping treated effluent from the WWTP to satellite groundwater disposal locations, decentralized WWTFs were evaluated for viability to treat wastewater from Needs Area 1 and shedding flow from the existing collection system. Flow “shedding” would help to reduce influent flow to the existing WWTP, which would alleviate concerns of average and peak flow capacity. The Union Point area has the largest available land area for effluent disposal. With such a large available area, a WWTF could be constructed on 1-acre of site area and still allow room for effluent disposal. In addition, the site is located in the northern part of town, which is where the highest flow in the existing collection system is pumped and conveyed. Three options were reviewed to send flow from the existing collection system to a new decentralized WWTF at Union Point. The Forest Street pump station, Hingham Street North pump station, and a combination of both stations could have new force mains constructed to re-direct flow from the existing collection system to a new decentralized WWTF. Based on the pump station capacities, it appears that re-routing Hingham Street North or a combination of both stations would be the most viable option to fully utilize the Union Point area and to address flow issues at the existing WWTP. Due to the high cost of constructing a new facility and disposal area, it is likely that this option would only be viable if the developers of

Union Point partnered with the Town. In addition, part of the area is sited as Open Space, which may lead to conflicts with public opinion on the best use of this land area.

7.7 Project Costs and Financing Plan

This section presents an initial assessment of the varying programs available to the Town for its various wastewater projects and highlights those in particular that should be further considered. It should be noted that many of the funding sources identified below are in various states of the application process. For ease of review, we have included a summary table, Table 7-4, below that shows each funding source in order of when the applications are due.

Table 7-5 Funding Opportunities Summary

Grant	Due Date	Maximum Award	Match Requirement	Applicable Projects
House Congressional Earmarks	Early 2024	No maximum	20%	Collection System, WWTP
Senate Congressional Earmarks	Early 2024	No maximum	20%	Collection System, WWTP
Shared Streets and Spaces Grant Program	Spring	$5,000 to $500,000	No match	Collection System, Roads, Public Spaces
Municipal Vulnerability Preparedness (MVP) Action Grant	Spring	$25,000 - $2,000,000 Regional projects - $5,000,000	25%	WWTP
MassWorks Infrastructure Program	Spring	No maximum	Not required	Groundwater Discharge, Collection System, Pump Stations
Complete Streets Grant Program	May 1, 2023 and October 1, 2023	$500,000 in any four rolling fiscal year periods	None	Collection System
Clean Water State Revolving Fund Loan (CWSRF)*	July 2023	No maximum Current Principal Forgiveness – 9.9%	No match	All project types
Asset Management Grant	August 2023	$150,000	40%	All project types
Community Compact Cabinet Efficiency & Regionalization (E&R) Program	Fall 2024	$100,000 for a single entity $200,000 for multi-jurisdictional	No match	Groundwater Discharge with Union Point developers
FEMA/MEMA Hazard	Application deadlines	$4,000,000	25%	All project types related to

Grant	Due Date	Maximum Award	Match Requirement	Applicable Projects
Mitigation Grant Program (HMGP)	vary; applications open within 12-months of a presidential Major Disaster Declaration			infrastructure protection
EDA Economic Adjustment Assistance (EAA) & Public Works (PW) Programs	Rolling	EAA awards range from $150,000 - $1,000,000 PW awards range from $600,000 - $3,000,000	20% match up to 100% in certain circumstances	Groundwater discharge at Union Point
Energy Efficiency Conservation Block Grant (EECBG)	Guidance coming soon*	*	*	Pump Stations, WWTP

**SRF needed to help position for federal earmark*

7.7.1 Congressional Earmarks

The 117th Congress wrote a new set of rules that allowed them to revive Congressionally directed spending on projects – known as "earmarks." Earmarks can support a wide range of local priority projects ranging from transportation investments, water, wastewater, stormwater infrastructure, and water quality protection projects; and economic development initiatives that improve distressed and blighted areas and encourage community revitalization. To take advantage of earmarks, a locality must submit a request to at least one Member of Congress who will determine which projects to support. Member-selected projects are submitted for grant funding to 10 designated Appropriations Subcommittees, each of which reviews the submissions to consider its placement in legislation.

The US House of Representatives issues requests for Community Project Funding and the US Senate issues Congressionally Directed Spending Requests. These two programs allow communities to work directly with Congress to bring awareness to important local projects that are deserving of federal partnership and have full community support.

7.7.1.1 US House of Representatives - Community Project Funding Requests

In 2021, the US House of Representatives reinstated the use of earmarks (member-directed spending requests), and it is expected that these "Community Project Funding Requests" will be accepted again next year for FY2024. Within the US House Committee on Appropriations, there are subcommittees for different agencies and accounts.

If Rockland is interested in applying for water or wastewater-related assistance, they must submit a PEF to MassDEP for an IUP listing under the CWSRF and/or DWSRF program. IUP listing is required for earmark projects under the Interior Subcommittee USEPA STAG program as well as a 20% local match.

The application would be made through Representative Bill Keating's office in early 2024. https://keating.house.gov/cpf.

7.7.1.2 US Senate - Congressionally Directed Spending Requests

The US Senate also reinstated the earmark process and is expected to do so again for FY24. The same requirements as for water and wastewater infrastructure Community Project Funding Requests would apply.

Applications would be made through both Senator Elizabeth Warren's office Congressionally Directed Spending Federal Funding Requests FY2023 | Services | U.S. Senator Elizabeth Warren of Massachusetts (senate.gov) and Senator Edward Markey's office CONGRESSIONALLY DIRECTED SPENDING FEDERAL FUNDING REQUESTS FY2023 | Senator Edward Markey of Massachusetts (senate.gov) in early 2024.

7.7.2 Shared Streets and Spaces Grant Program

The Massachusetts Department of Transportation (MassDOT) administers the Shared Streets and Spaces Grant Program to provide financial support for quick-launch/quick-build projects that implement or expand improvements to plazas, sidewalks, curbs, streets, parking areas, and other public spaces in support of public health, safe mobility, and renewed commerce. Eligible applicants are all municipalities and public transit authorities in the Commonwealth. Eligible projects must align with the program goals of supporting public health, safe mobility, and strengthened commerce. Eligible projects are defined by the following categories:

- Speed Management: Projects to make streets safer for all users by reducing vehicle speeds (e.g., road diets or lane narrowing; speed humps; mini-roundabouts or traffic circles; raised center medians; raised intersections or crosswalks; pedestrian-activated warning devices; and pedestrian signal upgrades). Projects must provide observed speed data before and after intervention. The maximum grant award is $200,000.
- Bicycle and Pedestrian Infrastructure: Projects to make biking and walking a safe, comfortable, and convenient option for everyday trips (e.g., new, or significantly widened sidewalks; new or improved pedestrian crossings; pedestrian signal upgrades; bike lanes; trails or shared-use path connections; at-grade rail crossing improvements for bicyclists and pedestrians; bicycle parking; pedestrian or bicyclist lighting or wayfinding; new bike-share equipment; and bicycle-friendly drain grates). The maximum grant award is $200,000.
- Transit Supportive Infrastructure: New facilities for public buses, including but not limited to, dedicated bus lanes, traffic signal priority equipment, and bus shelters. The maximum grant award is $500,000.
- Main Streets: Repurposing streets, plazas, sidewalks, curbs, and parking areas to facilitate outdoor activities and programming. The maximum grant award is $100,000.
- Equipment Only: Purchase of eligible equipment (e.g., speed feedback signs; pedestrian-activated warning devices; flex posts and other bicycle lane delineators; bicycle racks; bicycle repair stations; signal equipment; pavement markings and/or paint; safety/ directional signage for pedestrians and bicyclists; and snow removal equipment for pedestrian and bicyclist facilities. The maximum grant award is $50,000. Municipalities are eligible to receive two Equipment Only grants in addition to an award for another project type within the same grant round.

In Round 4, preference was given to projects that: promote speed management; are in a Census Block Group identified as an Environmental Justice Community or as having a median household income below the statewide median income; support safe travel to schools; support safe routes for seniors; provide safe routes to open spaces, playgrounds, and parks; provide key public transit connections; and demonstrate community support. Priority will also be given to projects in communities that have Housing Choice designation, have implemented economic development best practices through the Community Compact program, and/or are proposing a project that will benefit from an Opportunity Zone Fund investment. A match is not required, however, is highly recommended. For more information, visit Shared Streets and Spaces Grant Program | Mass.gov.

7.7.3 Municipal Vulnerability Preparedness (MVP) Action Grant

The Massachusetts Office of Energy and Environmental Affairs (EEA) administers the Municipal Vulnerability Preparedness Grant Program's MVP Action Grants to provide financial and technical assistance to designated "MVP Communities" to implement priority adaptation actions identified through the MVP planning process, or similar climate change vulnerability assessment and action planning that has led to MVP designation.

Eligible projects must address one (or more) priority implementation actions within the municipalities MVP plan/report and use best available techniques and climate projections.

Funding amounts range from $25,000 to $2 million. Regional projects may request up to $5 million. A minimum 25% match of the total project cost is required. Applications are typically due in late spring or early summer. Visit https://www.mass.gov/municipal-vulnerability-preparedness-mvp-program for more information.

7.7.4 MassWorks Infrastructure Program

The Massachusetts Executive Office of Housing and Economic Development administers the MassWorks Infrastructure Program to provide competitive grants for public infrastructure that support and accelerate housing production, spur private development, and create jobs. Eligible projects include the design, construction, building, land acquisition, rehabilitation, repair, and other improvements to publicly owned infrastructure including, but not limited to, sewers, utility extensions, streets, roads, curb-cuts, parking, water treatment systems, telecommunications systems, transit improvements, public parks and spaces within urban renewal districts, and pedestrian and bicycle ways. Program investments will be targeted to projects that require infrastructure improvements or expansion to support and/or facilitate new growth or address safety issues.

Generally, the most competitive applications are:

- Advanced in their design and permitting,
- Ready to begin in the upcoming construction season,
- Leveraging related private development that is also ready to start construction in the near term, and
- Aligned with the program's spending targets, and the state's sustainable development goals.

Only those projects that are prepared to proceed to construction in the Spring 2024 construction season should apply for consideration (a 25% design must be complete by grant application submission deadline). There are no set minimum or maximum grant awards. A match is not required, however, applications that include funding support from other government or private sources (particularly local funds) will be more competitive.

Section 3A to the Zoning Act (Chapter 40A of the General Laws) requires each of the 175 MBTA communities to have a zoning district in which multifamily zoning is permitted as of right, and that meets other requirements set forth in the statute. Any MBTA community that does not comply with Section 3A will not be eligible for funding from the MassWorks Infrastructure Program.

Applications are typically due in the spring and submitted through the Massachusetts Community One Stop for Growth application portal.

7.7.5 Complete Streets Grant Program

The MassDOT Complete Streets Funding Program provides technical assistance and construction funding to eligible municipalities. Eligible municipalities must pass a Complete Streets Policy and develop a Prioritization Plan. The Complete Streets grant funding awards are used to fund local, multi-modal infrastructure improvement projects, as identified in each municipality's submitted Complete Streets Prioritization Plan. Examples of projects that can be addressed through the program include improved street lighting, radar speed signage, intersection signalization, new shared bike paths, designated bicycle lanes, ADA/AAB compliant curb ramps, transit signal prioritization, and transit pedestrian connection improvements such as ramps, signage, and new signals at crosswalks.

Effective Fiscal Year 2022 Grant Round 1, municipalities are eligible to receive up to $500,000 in any rolling four-fiscal-year period. In other words, a municipality may only receive one full $500,000 grant, or several smaller grants, during any four-fiscal-year timeframe. Tier 3 construction applications are accepted on May 1st or October 1st, annually.

7.7.6 Clean Water State Revolving Fund Loan (CWSRF)

The CWSRF program provides low-interest rate financing to municipalities to construct water quality protection projects such as sewers and wastewater treatment facilities. A variety of publicly owned water quality improvement projects are eligible for financing. As part of the BIL, Massachusetts expects to receive $60.48 million for the CWSRF Supplemental Grant. The Supplemental CWSRF Grant requires that Massachusetts provide at least $29.6 million, 49% of its total grant amount, as loan forgiveness to eligible projects based on the affordability tier system. The Clean Water State Revolving Fund (CWSRF) offers loans at a 0% interest rate for projects primarily intended to remediate or prevent nutrient enrichment of a surface water body or water supply.

In addition, communities that have earned the Housing Choice designation at the time of the SRF project solicitation are eligible to have their loan's interest rate reduced by 0.5% (for example from 2% to 1.5% for a standard term loan).

Rockland is currently designated a Tier 2 Affordability Community (disadvantaged). and is eligible to receive 6.6% principal forgiveness.

Table 7-6 SRF Loan Forgiveness Summary

Tier	Percent of State APCI	Minimum Loan Forgiveness
1	Greater than 80%, but less than 100%	3.3%
2	Greater than 60%, but less than 80%	6.6%
3	Less than 60%	9.9%

Project Evaluation Forms (PEFs) are due annually in July/August.

7.7.7 Asset Management Grant Program

The Massachusetts Department of Environmental Protection (MassDEP) in partnership with the Massachusetts Clean Water Trust (the Trust) administers the Asset Management Plan Grant program to assist public entities in developing water infrastructure Asset Management Plans (AMPs). Up to $2 million was available for CY 2022. Eligible applicants are any city, town, special district, or other existing municipal governmental sub-unit which owns and controls a drinking water, wastewater, stormwater, or water re-use treatment or conveyance system. Eligible projects are new and complete AMPs, or supplements to existing AMPs that do not cover all aspects of asset management. Eligible project activities include:

- Asset Inventory: All activities that expand the applicant's asset information and ability to access and organize that information for management purposes.
- Level of Service: All activities that clarify the applicant's performance goals and means of measuring performance are eligible.
- Criticality/Risk Analysis: All activities related to asset characterization and identification of critical assets are eligible. Evaluations of the consequences of failure (criticality), such as replacement costs, collateral damage, and reduction in level of service to sensitive customers are also eligible activities.
- Life Cycle Cost (LCC) Analysis: All activities that apply LCC analysis to inform decisions about capital projects are eligible including asset construction, expansion, rehabilitation, or replacement.
- Funding Analysis: All activities that lead to creating a sustainable financial structure for the utility including determining the full cost of service over the long term and creating a rate structure that is suitable for the community.
- Asset Management Software and Training: All activities required to select, purchase, install, integrate, and successfully run AM Software are eligible including associated training.
- Asset Management Program Plan (AMPP): provisions for creating a written plan for continuing to operate and/or develop the AMP.
- Asset Management Report (AMR): provisions for generating reports of the conclusions of various asset evaluations and prioritizations, level of service goals and performance analysis, LCC analysis, and rate structure review, etc.
- Public Education: provisions for sharing the conclusions of the AM Planning or the status and capabilities of the AMP with the public in any format. Applicants must select a pre-qualified engineering consultant (e.g., Wright-Pierce) from a list approved by the Trust to assist with preparation of the AMP. The maximum grant award is $150,000, or 60% of the total project cost, whichever is less. A 40% match is required, of which up to 50% may be made up of in-kind services.

Small systems may be eligible to use in-kind services for up to 100% of their total match. Applicants may use Clean Water or Drinking Water SRF loans to finance cash contributions. Applicants must complete the Project Evaluation Form (PEF) to be included on the CY 2023 Intended Use Plan (IUP) project list for consideration to receive funding. PEFs are due in August 2023. For more information, visit Asset Management Planning Grant Program | Mass.gov.

7.7.8 Community Compact Cabinet Efficiency and Regionalization (E&R) Program

The Massachusetts Department of Revenue, Division of Local Services administers the Community Compact Cabinet Efficiency and Regionalization (E&R) program to provide financial support for governmental entities interested in implementing regionalization and other efficiency initiatives that allow for long-term local government. Eligible applicants are sustainability municipalities, regional school districts, school districts considering forming a regional school district or regionalizing services, regional planning agencies, and councils of governments. Municipalities are eligible to submit one individual application and may participate in one multi-jurisdictional application. Funds will be provided to assist in the planning and implementation of regionalization and other efficiency initiatives that support long-term municipal sustainability:

- Regionalization: shared services, joint or regional facilities, intergovernmental agreements, consolidations, mergers and other collaborative efforts.
- Internal Efficiencies: for a single entity to plan and implement innovative strategies that improve the quality and efficiency of municipal service delivery.

Planning and implementation activities are eligible. All municipalities associated with the application must have entered into a Compact in order to qualify for bonus points. The maximum award is $100,000 for a single entity and $200,000 for multi-jurisdictional applications. **Applications opened in the Fall of FY23.** For more information, visit Asset Management Planning Grant Program | Mass.gov.

7.7.9 Hazard Mitigation Grant Program (HMGP)

The Massachusetts Emergency Management Agency (MEMA) administers the federal Hazard Mitigation Grant Program (HMGP). Funds may be available statewide following a Presidential Major Disaster Declaration as requested by the Governor, with priority given to projects in the area of the state affected by the disaster. These funds assist communities to enact mitigation measures that reduce the risk of loss of life and property from future disasters. Eligible applicants include local governments who are part of a FEMA-approved multi-jurisdictional county hazard mitigation plan (or plan that is in the process of being updated), Native American tribes, and private non-profit organizations (sponsored by local government).

HMGP funds new and/or updated hazard mitigation plans, planning-related activities, and projects that result in an increase in the level of protection from natural hazard damages including:

- Stormwater upgrades.
- Drainage and culvert improvements.
- Property acquisition.
- Slope stabilization.
- Infrastructure protection.
- Seismic and wind retrofits; and
- Structure elevations.

All applicants and sub-applicants for projects must have a FEMA-approved Hazard Mitigation Plan by the application deadline and at the time of obligation of grant funds. Generally, the cost-share is 80% federal grant / 20% non-federal match (cash and/or in-kind services)**. Additional funding rounds may be available following a Presidential disaster declaration.**

7.7.10 U.S. Economic Development Agency Economic Adjustment Assistance and Public Works Program

The U.S. Economic Development Administration's (EDA) Economic Adjustment Assistance and Public Works Program provides funding to help distressed communities build, design, or engineer critical infrastructure and facilities that will help implement regional development strategies and advance bottom-up economic development goals to promote regional prosperity. Eligible projects shall build, design, or engineer sewer infrastructure and facilities that will help implement regional development strategies and advance bottom-up economic development goals to promote regional prosperity in distressed communities.

Investments made through the Public Works program must be aligned with a current CEDS or EDA-accepted regional economic development strategy and clearly lead to the creation or retention of long-term high-quality jobs.

To be eligible for funding each project must be consistent with the region's current Comprehensive Economic Development Strategy (CEDS) or equivalent EDA-accepted regional economic development strategy that meets EDA's CEDS or strategy requirements. Grant awards typically range from $600,000 to $3 million and the average award is approximately $1.4 million. Generally, the amount awarded by the Public Works Program is 50% of the total project cost. However, depending on the economic needs of the region in which the project is located, the EDA may award up to 80% of the total project cost. Applications are accepted on a rolling basis.

7.7.11 Energy Efficiency Conservation Block Grant (EECBG)

The Bipartisan Infrastructure Law (BIL) allocated $550 million for the Energy Efficiency and Conservation Block Grant (EECBG) to support communities with financial assistance to complete renewable energy, sustainable transportation and energy efficiency projects. Cities with a population greater than 35,000 or the top 10 most populous cities in each state are automatically eligible for EECBG formula funding from the U.S. Department of Energy (DOE). Cities that do not meet the criteria for the formula funds are eligible to apply through their state.

DOE released formula allocations (EECBG Program Formula Grant Application Hub | Department of Energy) along with information on how to receive the funding. Massachusetts EECBG non-formula grant guidance will be released in the coming months.

7.7.12 Rate Study

In addition to funding opportunities listed above, primary funding for upgrades to the collection system, pump stations, and WWTP are recovered through user fees. A rate study was conducted in late 2022 through early 2023. The report can be found in Appendix D. A summary of the findings is included below in Table 7-7.

Table 7-7 Rate Study Findings

Depart.	Project	Estimated $	Funding Source	Req. Year	Rec. Year	FY 2023	FY 2024	FY 2025	FY 2026	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038
Sewer	Inflow & Infiltration Remediation Syst - Extended FY33	$2,200,000	Sewer Und FB	2016	2019		$200,000	$200,000	$200,000.00	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000	$200,000						$200,000
Sewer	Inflow & Infiltration Annual Control Plan-Extended FY38	$2,241,000.	Sewer Und FB	2023	2024		$150,000	$155,000	$160,000	$200,000		$170,000	$175,000	$180,000	$220,000		$191,000	$197,000	$203,000	$240,000		$155,000
Sewer	Inflow & Infiltration Reoperation	$330,000	ARPA	2022	2023	$330,000																
Sewer	Digester Building Gas Lines	$350,000	Sewer Und FB + ARPA	2022	2024		$20,000															
Sewer	Digester Recirculation Pumps	$50,000	Sewer Und FB	2022	2025			$50,000														$50,000
Sewer	New Heating System - office building	$150,000	Sewer Und FB Grant to cover $50,000	2023	2025			$100,000														$100,000
Sewer	Portable Generator	$500,000	ARPA	2023	2024																	
Sewer	Spruce Street Ejector Station	$100,000	Sewer Und FB	2022	2024		$100,000															
Sewer	Sewer I/I Rehabilitation (Every 4 Years, $2M/year)	$6,000,000	SRF Borrowing	2028	2029						$2,000,000					$2,000,000					$2,000,000	
Sewer	Pump Station Upgrade - Phases 2 to 5	$200,000	SRF Borrowing	2024	2025			$50,000	$50,000	$50,000	$50,000											$50,000
Design Phase	WWTF Design/ Bidding - $2.5M total - Contract 1	$1,500,000	Conventional Loan ($1.5M) ARPA ($1M)	2024	2025		$1,500,000															
Treatment Upgrade	Phosphorus/ Tertiary Treatment Upgrade - Contract 1	$12,500,000	SRF Borrowing	2025	2026			$12,500,000														$12,500,000
Construction	WWTP Upgrades - Contracts 2 thru 4	$65,000,000	SRF Borrowing	2026	2027		$200,000		$12,000,000	$12,000,000	$11,000,000	$7,000,000	$7,000,000	$6,000,000	$5,000,000	$5,000,000						
							Phosphorous Treatment System,		Improve Hydraulic Capacity, New Screening, and Grit			Misc. Equipment, System Improvements, and Nitrogen				Solids Handling and Process						

Table 7-8 Summary

Funding Source			FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033
ARPA			$330,000	$830,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Conventional Loan			$ -	$1,500,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Gen Fund			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Grant			$ -	$ -	$50,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Sewer Und FB			$ -	$470,000	$505,000	$360,000	$400,000	$200,000.00	$370,000	$375,000	$380,000	$420,000	$200,000
SRF Borrowing			$ -	$ -	$12,550,000	$12,050,000	$12,050,000	$13,050,000	$7,000,000	$7,000,000	$6,000,000	$5,000,000	$7,000,000
Totals			$330,000	$2,800,000	$13,105,000	$12,410,000	$12,450,000	$13,250,000	$7,370,000	$7,375,000	$6,380,000	$5,420,000	$7,200,000
Control			$330,000	$2,800,000	$13,105,000	$12,410,000	$12,450,000	$13,250,000	$7,370,000	$7,375,000	$ 6,380,000	$ 5,420,000	$7,200,000
Diff			$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -

7.8 Implementation Plan

The wastewater management plan includes the financing and construction of various capital improvement projects throughout the Town. These recommendations include careful consideration, planning, and scheduling over the 20-year planning period. An implementation schedule is included in Table 7-9 which summarizes each aspect of the recommended upgrades presented in Phase 3 of the CWMP. The recommendations do not include costs for groundwater discharge or peak flow storage options as they are not recommended at this time.

Table 7-9 WWTP, Pump Stations, and Wastewater Collection System Implementation Plan

Item	Total Est. Costs Per Item	Plan Year																			
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Collection System	$6,741,000	$150,000	$155,000	$160,000	$200,000	$1,500,000	$170,000	$175,000	$180,000	$220,000	$1,500,000	$191,000	$197,000	$203,000	$240,000	$1,500,000	$250,000	$250,000	$250,000	$250,000	$2,000,000
Pump Stations																					
Forest Street	$964,000					$964,000															
Lincoln Road	$618,000					$618,000															
Wheeler Avenue	$1,163,000				$1,163,000																
Summer Street	$1,170,000				$1,170,000																
John Burke Drive	$1,163,000				$1,163,000																
Hingham Street – North	$1,628,000						$1,628,000														
Hingham Street – South	$1,784,000						$1,784,000														
Market Street	$864,000			$864,000																	
Woodsbury Road	$786,000			$786,000																	
Millbrook Drive	$765,000					$765,000															
Old Country Way	$765,000		$765,000																		
Spruce Street	$615,000																				$615,000
Butternut Lane	$618,000																				$618,000
WWTP	$72,000,000	$1,000,000	$1,115,000	$15,512,000	$641,000	$640,000	$9,395,000	$1,661,000	$1,661,000	$24,360,000	$961,000	$961,000	$14,093,000								
Total	$91,644,000	$1,150,000	$2,035,000	$17,322,000	$4,337,000	$4,487,000	$12,977,000	$1,836,000	$1,841,000	$24,580,000	$2,461,000	$1,152,000	$14,290,000	$203,000	$240,000	$1,500,000	$250,000	$250,000	$250,000	$250,000	$3,233,000

Appendix A
Public Hearing Presentation & Meeting Minutes

Appendix B
Sanitary Sewer Evaluation Survey Report & I/I Control Plan Letter

Prepared for:

TOWN OF ROCKLAND, MASSACHUSETTS

SEWER SYSTEM EVALUATION SURVEY

September 2021

COMMONWEALTH OF MASSACHUSETTS
MARK R. MESERVE
CIVIL
No. 37249
REGISTERED
PROFESSIONAL ENGINEER

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Prepared By:

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BACKGROUND

On January 13, 2021, AECOM received an executed Agreement from the Town of Rockland to solicit bids and procure a subcontractor to perform infiltration/inflow (I/I) investigative field work, and to document the findings in a sewer system evaluation survey (SSES) report. The work consists of flow isolation of approximately 90% of all pipe ranging in size from 8 to 12-inch diameter and follow-up television inspection in pipes that qualify for that work; and television inspection of approximately one/third of all pipe ranging in size from 15 to 33-inch diameter. The locations of the work are further identified in the "Figures" subsection of this report.

In accordance with the Agreement, the scope of work for this project includes the following:

1. Coordinate the work between the subcontractor and the Town to perform the field work, review the results of the flow isolation for pipe sizes 8 to 12-inch diameter and identify locations that qualify for follow-up CCTV inspection, review television inspection videos and written inspection logs and identify locations where rehabilitation is warranted to remove I/I sources.

2. For each I/I source identified in item 1, identify the type of rehabilitation method and estimate the rehabilitation cost.

3. Prepare a letter report documenting the findings of the field work including a general description and summary of the work, a summary of the sewer pipeline and/or manhole defects (I/I sources), rehabilitation costs and a priority ranking of I/I sources recommended for rehabilitation.

Presented in this report are the results of the field work and recommended follow-up rehabilitation work to remove I/I sources from the sewer system.

FIGURES

The following two figures are presented in Attachment A:

- Figure 1, Field Work Locations, identifies the locations of areas that were flow isolated and the main pipeline that received television inspection as part of this study.
- Figure 2, General Location Plan of Work, identifies the locations of I/I sources recommended for rehabilitation or further investigation as described later in this report.

DATA COLLECTION

Field work performed for this project consisted of flow isolation, internal preparatory cleaning and closed-circuit television (CCTV) inspection of sewer pipelines to identify infiltration sources. These efforts are described in the text below. The field work was performed by National Water Main Cleaning Company (NWM) under subcontract to AECOM.

Flow Isolation

Between March 1, 2021 and April 9, 2021, a total of 200,451 linear feet of mainline sewer with diameter from 8 to 12-inches received flow isolation work generally between the hours of midnight and 5:00 a.m. In most locations, the upstream manhole of each manhole-to-manhole pipe segment was plugged. After installation of the plug, the flow was measured in the downstream manhole using precalibrated weirs. The measured flow during the early morning hours is considered to be infiltration.

A detailed breakdown of the results of the flow isolation work is presented in a letter report dated April 30, 2021, prepared by AECOM and submitted to the Town of Rockland. The letter report and related backup tables are included in Attachment B of this report. The letter report includes the following tables and plan:

- Table 1. Rank of Pipe Segments with Infiltration Greater than 4,000 gpd/in-mi.

- Flow Isolation Summary Tables.

- Plan showing locations of sewer segments 8 to 12-inch diameter recommended for television inspection based on flow isolation results, and locations of pipe larger than 12-inch diameter that are scheduled for CCTV inspection.

In summary, Table 1 presented in Attachment B identifies 81 pipe segments with infiltration above 3,000 gpd/inch-mile. These pipe segments, representing a total length of approximately 19,131 linear feet of main pipeline, were scheduled for television inspection. Note: as explained in the letter report dated April 30, 2021, some pipe segments with infiltration greater than 3,000 gpd/in-mi but less than 4,000 gpd/in-mi were included in the list of pipe segments scheduled for CCTV inspection.

Sewer manholes that were accessed during the flow isolation work were observed for infiltration sources. The rate of infiltration observed entering the sewer system through each manhole was estimated, and the location of each manhole infiltration source was noted in the "Comments" column of the Flow Isolation Report tables presented in Attachment B.

Presented in Table 1 is a summary of manhole defects and estimated infiltration amounts from the manholes observed to have infiltration sources during the field work. A total of 34 manholes were found to have infiltration sources. Chemical sealing is the recommended rehabilitation method for all manholes. In some manholes with more serious leaks, the addition of a cementitious liner is also recommended. The information from Table 1 was used to identify manholes which qualify for rehabilitation work as described later in this report.

Preparatory Cleaning and Internal Television Inspection

Approximately 31,541 linear feet of main pipeline was scheduled for preparatory cleaning and internal television inspection. This total represents the sum of the following:

- 19,131 linear feet of 8 to 12-inch diameter pipe that qualified for CCTV inspection based on the flow isolation results.

- 8,860 linear feet of 15 to 21-inch diameter pipe which represents approximately one/third of the total pipe length in the Town of Rockland within that pipe range.

TABLE 1. SUMMARY OF MANHOLE DEFECTS FOUND DURING FLOW ISOLATION WORK

Manhole Number	Street Name	Defect	Estimated Infiltration (gpd)	Recommended Rehabilitation
D1	North Ave.	Walls	1,400	Chemical Seal & Cementitious Liner
D133	Leisurewoods Dr.	Walls	1,400	Chemical Seal & Cementitious Liner
D144	Leisurewoods Dr.	Walls	300	Chemical Seal
E2	Plain St.	Walls	300	Chemical Seal
E5	Reed St.	Walls	300	Chemical Seal
E12	Belmont St.	Pipe Connections (PC)	300	Chemical Seal
E13	Belmont St.	PC	300	Chemical Seal
E14	Belmont St.	Bench	300	Chemical Seal
E15	Belmont St.	Bench	300	Chemical Seal
E19	Pacific St.	Bench	300	Chemical Seal
E20	Pacific St.	Bench	300	Chemical Seal
E22	Pacific St.	Walls	300	Chemical Seal
E24	Reed St.	Walls	300	Chemical Seal
E28	Reed St.	Bench	300	Chemical Seal
E32	Taunton Ave.	Bench	300	Chemical Seal
E70	Grove St.	PC	300	Chemical Seal
H40	Park St.	Walls	300	Chemical Seal
H67	School St.	Invert & PC	2,900	Chemical Seal & Cementitious Liner
J4	Shaw Rd.	PC	150	Chemical Seal
J6	Josh Gray Rd.	Walls	400	Chemical Seal
L10	Liberty St.	Walls @ PC	1,100	Chemical Seal & Cementitious Liner
L12	Sunnybank Ave.	Wall @ PC	150	Chemical Seal
L21	Webster St.	Walls	300	Chemical Seal
L33	Everett St.	Walls	300	Chemical Seal
L61	Hingham St.	Walls	300	Chemical Seal
N113	Liberty St.	Bench	300	Chemical Seal
N115	Liberty St.	Walls	300	Chemical Seal
N143	Liberty St.	Wall @ PC	3,600	Chemical Seal & Cementitious Liner
N152	Liberty St.	Walls	300	Chemical Seal
N156	Liberty St.	PC	300	Chemical Seal
S190	Summer St.	Wall @ PC	5,000	Chemical Seal & Cementitious Liner
W7	Culver Dr.	Walls	300	Chemical Seal
W46A	Salem St.	Wall @ PC	300	Chemical Seal
W89	Brookside Rd.	Walls	1,400	Chemical Seal & Cementitious Liner
Totals	34 Manholes		24,700	

Notes:
(1) Estimated infiltration is based on a visual assessment of each infiltration source.

- 3,550 linear feet of 24 to 33-inch diameter pipe which represents approximately one/third of the total pipe length in the Town of Rockland within that pipe range.

The internal television inspection work was performed to identify specific pipeline defects or infiltration sources within a length of sewer from one manhole to another (pipe segment). Where necessary to perform the work, pipe segments were cleaned by a high-pressure jet to remove minor obstructions and to clean the pipe walls so that if defects are present they can be visually detected. Subsequently, a closed-circuit television camera, with audio, was used to inspect and record the condition of the pipe segment. The location, type and magnitude of each pipeline defect or infiltration source was documented.

From April 20, 2021 to May 6, 2021, a total of 31,618 linear feet of municipal sewer main pipeline received internal television inspection. This length of pipeline represents the sum of 19,385 feet of pipe 8 to 12-inch diameter plus 8,739 feet of pipe 15 to 21-inch diameter plus 3,494 feet of pipe 24 to 33-inch diameter.

The results of the internal television inspections are documented in videos and corresponding television inspection logs, also identified as "NWMCC Inspection Report", prepared by NWM. A hard copy of the television inspection logs and a thumb drive containing electronic copies of both the television inspection logs and the videos were provided separately to the Town of Rockland. The television inspection logs and the videos prepared by NWM are made a part of this report by reference.

AECOM performed a review of the television inspection videos and corresponding logs to determine the locations and types of pipeline defects, to estimate infiltration amounts associated with each defect, and to determine recommended rehabilitation methods. Presented in Table 2 is a summary of the pipeline defects identified from this study and an estimate of infiltration entering the sewer system from each defect. Recommended rehabilitation for each defect is presented separately in Tables 3 and 4, described later in this report.

TABLE 2. SUMMARY OF SEWER PIPELINE DEFECTS

Location				Pipe Information				Pipeline Defects				
								Main Pipeline			Service Connections	
Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Main Pipeline Defect Severity	Leak in Joint(1)	Cracked or Broken Pipe (1)	Estimated Infiltration (gpd)(2)	Service Connection Location (Station/ Orientation)(3)	Estimated Infiltration (gpd)(2)
Concord	C2	C1	Concord St.	300	VC	8	None				8/R 78/R 114/L 173/R	700 700 300 300
Concord	C3	C2	Concord St.	234	VC	8	Minor	100		400	117/R 130/L 187/R	1,400 300 1,400
Concord	C1	C63	Concord St.	41	RC	30	None					
Concord	C86	C1	Albion St.	348	RC	30	Minor	233		150	75/T 121/T 168/T 299/T	700 150 700 1,400
Concord	C5	C86	Albion St.	355	RC	30	Minor	136		700	80/T 120/T 215/T	300 300 700
Concord	C85	C5	Albion St.	410	RC	30	None				327/T	2,900(4)
Concord	C85	C35	Albion St.	379	RC	30	Minor	79; 90; 190		900	83/T 162/T	150 300
Concord	C7	C35	Market St.	431	RC	30	None				20/T 156/T	700 1,400
Division	D2	D1	North Ave.	252	VC	10	Minor	40	250	3,000	12/T 171/T 249/T	300 5,000 5,000
Division	D3	D2	North Ave.	160	VC	10	Minor		156(5)		37/T	2,200
Division	D4	D3	North Ave.	87	VC	10	Minor	36		1,400	82/R	700
Division	D7	D6	North Ave.	230	VC	8	Minor	227(6)	218-220	2,900		
Division	D9	D8	North Ave.	180	VC	8	Minor		52; 100	2,900	46/T 79/T 143/T 160/T	700 700 700 2,200
Division	D68	D67	Union St.	291	VC	8	None				126/L	700

TABLE 2 (Continued). SUMMARY OF SEWER PIPELINE DEFECTS

Location				Pipe Information				Pipeline Defects				
								Main Pipeline			Service Connections	
Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Main Pipeline Defect Severity	Leak in Joint[1]	Cracked or Broken Pipe [1]	Estimated Infiltration (gpd)[2]	Service Connection Location (Station/ Orientation)[3]	Estimated Infiltration (gpd)[2]
Division	D67	D66	Union St.	257	VC	8	None				12/L 66/R 174/L	1,400 300 1,400
Emerson	E1	M23	Easement	228	RC	18	None					
Emerson	E2	E1	Easement	267	RC	18	None					
Emerson	E3	E2	Easement	358	RC	18	None					
Emerson	E4	E3	Easement	326	RC	18	Minor	311		700	85/L	8,600
Emerson	E5	E4	Easement	301	RC	18	Minor	142		300	72/T	4,300
Emerson	E13	E12	Belmont St.	170	VC	8	None				65/L 107/R 134/L 166/R	150 400 1,400 400
Emerson	E14	E13	Belmont St.	292	VC	8	Minor	226		400	72/L 89/L	400 2,200
Emerson	E19	E18	Pacific St.	300	VC	8	Minor		71-72[5]; 108-109[5]		226/R 228/L	700[7] 400
Emerson	E20	E19	Pacific St.	299	VC	8	Minor	88		700	31/L 58/R 124/R 287/R	400[7] 1,400[7] 300 150
Emerson	E21	E22	Pacific St.	242	VC	8	None				72/L 74/R	150 300
Emerson	E24	E9	Reed St.	300	VC	8	Minor		33[5]		43/L	400
Emerson	E25	E24	Reed St.	301	VC	8	None				21/R 85/R 191/L 286/R	400 400 700 400
Emerson	E26	E25	Reed St.	300	VC	8	Moderate		215-216	2,900	45/L 134/R	700 1,400
Emerson	E30	E8	Division St.	112	VC	10	None					
Emerson	E31	E30	Taunton Ave.	253	VC	8	Minor		62[5]		154/R	700
Emerson	E32	E31	Taunton Ave.	265	VC	8		160; 256	160-161; 256-257	7,200		
Howard	H3	H2	Howard St.	201	VC	10	Minor	3; 114		4,300	8/R	150

TABLE 2 (Continued). SUMMARY OF SEWER PIPELINE DEFECTS

Location				Pipe Information				Pipeline Defects				
								Main Pipeline			Service Connections	
Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Main Pipeline Defect Severity	Leak in Joint[1]	Cracked or Broken Pipe [1]	Estimated Infiltration (gpd)[2]	Service Connection Location (Station/ Orientation)[3]	Estimated Infiltration (gpd)[2]
Howard	H4	H3	Howard St.	239	VC	10	Minor	214		700	50/R 68/L 123/R	3,600 700 300
Howard	H6	H5	Howard St.	300	VC	8	None				234/L	700
Howard	H7	H6	Howard St.	303	VC	8	Minor	99		150		
Howard	H8	H7	Howard St.	226	VC	8	Moderate	148; 158; 163	12-13; 22-23[15]	900	179/L	700
Howard	H9	H8	Howard St.	165	VC	8	Minor	13; 30		700	19/L 48/R	300 300
Howard	H10	H9	Howard St.	336	VC	8	Minor	90; 260		600	100/R 108/L 182/L 202/R	400 400 700 400
Howard	H13	H12	Wall St.	214	VC	8	Minor	66		700	72/L 187/R 199/L	700 2,200[7] 2,200[7]
Howard	H14	H13	Exchange St.	45	VC	8	None					
Howard	H15	H14	Exchange St.	337	VC	8	None				23/R 124/R 187/R 209/L 252/L	700 400 400 150 300
Howard	H13	H31	Exchange St.	280	VC	8	None				87/R 171/R	2,900[8] 1,400[9]
Howard	H31	H32	Exchange St.	348	VC	8	None				92/R 104/L 200/R 218/R 347/L 348/R	1,400[4] 1,400 2,900[7] 2,900[7] 400[17] 1,400[17]
Howard	H17	H16	Del Prete Ave.	340	VC	8	Minor	121; 264	152-153[5]	3,000	19/R 95/L 222/L	2,200 700 150

TABLE 2 (Continued). SUMMARY OF SEWER PIPELINE DEFECTS

Location				Pipe Information				Pipeline Defects				
								Main Pipeline			Service Connections	
Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Main Pipeline Defect Severity	Leak in Joint[1]	Cracked or Broken Pipe [1]	Estimated Infiltration (gpd)[2]	Service Connection Location (Station/ Orientation)[3]	Estimated Infiltration (gpd)[2]
Howard	H39	H38	Park St.	241	VC	8	Minor	129; 215		1,700	18/R 30/L 37/R 114/R 170/R 232/R	2,200[7] 1,400 3,600 700 1,400 400
Howard	H42	H5	East Water St.	209	VC	8	Minor	80	80-81	2,200	9/L	700
Howard	H43	H42	East Water St.	215	VC	8	None					
Howard	H61	H67	School St.	321	VC	8	Minor	152	(10)	1,400	164/L 176/R	400 150[8]
Howard	H68	H67	School St.	230	VC	8	None				82/R	400
Josh Gray	J2	J1	Linwood Ter.	260	RC	15	None				168/T	700
Josh Gray	J4	J2	Shaw Rd.	223	RC	15	None				63/T 129/T	1,400 2,900
Josh Gray	J5	J4	Easement	316	RC	15	None				15/T 238/T[11]	1,400 0
Josh Gray	J6	J5	Josh Gray Dr.	220	RC	15	None				90/T 149/T	300 700
Josh Gray	J7	J6	Josh Gray Dr.	273	RC	15	Minor	126	87[5]	4,300	44/T 125/T 210/T	700 1,400 2,900[4]
Josh Gray	J7	J8	Josh Gray Dr.	262	RC	15	Minor	62; 85		1,900	29/T 89/T 131/T[12]	150 700[4] 700
Josh Gray	J9	J8	Levin Rd.	120	RC	15	None				23/R 62/R 113/L[13]	1,400[4] 1,400 0
Josh Gray	J10	J9	Levin Rd.	297	RC	15	None				42/L 190/L 234/R	300 300 2,900
Josh Gray	J11A	J10A	Levin Rd.	14	AC	10	None					
Josh Gray	J11B	J10B	Levin Rd.	14	AC	10	None					

TABLE 2 (Continued). SUMMARY OF SEWER PIPELINE DEFECTS

Location				Pipe Information				Pipeline Defects				
								Main Pipeline			Service Connections	
Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Main Pipeline Defect Severity	Leak in Joint[1]	Cracked or Broken Pipe[1]	Estimated Infiltration (gpd)[2]	Service Connection Location (Station/ Orientation)[3]	Estimated Infiltration (gpd)[2]
Josh Gray	J12	J11	Levin Rd.	290	RC	15	None		20[5]		20/L 55/R 148/R 219/L 243/R	400 300 1,400[4] 400 400
Josh Gray	J13	J12	Levin Rd.	234	RC	15	None				78/R 90/L 156/L 176/R	400 300 400[7] 400[7]
Josh Gray	J17	J16	Moncreif Rd.	301	VC	10	Minor	3; 30; 246; 256		9,000	56/L 120/L 127/R 273/L	400 400 1,400[4] 400
Josh Gray	J18	J17	Moncreif Rd.	287	VC	10	Minor	91; 116; 126; 152; 187		3,900	146/T 248/T	700 400
Josh Gray	J19	J18	Moncreif Rd.	296	VC	10	None				50/T 142/T 242/T	5,800 400 400
Josh Gray	J20	J19	Moncreif Rd.	299	VC	10	None				41/T 122/T 204/T 280/T	1,400 700 1,400 4,300
Josh Gray	J21	J20	Moncreif Rd.	298	VC	10	None		(14)		61/T 148/T 249/T	400 1,400 400
Josh Gray	J22	J21	Pierce Rd.	242	VC	10	None		97[5]		73/T 169/T	1,400 2,900
Josh Gray	J23	J22	Levin Rd.	327	VC	10	None				80/T 187/T 253/T	2,900 1,400 700
Josh Gray	J25	J23	Levin Rd.	228	VC	10	None				57/T 154/T	400 700
Josh Gray	J25	J24	Old Market St.	88	PVC	8	None					
Josh Gray	J28	J27	Moncreif Rd.	76	VC	8	None				67/R	2,200[4]
Josh Gray	J34	J10	Josh Gray Rd.	242	VC	8	None				80/R	700

TABLE 2 (Continued). SUMMARY OF SEWER PIPELINE DEFECTS

Location				Pipe Information				Pipeline Defects				
								Main Pipeline			Service Connections	
Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Main Pipeline Defect Severity	Leak in Joint[1]	Cracked or Broken Pipe [1]	Estimated Infiltration (gpd)[2]	Service Connection Location (Station/ Orientation)[3]	Estimated Infiltration (gpd)[2]
Josh Gray	J39	J38	Moncreif Rd.	269	VC	8	None				69/R	1,400[4]
Josh Gray	J50	J13	Levin Rd.	321	PVC	8	None				75/L 170/L	2,200 1,400
Josh Gray	J51	J50	Levin Rd.	319	PVC	8	None				136/T 173/T 254/L 256/R 312/T 314/T	700 2,900[4] 400 700 2,900 150
Josh Gray	J54	J13	Brooks Rd.	240	VC	10	Minor	29	222-223[5]	300		
Josh Gray	J55	J54	Durbeck Rd.	308	VC	8	Minor	127; 171; 186		1,300	16/R 94/L 158/L 273/L	2,900[7] 2,200 300 700
Josh Gray	J56	J55	Durbeck Rd.	275	VC	8	Minor	84; 191; 193		6,100	21/L 101/L 124/R 176/L 193/R 270/L	1,100 700 700 2,200 700 700
Josh Gray	J59	J58	Durbeck Rd.	303	VC	8	None					
Josh Gray	J60	J59	Durbeck Rd.	219	VC	8	Minor	8; 12; 32		2,900	9/L	700
Josh Gray	J61	J54	Brooks Rd.	226	VC	8	Minor		89[5]		204/L	700
Josh Gray	J62	J61	Huggins Rd.	351	VC	8	Minor		296-297[5]		42/L	700
Josh Gray	J64	J63	Huggins Rd.	349	PVC	8	None				5/R 345/R	3,600 2,200
Liberty	L9	L8	Liberty St.	270	RC	21	Minor	61; 108; 122		3,900	20/T	700
Liberty	L10	L9	Liberty St.	261	RC	21	Minor	12		400	89/T 132/T 164/T	300 1,400 150
Liberty	L11	L10	Liberty St.	170	RC	21	None					
Liberty	L66	L11	East Water St.	131	RC	21	Minor	48; 95		300	58/T 97/T	300 300
Liberty	L12	L66	Sunnybank Ave.	251	RC	21	Minor	152		700		
Liberty	L13	L12	Sunnybank Ave.	199	RC	21	Minor	115		300		

TABLE 2 (Continued). SUMMARY OF SEWER PIPELINE DEFECTS

Location				Pipe Information				Pipeline Defects				
								Main Pipeline			Service Connections	
Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Main Pipeline Defect Severity	Leak in Joint[1]	Cracked or Broken Pipe [1]	Estimated Infiltration (gpd)[2]	Service Connection Location (Station/ Orientation)[3]	Estimated Infiltration (gpd)[2]
Liberty	L14	L13	Sunnybank Ave.	124	RC	21	None					
Liberty	L15	L14	Sunnybank Ave.	101	RC	21	None					
Liberty	L16	L15	Sunnybank Ave.	306	RC	21	None				95/T 138/T 168/T	300 150 300
Liberty	L17	L16	Sunnybank Ave.	235	RC	21	None				135/T	400
Liberty	L30	L10	East Water St.	351	VC	8	Minor	141	94-95[15]	700	68/T 126/R 133/R 140/L 220/T	700 400 300 700 2,900
Liberty	L68	L71	East Water St.	34	AC	8	None					
JD Mem.	M1	C63	John Dunn Mem. Dr.	349	RC	24	Minor	67; 276; 298; 332		600	103/R 258/T	400 400
JD Mem.	M2	M1	John Dunn Mem. Dr.	300	RC	24	Minor	37; 115; 226		3,200	215/R	700
JD Mem.	M3	M2	John Dunn Mem. Dr.	106	RC	24	None					
JD Mem.	M4	M3	John Dunn Mem. Dr.	107	RC	24	None					
JD Mem.	M5	M4	John Dunn Mem. Dr.	178	RC	24	None					
JD Mem.	M6	M5	John Dunn Mem. Dr.	179	RC	24	None					
JD Mem.	M7	M6	John Dunn Mem. Dr.	196	RC	24	Minor	1; 34		300		
JD Mem.	M8	M7	John Dunn Mem. Dr.	115	RC	24	None				15/R	700
JD Mem.	M9	M8	John Dunn Mem. Dr.	243	RC	21	None				23/T	400
JD Mem.	M97	M9	Studley's Pond Easement	476	RC	21	None					
JD Mem.	M97	M98	Studley's Pond Easement	360	RC	21	None					
JD Mem.	M99	M98	Studley's Pond Easement	301	RC	21	None					
JD Mem.	M87	M99	Studley's Pond Easement	484	RC	21	None					
JD Mem.	M20	M87	Studley's Pond Easement	234	RC	21	Minor	6		150		
JD Mem.	M21	M20	Emerson St. Easement	213	RC	18	None					
JD Mem.	M22	M21	Emerson St. Easement	193	RC	18	None					
JD Mem.	M23	M22	Emerson St. Easement	210	RC	18	None					
JD Mem.	M25	M24	West Water St.	193	VC	8	None				23/R 98/L 177/T	400 1,400[4] 700
-	N143	N144	Liberty St.	169	PVC	12	None				104/T	700

TABLE 2 (Continued). SUMMARY OF SEWER PIPELINE DEFECTS

Location				Pipe Information				Pipeline Defects				
								Main Pipeline			Service Connections	
Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Main Pipeline Defect Severity	Leak in Joint(1)	Cracked or Broken Pipe (1)	Estimated Infiltration (gpd)(2)	Service Connection Location (Station/ Orientation)(3)	Estimated Infiltration (gpd)(2)
-	N144	N147	Liberty St.	179	VC	12	Minor	36; 144; 156		4,300		
-	N284	N285	Marks St.	57	PVC	8	None					
Pond	P3	P7	Pond St.	238	AC	8	None					
Pond	P7	P10	Pond St.	102	AC	8	None					
Pond	P10	P11	Pond St.	237	AC	8	None		(16)		138/T 180/T	1,400 150
Pond	P31	P32	Old Country Way	115	PVC	8	None					
Pond	P36	P35	French Rd.	369	PVC	8	None					
Pond	P36	P37	French Rd.	80	PVC	8	None					
-	S181	S180	Summer St.	10	PVC	8	None					
-	S181	S182	Summer St.	114	PVC	8	None					
-	S190	S195	Summer St.	164	PVC	8	None					
-	S195	S196	Summer St.	242	PVC	8	None				169/T	700
-	S196	S197	Summer St.	308	PVC	8	None				177/T	700
West Water	W26	W25	North Ave.	223	PVC	12	None					
West Water	W27	W26	North Ave.	165	PVC	12	None					
West Water	W27	W28	North Ave.	86	VC	12	None					
West Water	W88	W87	Brookside Rd.	291	VC	10	None				78/T 110/T 177/T 200/T 256/T	400 2,900 3,600 1,400 400
West Water	W88	W89	Brookside Rd.	85	VC	10	None					
Total										85,450		226,500

Notes:
(1) The number in this column is the distance in feet from the first manhole identified in the "Location" column, and represents the location of the defect.
(2) Estimated infiltration is based upon a visual assessment of each infiltration source (pipeline defect).
(3) The station is the distance in feet from the first manhole identified in the "Location" column. For orientation, when advancing from the first manhole identified in the "Location" column toward the second manhole, L=left side; R=right side; T=top.
(4) Leaks visible in first joint at pipe connection between main pipeline and service connection.
(5) Very minor crack observed with no visible infiltration. Pipe appears to be structurally sound. Rehabilitation not recommended.
(6) Leaks visible in joint of vertical portion of drop inlet at MH D6.
(7) Leaks visible in service connection within first few joints from the main pipeline.
(8) Leaks entering from capped lateral about 0.5' to 1' from main pipeline.

TABLE 2 (Continued). SUMMARY OF SEWER PIPELINE DEFECTS

(9) Lateral filled with grease or other material at the main pipeline.
(10) Heavy debris (pieces of asphalt) observed in pipe at 314' from MH H61.
(11) Heavy mineral deposits in service connection.
(12) Extensive roots observed in service connection at connection with main pipeline, and protruding into main pipeline.
(13) Yellow water (usage) entering main pipeline from this service connection. Service connection has heavy mineral deposits.
(14) Previously installed liner at 66' from MH J21 is miss-shapen from 7 to 8 o'clock, but remains smooth and liner appears to be structurally sound.
(15) Broken pipe. No visible infiltration.
(16) Brick observed across sewer at 65' from MH P10.
(17) Located in pipe stub connected to MH H32.

REHABILITATION OF INFILTRATION SOURCES ON MAIN PIPELINE AND SEWER MANHOLES

Presented in Table 3 is a summary of the proposed rehabilitation methods for the removal of the infiltration sources found in the main pipelines and sewer manholes, including estimated removable infiltration rates, rehabilitation costs and unit costs. Each rehabilitation cost represents the estimated construction cost for the noted rehabilitation method without an allowance for engineering and contingencies. With both the estimated rehabilitation cost and the estimated removable infiltration rate known, the unit cost of infiltration removed ($/gpd) is calculated for each source by dividing the rehabilitation cost by the removable infiltration.

A cost-effectiveness analysis was performed to establish a cost-effective breakpoint for the rehabilitation of infiltration sources. The cost-effective breakpoint is a unit cost, typically presented as cost per gallon per day (gpd), whereby an infiltration source with a unit cost for removal greater than the cost-effective breakpoint is not considered cost-effective to remove.

Key items for consideration in establishing the cost-effective breakpoint include the following:

Annual transportation and treatment costs. Information was collected from the Town to estimate the annual cost to transport and treat wastewater flow. The most current information reflects an annual cost of approximately $2,480,000 which includes costs for sewer related operation and maintenance tasks such as payment for a third party for the operation and maintenance of the wastewater treatment plant (WWTP), labor, vehicle repair and maintenance, etc.

Annual average daily flow. Based upon town records at the WWTP for the last five years (2016 through 2020), the average daily flow is approximately 2,420,000 gpd.

Using a 20-year planning period and an interest rate of 4 percent, the present worth of the transportation and treatment cost is approximately $33,704,000. The cost-effective breakpoint is established by dividing the present worth of the transportation and treatment cost by the average daily flow at the WWTP:

TABLE 3. MAIN PIPELINE AND MANHOLES – SUMMARY TABLE OF INFILTRATION SOURCES, REHABILITATION METHODS AND COSTS

Location					Pipe Information				Main Pipeline Recommended Rehabilitation Method						
Rank	Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Heavy Cleaning	Joint Test & Seal	Grout Spot Repair	Structural Spot Repair	Manhole Chemical Seal	Removable Infiltration (gpd) [1]	Rehabilitation Cost ($) [2]	Unit Cost ($/gpd)
1	Josh Gray	J17	J16	Moncrief Rd.	301	VC	10		X				4,500	2,300	0.51
2	Howard	H67	-	School St.								X[3]	2,900	1,600	0.55
3	-	S190	-	Summer St.								X[3]	5,000	2,800	0.56
4	-	N143	-	Liberty St.								X[3]	3,600	2,400	0.67
5	Josh Gray	J56	J55	Durbeck Rd.	275	VC	8		X				3,050	2,100	0.69
6	-	N144	N147	Liberty St.	179	VC	12		X				2,150	1,500	0.70
7	Howard	H3	H2	Howard St.	201	VC	10		X				2,150	1,600	0.74
8	Division	D4	D3	North Ave.	87	VC	10		X				700	700	1.00
9	Division	D133	-	Leisurewoods Dr.								X[3]	1,400	1,400	1.00
10	Josh Gray	J7	J6	Josh Gray Dr.	273	RC	15		X				2,150	2,200	1.02
11	Josh Gray	J18	J17	Moncrief Rd.	287	VC	10		X				1,950	2,200	1.13
12	Josh Gray	J60	J59	Durbeck Rd.	219	VC	8		X				1,450	1,700	1.17
13	Liberty	L9	L8	Liberty St.	270	RC	21		X				1,950	2,700	1.39
14	Division	D1	-	North Ave.								X[3]	1,400	2,200	1.57
15	West Water	W89	-	Brookside Rd.								X[3]	1,400	2,400	1.71
16	Emerson	E26	E25	Reed St.	300	VC	8				215-216		1,450	2,500	1.72
17	Howard	H17	H16	Del Prete Ave.	340	VC	8		X				1,500	2,600	1.73
18	Josh Gray	J6	-	Josh Gray Rd.								X	400	700	1.75
19	Emerson	E32	E31	Taunton Ave.	265	VC	8		X		160-161; 256-257		3,600	7,000	1.94
20	Howard	H39	H38	Park St.	241	VC	8		X				850	1,800	2.12
21	JD Mem.	M2	M1	JD Mem. Dr.	300	RC	24		X				1,600	3,500	2.19
22	Howard	H42	H5	East Water St.	209	VC	8				80-81		1,100	2,500	2.27
23	Division	D144	-	Leisurewoods Dr.								X	300	700	2.33
24	Emerson	E2	-	Plain St.								X	300	700	2.33
25	Emerson	E5	-	Reed St.								X	300	700	2.33
26	Emerson	E12	-	Belmont St.								X	300	700	2.33
27	Emerson	E13	-	Belmont St.								X	300	700	2.33
28	Emerson	E14	-	Belmont St.								X	300	700	2.33
29	Emerson	E15	-	Belmont St.								X	300	700	2.33
30	Emerson	E19	-	Pacific St.								X	300	700	2.33
31	Emerson	E20	-	Pacific St.								X	300	700	2.33
32	Emerson	E22	-	Pacific St.								X	300	700	2.33

TABLE 3 (Continued). MAIN PIPELINE AND MANHOLES – SUMMARY TABLE OF INFILTRATION SOURCES, REHABILITATION METHODS AND COSTS

Location					Pipe Information				Main Pipeline Recommended Rehabilitation Method						
Rank	Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Heavy Cleaning	Joint Test & Seal	Grout Spot Repair	Structural Spot Repair	Manhole Chemical Seal	Removable Infiltration (gpd) (1)	Rehabilitation Cost ($) (2)	Unit Cost ($/gpd)
33	Emerson	E24	-	Reed St.								X	300	700	2.33
34	Emerson	E28	-	Reed St.								X	300	700	2.33
35	Emerson	E22	-	Taunton Ave.								X	300	700	2.33
36	Emerson	E70	-	Grove St.								X	300	700	2.33
37	Howard	H40	-	Park St.								X	300	700	2.33
38	Liberty	L21	-	Webster St.								X	300	700	2.33
39	Liberty	L33	-	Everett St.								X	300	700	2.33
40	Liberty	L61	-	Hingham St.								X	300	700	2.33
41	-	N113	-	Liberty St.								X	300	700	2.33
42	-	N115	-	Liberty St.								X	300	700	2.33
43	-	N152	-	Liberty St.								X	300	700	2.33
44	-	N156	-	Liberty St.								X	300	700	2.33
45	West Water	W7	-	Culver Dr.								X	300	700	2.33
46	West Water	W46A	-	Salem St.								X	300	700	2.33
47	Liberty	L10	-	Liberty St.								X(3)	1,100	3,000	2.73
48	Josh Gray	J7	J8	Josh Gray Dr.	262	RC	15		X(4)				950	2,600	2.74
49	Division	D7	D6	North Ave.	230	VC	8		X(5)		218-220		1,450	4,500	3.10
50	Division	D2	D1	North Ave.	252	VC	10		X		250		1,500	4,700	3.13
51	Howard	H61	H67	School St.	321	VC	8	314(6)	X				700	2,400	3.43
52	Division	D9	D8	North Ave.	180	VC	8				52; 100		1,450	5,000	3.45
53	Josh Gray	J55	J54	Durbeck Rd.	308	VC	8		X				650	2,300	3.54
54	Howard	H9	H8	Howard St.	165	VC	8		X				350	1,300	3.71
55	Howard	H13	H12	Wall St.	214	VC	8		X				350	1,600	4.57
56	Josh Gray	J4	-	Shaw Rd.								X	150	700	4.67
57	Liberty	L12	-	Sunnybank Ave.								X	150	700	4.67
58	Howard	H4	H3	Howard St.	239	VC	10		X				350	1,800	5.14
59	Emerson	E20	E19	Pacific St.	299	VC	8		X				350	2,300	6.57
60	Liberty	L12	L66	Sunnybank Ave.	251	RC	21		X				350	2,500	7.14
61	Howard	H10	H9	Howard St.	336	VC	8		X				300	2,500	8.33
62	Emerson	E4	E3	Easement	326	RC	18		X				350	3,000	8.57
63	Liberty	L66	L11	East Water St.	131	RC	21		X				150	1,300	8.67
64	Concord	C3	C2	Concord St.	234	VC	8		X				200	1,800	9.00
65	Emerson	E14	E13	Belmont St.	292	VC	8		X				200	2,200	11.00
66	Howard	H8	H7	Howard St.	226	VC	8		X	12-13	22-23		450	5,000	11.11
67	Josh Gray	J54	J13	Brooks Rd.	240	VC	10		X				150	1,800	12.00

TABLE 3 (Continued). MAIN PIPELINE AND MANHOLES – SUMMARY TABLE OF INFILTRATION SOURCES, REHABILITATION METHODS AND COSTS

Location					Pipe Information				Main Pipeline Recommended Rehabilitation Method						
Rank	Sewer Subbasin	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in.)	Heavy Cleaning	Joint Test & Seal	Grout Spot Repair	Structural Spot Repair	Manhole Chemical Seal	Removable Infiltration (gpd) (1)	Rehabilitation Cost ($) (2)	Unit Cost ($/gpd)
68	Concord	C85	C35	Albion St.	379	RC	30		X				450	5,700	12.67
69	Liberty	L10	L9	Liberty St.	261	RC	21		X				200	2,600	13.00
70	Liberty	L13	L12	Sunnybank Ave.	199	RC	21		X				150	2,000	13.33
71	JD Mem.	M1	C63	JD Mem. Dr.	349	RC	24		X				300	4,000	13.33
72	Concord	C5	C86	Albion St.	355	RC	30		X				350	5,300	15.14
73	JD Mem.	M7	M6	JD Mem. Dr.	196	RC	24		X				150	2,300	15.33
74	Liberty	L30	L10	East Water St.	351	VC	8		X		94-95		350	6,000	17.14
75	Emerson	E5	E4	Easement	301	RC	18		X				150	2,700	18.00
76	Howard	H7	H6	Howard St.	303	VC	8		X				75	2,300	30.67
77	JD Mem.	M20	M87	Studley's Pond Easement	234	RC	21		X				75	2,400	32.00
78	Concord	C86	C1	Albion St.	348	RC	30		X				75	5,200	69.33
Total													67,425	160,700	

Notes:
(1) Infiltration rates shown are estimated removable infiltration rates. It was assumed that recommended rehabilitation work would remove 100 percent of the infiltration entering the system through manhole walls and bases and 50 percent of infiltration through main pipelines.
(2) Rehabilitation costs do not include an allowance for engineering and contingencies.
(3) Recommended rehabilitation includes chemical seal and installation of cementitious liner.
(4) Root removal required at 130' from MH J7.
(5) Recommended rehabilitation is for testing and sealing joints in drop connection at MH D6.
(6) Heavy debris (pieces of asphalt) observed in pipe at 314' from MH 61. Pipe cleaning is recommended.

General Notes:

A. Refer to Tables 1 and 2 for detailed breakdown of manhole defects and pipeline defects, respectively.
B. The number noted in the "Spot Repair" columns or the "Heavy Cleaning" column is the distance in feet from the first manhole identified in "Location" column, and represents the location of recommended pipe spot repair or heavy cleaning.

$$\frac{\text{Present worth of transportation and treatment cost}}{\text{Average daily flow}} = \frac{\$33{,}704{,}000}{2{,}420{,}000 \text{ gpd}} = \$13.93/\text{gpd}$$

This means that any infiltration source with a unit cost for removal equal to or less than $13.93 per gallon per day is considered cost-effective to remove. An infiltration source with a unit cost for removal greater than $13.93 per gallon per day is not considered cost-effective to remove.

Table 3 includes a priority ranking of infiltration sources from the lowest unit cost to the highest unit cost. We recommend that all infiltration sources with a unit cost for removal equal to or less than $13.93 be rehabilitated. In applying this criteria to Table 3, a total of approximately 66,200 gpd of infiltration can be cost-effectively removed from the main pipelines and manholes by rehabilitating 71 infiltration sources at an estimated construction cost of $134,500.

REHABILITATION OF INFILTRATION SOURCES ON SERVICE CONNECTIONS

The results of the television inspection and flow isolation work show a significant amount of infiltration entering the sewer system through lateral service connections. In fact, as shown in the "Total" row at the bottom of Table 2, the estimated infiltration entering the sewer system from service connections within the sewers that were televised is substantially greater than the estimated infiltration entering the sewer system from the main pipeline (226,500 gpd versus 85,450 gpd, respectively). Evidence of infiltration from service connections was noted by the following methods:

- During the television inspection work, the camera used to inspect the main pipeline had the pan and tilt capability to peer directly into the incoming service connection. In many locations, the resulting video clearly shows the locations of leaks in joints within the first few pipe lengths of the service connection.

- Service connections noted to be running with a constant flow of clear water over a period of several minutes.

There are four typical methods to rehabilitate a service connection to remove infiltration sources, as described below. The estimated costs presented below are construction costs and do not include an allowance for engineering and contingencies.

a. **Joint Test and Seal.** This work is typically performed by inserting joint testing and sealing equipment into the service connection from the main pipeline. Joints and pipe cracks in the service connection are then chemically grouted in a manner similar to that used in the main pipeline. During this work, it is often difficult for the equipment to negotiate the pipe bends commonly installed on service connections and the extent of work is generally limited to short distances of up to 20 feet from the main pipeline. The estimated cost to test and seal the joints in a service connection as referenced above is approximately $3,000 per connection.

b. **Excavate and Replace.** The service connection may be excavated and replaced from the face of the dwelling to the main pipeline in the street. The cost of this work will vary depending upon the length of the service connection, the depth of pipe, the need for dewatering of groundwater in the pipe trench, the extent of above ground reinstatement work that would need to be performed to improved lawns and shrubbery, sidewalk and pavement replacement in the main road, and traffic control. A typical cost for replacement of a service connection 55 feet long may approach $10,000 per service connection, if the service connection is connected to the main pipeline through a wye branch.

   If a service connection is connected to the main pipeline through a chimney, as defined later in this report, the estimated cost to excavate and replace the chimney and 10 feet of main pipeline (5 feet each side of chimney) is approximately $10,000 per chimney. Thus, the total cost to excavate and replace a service connection connected to a chimney is approximately $20,000, being the sum of $10,000 for the service connection plus $10,000 for the chimney and 10 feet of main pipeline.

c. **Pipe Lining Through Wye Branch Connection.** There are several trenchless technologies available for installing a cured-in-place lateral liner into the existing service connection between the house and the main pipeline. The lining is typically installed from the main pipeline into the wye branch of the lateral and consists of a one-piece product affixed to the walls of the lateral pipe and at the junction within the main pipeline. This method of rehabilitation eliminates the joints between the main pipeline and the service connection, and along the service connection to the termination of the liner typically at the cleanout near the house. Depending upon the number of bends that exist in the lateral, a lateral liner can be installed up to 100 feet into the lateral from the main pipeline. A typical cost for service connection lining is approximately $6,500 per connection, assuming an average service connection length of 55 feet. This cost is estimated using a cost of $4,500 for the first 30 feet of liner from the main pipeline, plus $55 per linear foot of liner beyond the first 30 feet from the main pipeline, plus $600 for CCTV inspection of the new liner roughly a year after completion to confirm no defects.

d. **Pipe Lining with Chimney Connection.** Some service connections connect to the main pipeline through a chimney instead of a wye branch. A chimney is a vertical pipe that extends upward from the main pipeline and connects to the service connection at the top of the chimney with a 90 degree "tee" fitting. The tee fitting may connect to either one or two lateral service connections at the top. Where a chimney exists, installation of a continuous liner between the main pipeline and the lateral service connection to the cleanout of the house is not possible because the equipment is usually not capable of navigating the 90 degree bend at the top of the chimney. Instead, current technology allows for the bottom two feet of the chimney to be sealed from the main pipeline including the key connection between the chimney with the main pipeline where infiltration is commonly found; and a liner is installed in the service connection from the cleanout near the house to the top of the chimney at the main pipeline. Under this procedure, the service connection is lined and a portion of the chimney is sealed, but the length of chimney greater than 2 feet from the main pipeline remains unsealed. For example, if a chimney vertical dimension is 5 feet, only the bottom 2 feet of the chimney would be sealed and the remaining top 3 feet of the chimney would not be sealed.

Where one service connection is connected to the top of a chimney, a typical estimated cost for service connection liner with the bottom 2 feet of chimney seal is approximately $10,100 per connection, assuming an average service connection length of 55 feet. This cost is estimated using a unit rate of $100 per linear foot of liner installed from cleanout to the main pipeline ($5,500) plus $2,500 for the bottom 2 feet of the chimney to be sealed at the main pipeline, plus $1,500 for work at the cleanout near the house from where the liner will be installed, plus $600 for CCTV inspection of the new liner through the cleanout roughly a year after completion to confirm no defects.

Where two service connections are connected to the top of the chimney, a typical estimated cost for two service connection liners with a chimney seal is approximately $17,700 using the same unit rates identified above.

As shown above, joint testing and sealing is the least expensive method for rehabilitating a service connection. However, joint testing and sealing is not recommended for rehabilitation of a service connection because of the limited length (approximately 20 feet) that joint testing and sealing can be performed from the main pipeline. The 20 feet length is approximately one/third of the total length of a typical service connection. If only the first 20 feet of the service connection is sealed, there is a potential for infiltration to migrate to the joints along the service connection that are left unsealed.

The recommended method for rehabilitating service connections is pipe lining, which eliminates joints between the main pipeline to the terminus of the liner at the cleanout near the house. During the initial stages of the rehabilitation work, television inspection of each service connection should be performed to confirm if the service connection is an appropriate candidate for pipe lining or if another rehabilitation method is appropriate, based on the nature and location of the pipe defects and leaks, and the location of bends in the pipe.

Presented in Table 4 is a summary of the lateral service connections with infiltration sources identified during the field work and the related rehabilitation costs. Only the service connections with estimated infiltration amounts of 1,000 gpd or greater are shown in the table.

TABLE 4. LATERAL SERVICE CONNECTIONS – SUMMARY TABLE OF INFILTRATION SOURCES AND REHABILITATION COSTS

General Location			Main Pipeline Information			Lateral Service Connection Information						
From MH	To MH	Service Connection Address or Street Name	Length (feet)	Type	Diameter (inches)	Location (1)	Orientation (2)	Approx. Chimney Height (feet)	Chimney Service Connections (3)	Estimated Infiltration (gpd)	Estimated Rehabilitation Cost ($) (4)	Unit Cost ($/gpd)
C3	C2	41 Concord St.	234	VC	8	117	R			1,400	6,500[12]	4.64
		47 Concord St.				187	R			1,400	6,500[12]	4.64
C86	C1	142 Albion St. & 80 Concord St.	348	RC	30	299	T	2.7	2	1,400	17,700[13]	12.64
C85	C5	71 & 72 Albion St.	410	RC	30	327	T	4.9	2	2,900[5]	17,700[13]	6.10
C7	C35	323/325 Market St.	431	RC	30	156	T	4.0	1	1,400	10,100[14]	7.21
D2	D1	177 & 180 North Ave.	252	VC	10	171	T	3.2	2	5,000	17,700[13]	3.54
		169/171 North Ave.				249	T	4.7	1	5,000	10,100[14]	2.02
D3	D2	203 North Ave.	160	VC	10	37	T	4.3	1	2,200	10,100[14]	4.59
D9	D8	305 North Ave.	180	VC	8	160	T[10]			2,200	6,500[12]	2.95
D67	D66	466 Union St.	257	VC	8	12	L			1,400	6,500[12]	4.64
		482 Union St.				174	L			1,400	6,500[12]	4.64
E4	E3	Connection from Memorial Park School	326	RC	18	85	L[11]			8,600	(11)	-
E5	E4	210 & Lot W-56 & 13 Reed St.	301	RC	18	72	T	4.9	2	4,300	17,700[13]	4.12
E13	E12	134 Belmont St.	170	VC	8	134	L			1,400	6,500[12]	4.64
E14	E13	102 Belmont St.	292	VC	8	89	L			2,200	6,500[12]	2.95
E20	E19	71 Pacific St.	299	VC	8	58	R			1,400[6]	6,500[12]	4.64
E26	E25	71 Reed St.	300	VC	8	134	R			1,400	6,500[12]	4.64
H4	H3	196 Howard St.	239	VC	10	50	R			3,600	6,500[12]	1.81
H13	H12	28 Wall St.	214	VC	8	187	R			2,200[6]	6,500[12]	2.95
		27 Wall St.				199	L			2,200[6]	6,500[12]	2.95
H13	H31	Across from 104 Exchange St.	280	VC	8	87	R			2,900[7]	6,500[12]	2.24
		Across from 114 Exchange St.				171	R			1,400[8]	6,500[12]	4.64
H31	H32	127 Exchange St.	348	VC	8	92	R			1,400[5]	6,500[12]	4.64
		138 Exchange St.				104	L			1,400	6,500[12]	4.64
		139 Exchange St.				200	R			2,900[6]	6,500[12]	2.24
		145 Exchange St.				218	R			2,900[6]	6,500[12]	2.24
		153 Exchange St.				348	R			1,400[9]	6,500[12]	4.64

TABLE 4 (Continued). LATERAL SERVICE CONNECTIONS – SUMMARY TABLE OF INFILTRATION SOURCES AND REHABILITATION COSTS

General Location			Main Pipeline Information			Lateral Service Connection Information						
From MH	To MH	Service Connection Address or Street Name	Length (feet)	Type	Diameter (inches)	Location (1)	Orientation (2)	Approx. Chimney Height (feet)	Chimney Service Connections (3)	Estimated Infiltration (gpd)	Estimated Rehabilitation Cost ($) (4)	Unit Cost ($/gpd)
H17	H16	37 Christine Ave.	340	VC	8	19	R			2,200	6,500(12)	2.95
H39	H38	57 Park St.	241	VC	8	18	R			2,200(6)	6,500(12)	2.95
		58/56 Park St.				30	L			1,400	6,500(12)	4.64
		65 Park St.				37	R			3,600	6,500(12)	1.81
		75/73 Park St.				170	R			1,400	6,500(12)	4.64
J4	J2	Shaw Rd. "lots"	223	RC	15	63	T	6.2	2	1,400	17,700(13)	12.64
		16 & 32 Linwood Ter.				129	T	6.2	2	2,900	17,700(13))	6.10
J5	J4	38 & 43 Josh Gray Rd.	316	RC	15	15	T	6.4	2	1,400	17,700(13)	12.64
J7	J6	20 & 19 Josh Gray Rd.	273	RC	15	125	T	3.1	2	1,400	17,700(13)	12.64
		24 & 23 Josh Gray Rd.				210	T	4.1	2	2,900(5)	17,700(13)	6.10
J9	J8	307 Levin Rd.	120	RC	15	23	R			1,400(5)	6,500(12)	4.64
		5 Josh Gray Rd.				62	R			1,400	6,500(12)	4.64
J10	J9	299 Levin Rd.	297	RC	15	234	R			2,900	6,500(12)	2.24
J12	J11	265 Levin Rd.	290	RC	15	148	R			1,400(5)	6,500(12)	4.64
J17	J16	139 Moncrief Rd.	301	VC	10	127	R			1,400(5)	6,500(12)	4.64
J19	J18	123 & 122 Moncrief Rd.	296	VC	10	50	T	6.1	2	5,800	17,700(13)	3.05
J20	J19	91 & 90 Moncrief Rd.	299	VC	10	41	T	4.2	2	1,400	17,700(13)	12.64
		107 & 104 Moncrief Rd.				204	T	4.4	2	1,400	17,700(13)	12.64
		115 & 114 Moncrief Rd.				280	T	4.4	2	4,300	17,700(13)	4.12
J21	J20	74 & 73 Moncrief Rd.	298	VC	10	148	T	4.2	2	1,400	17,700(13)	12.64
J22	J21	61 Levin Rd.	242	VC	10	73	T	4.2	1	1,400	10,100(14)	7.21
		64 Moncrief Rd. & 6 Pierce Rd.				169	T	4.3	2	2,900	17,700(13)	6.10
J23	J22	30 & 27 Levin Rd.	327	VC	10	80	T	4.3	2	2,900	17,700(13)	6.10
		38 & 37 Levin Rd.				187	T	4.2	2	1,400	17,700(13)	12.64
J28	J27	21 Moncrief Rd.	76	VC	8	67	R			2,200(5)	6,500(12)	2.95
J39	J38	263 Moncrief Rd.	269	VC	8	69	R			1,400(5)	6,500(12)	4.64
J50	J13	208 Levin Rd.	321	PVC	8	75	L			2,200	6,500(12)	2.95
		216 Levin Rd.				170	L			1,400	6,500(12)	4.64
J51	J50	185 Levin Rd.	319	PVC	8	173	T(10)			2,900(5)	6,500(12)	2.24
		138 Levin Rd.				312	T(10)			2,900	6,500(12)	2.24
J55	J54	193 Durbeck Rd.	308	VC	8	16	R			2,900(6)	6,500(12)	2.24
		204 Durbeck Rd.				94	L			2,200	6,500(12)	2.24

TABLE 4 (Continued). LATERAL SERVICE CONNECTIONS – SUMMARY TABLE OF INFILTRATION SOURCES AND REHABILITATION COSTS

General Location			Main Pipeline Information			Lateral Service Connection Information						
From MH	To MH	Service Connection Address or Street Name	Length (feet)	Type	Diameter (inches)	Location (1)	Orientation (2)	Approx. Chimney Height (feet)	Chimney Service Connections (3)	Estimated Infiltration (gpd)	Estimated Rehabilitation Cost ($) (4)	Unit Cost ($/gpd)
J56	J55	172 Durbeck Rd.	275	VC	8	21	L			1,100	6,500(12)	5.91
		188 Durbeck Rd.				176	L			2,200	6,500(12)	2.95
J64	J63	65 Huggins Rd.	349	PVC	8	5	R			3,600	6,500(12)	1.81
		101 Huggins Rd.				345	R			2,200	6,500(12)	2.95
L10	L9	225 East Water St.	261	RC	21	132	T	4.3	1	1,400	10,100(14)	7.21
L30	L10	222 East Water St.	351	VC	8	220	T	3.0	1	2,900	10,100(14)	3.48
M25	M24	232 West Water St.	193	VC	8	98	L			1,400(5)	6,500(12)	4.64
P10	P11	154R Pond St.	237	AC	8	138	T	8.6	1	1,400	10,100(14)	7.21
W88	W87	60 Brookside Rd.	291	VC	10	110	T	2.6	1	2,900	10,100(14)	3.48
		69 Brookside Rd.				177	T	2.4	1	3,600	10,100(14)	2.81
		70 Brookside Rd.				200	T	2.4	1	1,400	10,100(14)	7.21
Total										161,700	674,900	

Notes:
(1) The number noted in the "Location" column is the distance in feet from the first manhole identified in the "General Location" column.
(2) When advancing from the first manhole identified in the "General Location" column toward the second manhole, L = left side; R = right side; T = top.
(3) Number in column indicates number of lateral service connections that are connected to the top of chimney.
(4) Rehabilitation costs do not include an allowance for engineering and contingencies.
(5) Leaks visible in first joint at pipe connection between main pipeline and chimney.
(6) Leaks visible in service connection within first few joints from the main pipeline.
(7) Leaks entering from capped lateral about .5' to 1' from main pipeline.
(8) Lateral filled with grease or other material at the main pipeline.
(9) Located in pipe stub connected to MH H32.
(10) One LSC connection at top of main pipeline, but not a chimney.
(11) Approximate 300' long service connection (6" & 8" VC pipe) extending to Memorial Park School, consisting of approximately 5 pipe segments. Internal CCTV inspection of the 300 LF of pipe is recommended in order to confirm if any subsequent rehabilitation work is needed.
(12) Estimated rehabilitation cost is for lining the LSC from the main pipeline to the cleanout near house.
(13) Estimated rehabilitation cost is for sealing the bottom 2 feet of chimney at the main pipeline and for lining each of the two LSC's from cleanout at each house to the top of the chimney at the main pipeline.
(14) Estimated rehabilitation cost is for sealing the bottom 2 feet of chimney at the main pipeline and for lining the LSC from the cleanout at house to the top of the chimney at the main pipeline.

The rehabilitation costs represent the estimated construction costs without an allowance for engineering and contingencies.

A review of Table 4 shows the following types of lateral service connections:

- A total of 40 service connections are shown to be connecting to the main pipeline either from the left or the right, identified as "L" or "R" respectively, in the orientation column. These service connections are typically connected to the side of the main pipeline through a wye branch at an angle not greater than 45 degrees.

- A total of 30 service connections are shown to connect to the main pipeline from the top, identified as "T" in the orientation column. Three of these service connections are connected to the main pipeline from the top through a wye branch and the other 27 are connected to the main pipeline through a chimney. Table 4 identifies the number of service connections connected to each chimney and the approximate height of each chimney. As shown in Table 4, 10 chimneys connect to one service connection at the top of the chimney, and 17 chimneys connect to two service connections at the top of the chimney.

The locations of the service connections with infiltration listed in Table 4 were reviewed. If service connections for adjacent houses are found to exhibit high infiltration rates, this is an indication that the general area may have high groundwater and defective service connections, and the most effective way to reduce the infiltration is to rehabilitate all of the service connections in that area. A group of 9 service connections listed in Table 4 recommended for rehabilitation is clustered along Exchange Street and Wall Street between manhole Nos. H32 and H12. Another group of 9 service connections is clustered along Moncrief Road and Levin Road between manhole Nos. J18 an J23.

Table 4 includes a column showing the unit cost ($/gpd), representing the estimated rehabilitation cost divided by the estimated infiltration removed for each infiltration source. For estimating the unit cost, we assume the recommended rehabilitation method will remove all the estimated infiltration in the service connection. As derived earlier in this report, an infiltration source with a unit cost for removal equal to or less than $13.93 per gallon per day is considered cost-effective to remove. In applying this criteria to Table 4, a total of approximately 153,100 gpd of infiltration can be cost-effectively removed from the lateral service connections and chimneys by rehabilitating 69 infiltration sources at an estimated construction cost of approximately $674,900.

SUMMARY

The field work performed as part of this study identified 78 infiltration sources in sewer manholes and main pipelines. These sources contribute an estimated 67,500 gpd of removable infiltration. The field work also identified 69 service connections with estimated infiltration amounts equal to or greater than 1,000 gpd each. These service connections contribute an estimated 153,100 gpd of infiltration to the sewer system.

A cost-effectiveness analysis was performed, and 140 infiltration sources contributing a total of approximately 219,300 gpd of infiltration were determined to be cost-effective to remove. The total construction cost of this rehabilitation effort is estimated at $809,400, representing the sum of approximately $134,500 to rehabilitate manholes and main pipeline plus approximately $674,900 to rehabilitate lateral service connections.

We recommend that the infiltration sources which were determined to be cost-effective to remove be rehabilitated.

During the television inspection work between manhole Nos. E4 and E3 (easement for 18-inch pipe off Reed Street), a pipe connection thought to be a service connection was found to have significant infiltration of approximately 8,600 gpd. A subsequent review of available plans in this area shows that the pipe connection is actually an approximate 300 feet long service connection consisting of about 5 pipe segments (6-inch and 8-inch vitrified clay pipe) extending to the Memorial Park School. We recommend the 5 pipe segments receive follow-up CCTV inspection during a high groundwater period to determine the pipe condition and location of any infiltration sources.

ATTACHMENT A

- Figure 1 Field Work Locations
- Figure 2 General Location Plan of Work

ATTACHMENT B

AECOM Letter Report Dated April 30, 2021 Documenting Flow Isolation Results and Recommendations for Television Inspection

Town of Rockland

Sewer Commission

Post Office Box 330
ROCKLAND, MASSACHUSETTS 02370

Charles Heshion, *Chairman*
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Sherri Vallie, *Commissioner*

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December 12, 2022

David Burns
Municipal Services
Massachusetts Department of Environmental Protection
20 Riverside Drive
Lakeville, MA 02347

Re: **Town of Rockland Infiltration/Inflow Control Plan**

Dear Mr. Burns,

The purpose of this letter is to present the Town of Rockland's Infiltration/Inflow (I/I) Control Plan and to request compliance with 314 CMR 12.00, *Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers*.

BACKGROUND

The Town of Rockland is located approximately 20 miles south of Boston, Massachusetts, and contains approximately 340,000 linear feet (lf) of sanitary sewers. In 2021, Rockland completed an I/I Sewer System Evaluation Survey (SSES). This project focused on identifying excessive and cost effective I/I present in the sewer system.

SANITARY SEWER OVERFLOWS (SSOs)

In the past 15 years, Rockland has experienced two (2) storm event that qualifies at or above the 5-year, 24-hour storm event recurrence interval. It is listed in the table below with other significant storm events from the same period. During this time period, twenty-four (24) SSOs were recorded and were all caused by rain events. The SSO Notification Form was submitted to MassDEP and is available upon request.

Storm Date(s)	Total Precipitation (in.)[1]	Peak 24 Hour Precipitation (in.)	Approximate Recurrence Interval[2]	Documented/Reported SSO
March 14-15, 2010	7.50	4.78	25 Year, 2-Day	Yes
October 28-30, 2012	4.14	3.06	1- to 2-Year, 3-Day	No
June 7-8, 2013	4.10	2.95	2- to 5-Year, 2-Day	No
March 29-31, 2014	4.51	2.98	2- to 5-Year, 3-Day	Yes
October 21-24, 2014	4.07	2.45	1- to 2-Year, 4-Day	No
March 2-3, 2018	4.17	4.17	5-Year, 24-Hour	No
September 25-28, 2018	5.21	2.43	2- to 5-Year, 4-Day	No

Note:
1. Rainfall data is based on the NOAA rain gage located in Brockton, MA.
2. Recurrence intervals are based on Technical Paper 40 (NOAA).
3. Only storm events that qualify as at least a five-year, 24-hour storm or have a total precipitation above 4 inches are shown in the table.

SEWER SYSTEM EVALUATION STUDIES AND OTHER I/I INVESTIGATIONS

Prior investigation work completed by Rockland to evaluate their sewer system is documented below. All projects followed MassDEP's *Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys.*

In 2021, the Town of Rockland conducted a Sewer System Evaluation Survey (SSES). As part of this project, flow isolation was conducted on 200,451 lf of 8- to 12-inch diameter sewers, or approximately 90% of the system total for this size category. A total of 19,131 lf of 8- to 12-inch sewers were selected for television inspection based on flow isolation results, in addition to 12,410 lf of 15- to 33-inch diameter sewers representing approximately one-third of the system total for this size category, were selected for further television inspection. Approximately 67,400 gallon per day (gpd) of infiltration from sewer mains and manholes was identified and 161,700 gpd of infiltration from sewer lateral services was identified. Defects identified during television inspection were recommended for rehabilitation in the report dated September 2021 on the basis of cost-effectiveness considering estimated cost of construction versus approximate cost of transportation and treatment.

PLAN AND SCHEDULE OF FUTURE WORK

The Town of Rockland Sewer Commission is prepared to address I/I in the sewer system. A sewer system rehabilitation project is scheduled to be performed to eliminate the I/I identified in the 2021 I/I SSES Report. Approximately 119,350 gpd of I/I is anticipated to be eliminated as the result of the rehabilitation project.

Moving forward, the Town has developed an Annual I/I Control Program. Year 1 of the program is anticipated to start in Spring 2023 and will focus on Town-wide flow monitoring to establish a new baseline for I/I. Data from flow monitoring will be analyzed and the Town will implement an Annual I/I Control Program that will consist of focused annual inspection including a private inflow removal program, television inspection, manhole inspections, and smoke testing. The annual program will be broken into three (3) phases. Each phase includes three (3) years of infiltration work (manhole and television inspection) and one year of inflow work (smoke testing, dye testing/flooding, and building inspection). A rehabilitation project will be performed at the end of each phase. Funding for future projects will be from town funds and may include funding from the MassDEP SRF Program. A draft Annual Infiltration/Inflow Program table is attached for reference. It should be note that the actual sewer length to be inspected per year will be adjusted after the conclusion of Year 1 Metering program.

Based on the past and future sewer system evaluation studies and rehabilitation work stated in this letter, the Town of Rockland requests compliance with 314 CMR 12.00.

Sincerely,

Charles Heshion

Chuck Heshion
Chairman, Rockland Board of Sewer Commissioners

cc: Frank Occhipinti, PE; Weston & Sampson

Annual Infiltration/Inflow Program
Town Rockland, Massachusetts

Note: Sewer length and number of manholes are estimated based on a 15-year program. Actual sewer length to be inspected per year will be adjusted after the conclusion of Year 1/Metering program.

Fiscal Year	Calendar Year/Month	Project Name	Scope	Subarea(s)	Sewer Length (lf)	Manholes	Estimated Cost [2]
FY2023	Spring 2023	Year 1 Program	Town-wide Metering Program and GIS-based Depth-to-Groundwater Analysis	-	-	-	$ 150,000
			Phase 1				
FY2024	Spring 2024	Year 2 Infiltration	Manhole inspections and television inspection	-	34,000	170	$ 150,000
FY2025	Spring 2025	Year 3 Infiltration	Manhole inspections and television inspection	-	34,000	170	$ 155,000
FY2026	Spring 2026	Year 4 Infiltration	Manhole inspections and television inspection		34,000	170	$ 160,000
FY2027	Summer 2026 - Spring 2027	Year 2 to 4 Inflow	Smoke Testing, Dye Testing/Flooding with TV, and Building Inspection	-	102,000	-	$ 200,000
FY2028	Design - Summer 2027 Bid - Fall/Winter 2027 Construction - Spring 2028	Year 2 to 4 Rehabilitation	Sewer System Rehabilitation - Cost Effective and Structural Defective Rehabilitation	-	TBD	TBD	$ 1,500,000 [1]
			Phase 2				
FY2029	Spring 2029	Year 5 Infiltration	Manhole inspections and television inspection	-	34,000	170	$ 170,000
FY2030	Spring 2030	Year 6 Infiltration	Manhole inspections and television inspection	-	34,000	170	$ 175,000
FY2031	Spring 2031	Year 7 Infiltration	Manhole inspections and television inspection		34,000	170	$ 180,000
FY2032	Summer 2031 - Spring 2032	Year 5 to 7 Inflow	Smoke Testing, Dye Testing/Flooding with TV, and Building Inspection	-	102,000	-	$ 220,000
FY2033	Design - Summer 2032 Bid - Fall/Winter 2032 Construction - Spring 2033	Year 5 to 7 Rehabilitation	Sewer System Rehabilitation - Cost Effective and Structural Defective Rehabilitation	-	TBD	TBD	$ 1,500,000 [1]
			Phase 3				
FY2034	Spring 2034	Year 8 Infiltration	Manhole inspections and television inspection	-	34,000	170	$ 191,000
FY2035	Spring 2035	Year 9 Infiltration	Manhole inspections and television inspection	-	34,000	170	$ 197,000
FY2036	Spring 2036	Year 10 Infiltration	Manhole inspections and television inspection		34,000	170	$ 203,000
FY2037	Summer 2036 - Spring 2037	Year 8 to 10 Inflow	Smoke Testing, Dye Testing/Flooding with TV, and Building Inspection	-	102,000	-	$ 240,000
FY2038	Design - Summer 2037 Bid - Fall/Winter 2037 Construction - Spring 2038	Year 8 to 10 Rehabilitation	Sewer System Rehabilitation - Cost Effective and Structural Defective Rehabilitation	-	TBD	TBD	$ 1,500,000 [1]

[1] Estimated cost includes construction and engineering

[2] Estimated unit cost is based on a 3-4% increase from previous year

Prepared 10/12/2022

Updated 12/12/2022

	Infiltration
	Inflow
	Rehab/Construction

Appendix C
NPDES Permits

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

Town of Rockland, Massachusetts

is authorized to discharge from the facility located at

Rockland Wastewater Treatment Plant
587R Summer Street
Rockland, MA 02370

to receiving water named

French Stream
South Coastal Watershed

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on the first day of the calendar month immediately following 60 days after signature.[1]

This permit expires at midnight, five years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on January 27, 2006.

This permit consists of **Part I** including the cover page(s), **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011), **Attachment B** (Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013), and **Part II (**NPDES Part II Standard Conditions, April 2018).

Signed this day of

KENNETH MORAFF Digitally signed by KENNETH MORAFF Date: 2021.11.29 14:47:19 -05'00'

Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Procedures for appealing EPA's Final Permit decision may be found at 40 CFR § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated effluent through Outfall Serial Number 001 to the French Stream. The discharge shall be limited and monitored as specified below; the receiving water and the influent shall be monitored as specified below.

Effluent Characteristic	Effluent Limitation			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Rolling Average Effluent Flow[5]	Report MGD[5]	---	---	Continuous	Recorder
Effluent Flow[5]	2.5 MGD	---	Report MGD	Continuous	Recorder
BOD_5 (May 1 – September 30)	6 mg/L 125 lb/day	6 mg/L 125 lb/day	10 mg/L 209 lb/day	2/Week	Composite
BOD_5 (October 1 – April 30)	20 mg/L 417 lb/day	20 mg/L 417 lb/day	30 mg/L 626 lb/day	2/Week	Composite
BOD_5 Removal	≥ 85 %	---	---	1/Month	Calculation
TSS (May 1 – September 30)	10 mg/L 209 lb/day	10 mg/L 209 lb/day	15 mg/L 313 lb/day	2/Week	Composite
TSS (October 1 – April 30)	20 mg/L 417 lb/day	20 mg/L 417 lb/day	30 mg/L 626 lb/day	2/Week	Composite
TSS Removal	≥ 85 %	---	---	1/Month	Calculation
pH Range[6]	6.5 - 8.3 S.U.			1/Day	Grab
Total Residual Chlorine[7,8]	11 µg/L	---	19 µg/L	1/Day	Grab
Escherichia coli [7,8]	126 cfu/100 mL	---	409 cfu/100 mL	3/Week	Grab
Total Copper	12 µg/L	---	19 µg/L	1/Month	Composite
Total Aluminum	87.2 µg/L	---	Report µg/L	1/Month	Composite
Dissolved Oxygen (May 1 – Sept 30)	≥ 7.4 mg/L			1/Day	Grab
Ammonia Nitrogen (April 1 – May 31)	2.5 mg/L	2.5 mg/L	5.7 mg/L	2/Week	Composite
Ammonia Nitrogen (June 1 – Sept 30)	1.0 mg/L	1.0 mg/L	1.5 mg/L	2/Week	Composite
Ammonia Nitrogen (Oct 1 – March 31)	3.3 mg/L	3.3 mg/L	5.7 mg/L	2/Week	Composite

Effluent Characteristic	**Effluent Limitation**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Total Kjeldahl Nitrogen[9] (April 1 – October 31) (November 1 – March 31)	Report mg/L Report mg/L	---	Report mg/L Report mg/L	1/Week 1/Month	Composite
Nitrate + Nitrite[9] (April 1 – October 31) (November 1 – March 31)	Report mg/L Report mg/L	---	Report mg/L Report mg/L	1/Week 1/Month	Composite
Total Nitrogen[9]	Report mg/L Report lb/day	---	Report mg/L	1/Month	Calculation
Total Phosphorus[10] (April 1 – October 31)	0.1 mg/L	---	Report mg/L	2/Week	Composite
Total Phosphorus (November 1 – March 31)	1.0 mg/L	---	Report mg/L	1/Week	Composite
Perfluorohexanesulfonic acid (PFHxS)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorononanoic acid (PFNA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanoic acid (PFOA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluoroheptanoic acid (PFHpA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorodecanoic acid (PFDA)[11]	---	---	Report ng/L	1/Quarter	Composite
Whole Effluent Toxicity (WET) Testing[12,13]					
LC_{50}	---	---	≥ 100 %	1/Quarter	Composite
C-NOEC	---	---	≥ 99 %	1/Quarter	Composite
Hardness	---	---	Report mg/L	1/Quarter	Composite
Ammonia Nitrogen	---	---	Report mg/L	1/Quarter	Composite
Total Aluminum	---	---	Report mg/L	1/Quarter	Composite
Total Cadmium	---	---	Report mg/L	1/Quarter	Composite
Total Copper	---	---	Report mg/L	1/Quarter	Composite
Total Nickel	---	---	Report mg/L	1/Quarter	Composite
Total Lead	---	---	Report mg/L	1/Quarter	Composite
Total Zinc	---	---	Report mg/L	1/Quarter	Composite
Total Organic Carbon	---	---	Report mg/L	1/Quarter	Composite

Ambient Characteristic[14]	**Reporting Requirements**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Hardness	---	---	Report mg/L	1/Quarter	Grab
Ammonia Nitrogen	---	---	Report mg/L	1/Quarter	Grab
Total Aluminum	---	---	Report mg/L	1/Quarter	Grab
Total Cadmium	---	---	Report mg/L	1/Quarter	Grab
Total Copper	---	---	Report mg/L	1/Quarter	Grab
Total Nickel	---	---	Report mg/L	1/Quarter	Grab
Total Lead	---	---	Report mg/L	1/Quarter	Grab
Total Zinc	---	---	Report mg/L	1/Quarter	Grab
Total Organic Carbon	---	---	Report mg/L	1/Quarter	Grab
Dissolved Organic Carbon[15]	---	---	Report mg/L	1/Quarter	Grab
pH[16]	---	---	Report S.U.	1/Quarter	Grab
Temperature[16]	---	---	Report °C	1/Quarter	Grab

Influent Characteristic	**Reporting Requirements**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
BOD_5	Report mg/L	---	---	2/Month	Composite
TSS	Report mg/L	---	---	2/Month	Composite
Perfluorohexanesulfonic acid (PFHxS)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorononanoic acid (PFNA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanoic acid (PFOA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluoroheptanoic acid (PFHpA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorodecanoic acid (PFDA)[11]	---	---	Report ng/L	1/Quarter	Composite

Sludge Characteristic	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly	Average Weekly	Maximum Daily	Measurement Frequency	Sample Type[4]
Perfluorohexanesulfonic acid (PFHxS)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluorononanoic acid (PFNA)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluorooctanesulfonic acid (PFOS)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluorooctanoic acid (PFOA)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluoroheptanoic acid (PFHpA)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluorodecanoic acid (PFDA)[17]	---	---	Report ng/g	1/Quarter	Composite[18]

Footnotes:

1. All samples shall be collected in a manner to yield representative data. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented as an electronic attachment to the applicable discharge monitoring report. The Permittee shall report the results to the Environmental Protection Agency Region 1 (EPA) and the State of any additional testing above that required herein, if testing is in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 µg/L, if the ML for a parameter is 50 µg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" to all non-detects for that reporting period and report the average of all the results.

4. A "grab" sample is an individual sample collected in a period of less than 15 minutes.

   A "composite" sample is a composite of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

5. The limit is a monthly average, reported in million gallons per day (MGD). The Permittee shall also report the annual rolling average, which will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months. Also report maximum daily flow in MGD.

   The Permittee must utilize an effluent flow meter to measure effluent flow. See section I.G.3 for a compliance schedule regarding installation of the effluent flow meter.

6. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.).

7. The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Monitoring for total residual chlorine (TRC) is only required for discharges that have been previously chlorinated or that contain residual chlorine. The compliance level for TRC is 20 μg/L.

   Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

   The Permittee shall substitute three TRC grab samples per day, for any day that they are unable to comply with the continuous recording requirement. Each grab sample shall be taken at least 2 hours from the previous grab sample.

8. The monthly average limit for *Escherichia coli* (*E. coli*) is expressed as a geometric mean. E. coli monitoring shall be conducted concurrently with TRC monitoring, if TRC monitoring is required.

   The *E. coli* limit shall become effective in accordance with the compliance schedule found at Part I.G.1.

9. Total Kjeldahl nitrogen and nitrate + nitrite samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen, as follows.

   Total Nitrogen (mg/L) = Total Kjeldahl Nitrogen (mg/L) + Nitrate + Nitrite (mg/L)

   Total Nitrogen (lb/day) = [(average monthly Total Nitrogen (mg/L) * total monthly effluent flow (Millions of Gallons (MG)) / # of days in the month] * 8.34

10. The phosphorus limit shall become effective in accordance with the compliance schedule found at Part I.G.2.

11. Report in nanograms per liter (ng/L). This reporting requirement for the listed per- and polyfluoroalkyl substances (PFAS) parameters takes effect the first full calendar quarter following 6 months after EPA notifies the Permittee that an EPA multi-lab validated method for wastewater is available.

12. The Permittee shall conduct acute toxicity tests (LC50) and chronic toxicity tests (C-NOEC) in accordance with test procedures and protocols specified in Attachment A and B of this permit. LC50 and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*. Toxicity test samples shall be collected during the same weeks each time of calendar quarters ending March 31st, June 30th, September 30th, and December 31st. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal that includes the results for that toxicity test.

13. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A and B**, Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

14. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A and B.** Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

1. Monitoring and reporting for dissolved organic carbon (DOC) are not requirements of the Whole Effluent Toxicity (WET) tests but are additional requirements. The Permittee may analyze the WET samples for DOC or may collect separate samples for DOC concurrently with WET sampling.

2. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

3. Report in nanograms per gram (ng/g). This reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter following 6 months after EPA notifies the permittee that an EPA multi-lab validated method for sludge is available.

4. Sludge sampling shall be as representative as possible based on guidance found at https://www.epa.gov/sites/production/files/2018-11/documents/potw-sludge-sampling-guidance-document.pdf.

Part I.A., continued.

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. The discharge shall be free from pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

4. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

5. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

6. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

8. The Permittee must provide adequate notice to EPA-Region 1 and the State of the following:

    a. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Part 301 or Part 306 of the Clean Water Act if it were directly discharging those pollutants or in a primary industry category (see 40 CFR Part 122 Appendix A as amended) discharging process water; and

    b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

    c. For purposes of this paragraph, adequate notice shall include information on:

        (1) The quantity and quality of effluent introduced into the POTW; and

        (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

9. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit in accordance with Part II.D.1.e.(1) (24-hour reporting). See Part I.H below for reporting requirements.

2. The Permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge, except SSOs that do not impact a surface water or the public, on a publicly available website, and it shall remain on the website for a minimum of 12 months. Such notification shall include the location and description of the discharge; estimated volume; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue.

3. Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at https://www.mass.gov/how-to/sanitary-sewer-overflowbypassbackup-notification.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance (O&M) of the sewer system shall be in compliance with the Standard Conditions of Part II and the following terms and conditions. The Permittee shall complete the following activities for the collection system that it owns:

1. Maintenance Staff

The Permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Provisions to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

2. Preventive Maintenance Program

The Permittee shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

3. Infiltration/Inflow

The Permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant's effluent limitations. Plans and programs to control I/I shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

4. Collection System Mapping

Within 30 months of the effective date of this permit, the Permittee shall prepare a map of the sewer collection system it owns. The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

a. All sanitary sewer lines and related manholes;

b. All combined sewer lines, related manholes, and catch basins;

c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combination manholes);

d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;

e. All pump stations and force mains;

f. The wastewater treatment facility(ies);

g. All surface waters (labeled);

h. Other major appurtenances such as inverted siphons and air release valves;

i. A numbering system that uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j. The scale and a north arrow; and

k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System O&M Plan

The Permittee shall develop, or update, as applicable and implement the Collection System O&M Plan it has previously submitted to EPA and the State. The Plan shall be available for review by federal, state and local agencies as requested. The Plan shall include:

a. A description of the collection system management goals, staffing, information management, and legal authorities;

b. A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities; and

c. A preventive maintenance and monitoring program for the collection system;

d. Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;

e. Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;

f. Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;

g. A description of the Permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof downspouts;

h. An educational public outreach program for all aspects of I/I control, particularly private inflow; and

i. An <u>Overflow Emergency Response Plan</u> to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The Permittee shall submit a summary report of activities related to the implementation of its Collection System O&M Plan during the previous calendar year. The report shall be submitted to EPA and the State annually by March 31. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year, including a quantification of I/I identified and removed;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit; and

f. If the average annual flow in the previous calendar year exceeded 80 percent of the facility's 2.5 MGD design flow (2.0 MGD), or there have been capacity related overflows, the report shall include:

   (1) Plans for further potential flow increases describing how the Permittee will maintain compliance with the flow limit and all other effluent limitations and conditions; and

   (2) A calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year.

D. ALTERNATE POWER SOURCE

In order to maintain compliance with the terms and conditions of this permit, the Permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works it owns and operates, as defined in Part II.E.1 of this permit.

E. INDUSTRIAL USERS AND PRETREATMENT PROGRAM

1. The Permittee shall submit to EPA and the State the name of any Industrial User (IU) subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR chapter I, subchapter N (Parts 405-415, 417-430, 432, 447, 449-451, 454, 455, 457-461, 463-469, and 471 as amended) who commences discharge to the facility after the effective date of this permit.

   This reporting requirement also applies to any other IU who is classified as a Significant Industrial User which discharges an average of 25,000 gallons per day or more of process wastewater into the facility (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastewater which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the facility; or is designated as such by the Control Authority as defined in 40 CFR § 403.3(f) on the basis that the industrial user has a reasonable potential to adversely affect the wastewater treatment facility's operation, or for violating any pretreatment standard or requirement (in accordance with 40 CFR § 403.8(f)(6)).

2. In the event that the Permittee receives originals of reports (baseline monitoring reports, 90-day compliance reports, periodic reports on continued compliance, etc.) from industrial users subject to Categorical Pretreatment Standards under 40 CFR § 403.6 and 40 CFR chapter I, subchapter N (Parts 405-415, 417-430, 432-447, 449-451, 454, 455, 457-461, 463-469, and 471 as amended), or from a Significant Industrial User, the Permittee shall forward the originals of these reports within ninety (90) days of their receipt to EPA, and copy the State.

3. Beginning the first full calendar quarter following 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater is available, the Permittee shall commence annual sampling of the following types of industrial discharges into the POTW:

   - Commercial Car Washes
   - Platers/Metal Finishers
   - Paper and Packaging Manufacturers
   - Tanneries and Leather/Fabric/Carpet Treaters
   - Manufacturers of Parts with Polytetrafluoroethylene (PTFE) or teflon type coatings (i.e. bearings)
   - Landfill Leachate
   - Centralized Waste Treaters
   - Contaminated Sites
   - Fire Fighting Training Facilities
   - Airports
   - Any Other Known or Expected Sources of PFAS

   Sampling shall be for the following PFAS chemicals:

Industrial User Effluent Characteristic	Maximum Daily	Monitoring Requirements	
		Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	Report ng/L	1/year	Composite
Perfluorononanoic acid (PFNA)	Report ng/L	1/year	Composite
Perfluorooctanesulfonic acid (PFOS)	Report ng/L	1/year	Composite
Perfluorooctanoic acid (PFOA)	Report ng/L	1/year	Composite
Perfluoroheptanoic acid (PFHpA)	Report ng/L	1/year	Composite
Perfluorodecanoic acid (PFDA)	Report ng/L	1/year	Composite

   The industrial discharges sampled and the sampling results shall be summarized and submitted to EPA and copy the state as an electronic attachment to the March discharge monitoring report due April 15 of the calendar year following the testing.

F. SLUDGE CONDITIONS

1. The Permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR § 503, which prescribe "Standards for the Use or Disposal of Sewage Sludge" pursuant to § 405(d) of the CWA, 33 U.S.C. § 1345(d).

2. If both state and federal requirements apply to the Permittee's sludge use and/or disposal practices, the Permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices:

   a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge only landfill

   c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR Part 503 do not apply to facilities that dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities that do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR Part 503 requirements include the following elements:

   a. General requirements

   b. Pollutant limitations

   c. Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)

   d. Management practices

   e. Record keeping

   f. Monitoring

   g. Reporting

   The specific 40 CFR Part 503 requirements that are applicable to the Permittee will depend on the use or disposal practice(s) followed and the quality of sludge produced by a facility. The EPA Region 1 guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the Permittee to assist it in determining the applicable requirements.

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year, as follows:

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

   Sampling of the sewage sludge shall use the procedures detailed in 40 CFR § 503.8.

7. Under 40 CFR § 503.9(r), the Permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the Permittee contracts with another "person who prepares sewage

sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the Permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the Permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the Permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR § 503 Subpart B.

8. The Permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by February 19 (see also "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted electronically using EPA's Electronic Reporting tool ("NeT") (see "Reporting Requirements" section below).

G. SPECIAL CONDITIONS

1. The effluent limit for *E. coli* shall be subject to a schedule of compliance whereby the limit takes effect 12 months after the effective date of the permit. During this first year, the Permittee must comply with interim fecal coliform limits of 200 cfu/100 mL (monthly average) and 400 cfu/100 mL (daily maximum).

2. Total Phosphorus Compliance Schedule

   The effluent limit for total phosphorus, effective from April 1 through October 31, shall be subject to a schedule of compliance whereby the limit takes effect 36 months after the effective date of the permit. For the period starting on the effective date of this permit and ending 36 months after the effective date, the Permittee shall continue to comply with the existing monthly average limit of 0.2 mg/L. The schedule includes one year to evaluate potential treatment process changes (such as chemical addition), one year to implement any process changes necessary to meet the more stringent limit of 0.1 mg/L, and one year to optimize the facility after those changes have been implemented to come into compliance with the new limit. The schedule of compliance is as follows:

   a. Within twelve (12) months of the effective date of the permit, the Permittee shall submit to EPA and MassDEP a status report evaluating the potential treatment process changes (such as chemical addition) necessary to achieve the permit limit.

   b. Within twenty-four (24) months of the effective date of the permit, the Permittee shall complete any process changes necessary to achieve the total phosphorus limit and submit a progress report to EPA and MassDEP detailing these changes.

   c. Within thirty-six (36) months of the effective date of the permit, the Permittee shall complete optimization of the plant and comply with the phosphorus limit. Additionally, the Permittee shall submit a final report that summarizes the process changes and plant optimization efforts.

3. The effluent flow meter installation is subject to a schedule of compliance whereby it shall be operational 12 months after the effective date of the permit. During this first year, the Permittee may continue to report values from the influent flow meter.

H. REPORTING REQUIREMENTS

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

   The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State electronically using NetDMR no later than the 15th day of the following month. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. See Part I.H.6. for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Biosolids/Sewage Sludge Reports

   By February 19 of each year, the Permittee must electronically report their annual Biosolids/Sewage Sludge Report for the previous calendar year using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

4. Submittal of Requests and Reports to EPA Water Division (WD)

   a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA Water Division (WD):

      (1) Transfer of permit notice;

      (2) Request for changes in sampling location;

      (3) Request for reduction in testing frequency;

      (4) Report on unacceptable dilution water / request for alternative dilution water for

WET testing.

(5) Report of new industrial user commencing discharge

(6) Report received from existing industrial user

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

5. Submittal of Reports to EPA Enforcement and Compliance Assurance Division (ECAD) in Hard Copy Form

a. The following notifications and reports shall be signed and dated originals, submitted as hard copy, with a cover letter describing the submission:

(1) Written notifications required under Part II.B.4.c, for bypasses, and Part II.D.1.e, for sanitary sewer overflows (SSOs). Starting on 21 December 2025, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

(2) Collection System Operation and Maintenance Plan

(3) Report on annual activities related to O&M Plan

This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

6. State Reporting

Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management
8 New Bond Street
Worcester, Massachusetts 01606

7. Verbal Reports and Verbal Notifications

a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to the State. This includes verbal reports and notifications that require reporting within 24 hours (e.g., Part II.B.4.c.(2), Part II.B.5.c.(3), and Part II.D.1.e).

b. Verbal reports and verbal notifications shall be made to:

EPA ECAD at 617-918-1510
and
MassDEP Emergency Response at 888-304-1133

I. STATE 401 CERTIFICATION CONDITIONS

1. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, beginning six (6) months after the permittee has been notified by EPA of a multi-lab validated method for wastewater, or two (2) years after the effective date of the 2021 Federal NPDES permit, whichever is earlier, the permittee shall conduct monitoring of the influent, effluent, and sludge for PFAS compounds as detailed in the tables below. If EPA's multi-lab validated method is not available by twenty (20) months after the effective date of the 2021 Federal NPDES permit, the permittee shall contact MassDEP (massdep.npdes@mass.gov) for guidance on an appropriate analytical method. Notwithstanding any other provision of the 2021 Federal NPDES Permit to the contrary, monitoring results shall be reported to MassDEP electronically, at massdep.npdes@mass.gov, or as otherwise specified, within 30 days after they are received.

Influent and Effluent (Outfall 001)

Parameter	Units	Measurement Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	ng/L	Quarterly[1]	24-hour Composite
Perfluoroheptanoic acid (PFHpA)	ng/L	Quarterly	24-hour Composite
Perfluorononanoic acid (PFNA)	ng/L	Quarterly	24-hour Composite
Perfluorooctanesulfonic acid (PFOS)	ng/L	Quarterly	24-hour Composite
Perfluorooctanoic acid (PFOA)	ng/L	Quarterly	24-hour Composite
Perfluorodecanoic acid (PFDA)	ng/L	Quarterly	24-hour Composite

Sludge

Parameter	**Units**	**Measurement Frequency**	**Sample Type**
Perfluorohexanesulfonic acid (PFHxS)	ng/g	Quarterly	Composite[2]
Perfluoroheptanoic acid (PFHpA)	ng/g	Quarterly	Composite
Perfluorononanoic acid (PFNA)	ng/g	Quarterly	Composite
Perfluorooctanesulfonic acid (PFOS)	ng/g	Quarterly	Composite
Perfluorooctanoic acid (PFOA)	ng/g	Quarterly	Composite
Perfluorodecanoic acid (PFDA)	ng/g	Quarterly	Composite

2. Pursuant to 314 CMR 3.11 (2)(a)6., and in accordance with MassDEP's obligation under 314 CMR 4.05(5)(e) to maintain surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, beginning six (6) months after permittee has been notified by EPA of a multi-lab validated method for wastewater, or two (2) years after the effective date of the 2021 Federal NPDES permit, whichever is earlier, the permittee shall commence annual monitoring of all Significant Industrial Users[3,4] discharging into the POTW. Monitoring shall be in accordance with the table below. If EPA's multi-lab validated method is not available by twenty (20) months after the effective date of the 2021 Federal NPDES permit, the permittee shall contact MassDEP (massdep.npdes@mass.gov) for guidance on an appropriate analytical method. Notwithstanding any other provision of the 2021 Federal NPDES permit to the contrary, monitoring results shall be reported to MassDEP electronically at massdep.npdes@mass.gov within 30 days after they are received.

Parameter	**Units**	**Measurement Frequency**	**Sample Type**
Perfluorohexanesulfonic acid (PFHxS)	ng/L	Annual	24-hour Composite
Perfluoroheptanoic acid (PFHpA)	ng/L	Annual	24-hour Composite
Perfluorononanoic acid (PFNA)	ng/L	Annual	24-hour Composite
Perfluorooctanesulfonic acid (PFOS)	ng/L	Annual	24-hour Composite
Perfluorooctanoic acid (PFOA)	ng/L	Annual	24-hour Composite
Perfluorodecanoic acid (PFDA)	ng/L	Annual	24-hour Composite

ATTACHMENT A

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (<u>Ceriodaphnia</u> <u>dubia</u>) definitive 48 hour test.**

- **Fathead Minnow (<u>Pimephales</u> <u>promelas</u>) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (<u>Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.</u>) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

<u>Standard Methods for the Examination of Water and Wastewater</u> describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, CERIODAPHNIA DUBIA 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (^oC)	20 $\pm$ 1^oC or 25 $\pm$ 1^oC
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and Selenastrum to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^R or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (<u>PIMEPHALES</u> <u>PROMELAS</u>) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hr light, 8 hr dark
5.	Size of test vessels	250 mL minimum
6.	Volume of test solution	Minimum 200 mL/replicate
7.	Age of fish	1-14 days old and age within 24 hrs of each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q[R] or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3]	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description
- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody
- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.
- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)
- Raw data and bench sheets.
- Provide a description of dechlorination procedures (as applicable).
- Any other observations or test conditions affecting test outcome.

ATTACHMENT B

FRESHWATER CHRONIC TOXICITY TEST PROCEDURE AND PROTOCOL

USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition. October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at http://www.epa.gov/waterscience/WET/ . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6^{o} C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at <u>http://www.epa.gov/region1/enforcementandassistance/dmr.html</u> for further important details on alternate dilution water substitution requests.

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. $\geq$3 standard deviations for IC25 values and $\geq$ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1, 4]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3, 4]	x		0.02
Alkalinity[4]	x	x	2.0
pH[4]	x	x	--
Specific Conductance[4]	x	x	--
Total Solids [6]	x		--
Total Dissolved Solids [6]	x		--
Ammonia[4]	x	x	0.1
Total Organic Carbon [6]	x	x	0.5
Total Metals [5]			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 2340B (hardness by calculation)
  -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  -Method 4500-CL E Low Level Amperometric Titration
  -Method 4500-CL G DPD Colorimetric Method
- USEPA 1983. Manual of Methods Analysis of Water and Wastes
  -Method 330.5

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/ . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value**,** for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.

- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater that the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Test sensitivity evaluation results (test PMSD for growth and reproduction)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

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[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. <u>Permit Actions</u>

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

   a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

   b. Claims of confidentiality for the following information will be denied:

      (1) The name and address of any permit applicant or Permittee;
      (2) Permit applications, permits, and effluent data.

   c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

   a. Definitions

      (1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

      (2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

   b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

   c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. Upset

a. *Definition*. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. <u>Inspection and Entry</u>

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

D. REPORTING REQUIREMENTS

1. <u>Reporting Requirements</u>

a. *Planned Changes*. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).

(3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. *Anticipated noncompliance*. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. *Transfers*. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

d. *Monitoring reports*. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions

For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in "approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an “approved program.”

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a “discharge of pollutants;”

(b) That did not commence the “discharge of pollutants” at a particular “site” prior to August 13, 1979;

(c) Which is not a “new source;” and

(d) Which has never received a finally effective NPDES permit for discharges at that “site.”

This definition includes an “indirect discharger” which commences discharging into “waters of the United States” after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a “site” for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a ”site” under EPA’s permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System."

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq*.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a "primary industry category."

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

Sludge-only facility means any "treatment works treating domestic sewage" whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of "sludge use or disposal practices," any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, "domestic sewage" includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

  (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

  (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

  (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	"Whole effluent toxicity"
ZID	Zone of Initial Dilution

RESPONSE TO COMMENTS
NPDES PERMIT NO. MA0101923
ROCKLAND WASTEWATER TREATMENT PLANT
ROCKLAND, MASSACHUSETTS

The U.S. Environmental Protection Agency's New England Region (EPA) is issuing a Final National Pollutant Discharge Elimination System (NPDES) Permit for the Rockland Wastewater Treatment Plant (WWTP) located in Rockland, Massachusetts. This permit is being issued under the Federal Clean Water Act (CWA), 33 U.S.C., §§ 1251 *et seq.*

In accordance with the provisions of 40 Code of Federal Regulations (CFR) §124.17, this document presents EPA's responses to comments received on the Draft NPDES Permit # MA0101923 ("Draft Permit"). The Response to Comments explains and supports EPA's determinations that form the basis of the Final Permit. From August 25, 2021 through September 23, 2021, EPA solicited public comments on the Draft Permit.

EPA received comments from:

- Town of Rockland, dated September 23, 2021

Although EPA's knowledge of the facility has benefited from the various comments and additional information submitted, the information and arguments presented did not raise any substantial new questions concerning the permit that warranted a reopening of the public comment period. EPA does, however, make certain clarifications and changes in response to comments. These are explained in this document and reflected in the Final Permit. Below EPA provides a summary of the changes made in the Final Permit. The analyses underlying these changes are contained in the responses to individual comments that follow.

A copy of the Final Permit and this response to comments document will be posted on the EPA Region 1 web site: http://www.epa.gov/region1/npdes/permits_listing_ma.html.

A copy of the Final Permit may be also obtained by writing or calling Doug MacLean, U.S. EPA, 5 Post Office Square, Suite 100 (Mail Code: 06-4), Boston, MA 02109-3912; Telephone: (617) 918-1608; Email maclean.douglas@epa.gov.

Table of Contents

I. Summary of Changes to the Final Permit

1. A compliance schedule has been added in section I.G.3 of the Final Permit for installation of an effluent flow meter. See Response 3.
2. The TRC language in Footnote 7 of Part I.A.1 of the Final Permit has been adjusted to account for chlorine grab sampling when necessary and to require that each grab samples shall be taken at least 2 hours from the previous grab sample. See Response 5.
3. Pretreatment language in section I.E of the permit has been revised to no longer require a pretreatment program. Attachments C & D have also been removed from the Final Permit. See Response 11.

II. Responses to Comments

Comments are reproduced below as received; they have not been edited.

A. Comments from Keith Nastasia, Sewer Superintendent, Town of Rockland:

Comment 1

As the permittee of the aforementioned NPDES permit, the Town of Rockland has reviewed the Draft NPDES permit for the Rockland Wastewater Treatment Plant (WWTP). The Draft NPDES Permit includes a number of items of concern to us, which we question, and that we believe should not be changed, or which require additional explanation and justification from EPA. The changes in question are summarized as follows:

1. The plant flow characteristics are requested to be reported as rolling average, to be consistent with other communities that discharge to South Coastal Basin (page 2 of 20 of the draft permit).

2. The "Effluent Flow" term (on page 2 of 20) is requested to be changed to plant flow.

3. Objection to the lowering of the Total Aluminum limit to 87.2 ug/L mg/I (as described on page 2 of 20).

4. Language adjustment to match previous permit foot notes related to Total Chlorine Residual (page 7 of 20).

5. Objection to the lowering of the Total Phosphorous summer season limit to 0.1 mg/I, as described on page 3 of 20 of the draft permit.

6. Comment on the new requirement to sample for and report levels of PFAS compounds (including PFHxS, PFHpA, PFNA, PFOS, PFOA and PFDA), as described on pages 8 of 20 of the draft permit.

7. Adjustment to Unauthorized Discharges public posting to Town website, as discussed on page 10 of 20 of the draft permit.

8. Comment on new provisions related to the Operation and Maintenance of the sewer system, as described on pages 1 O and 11 of 20 of the draft permit.

9. Request for change to Collection System Mapping verbiage on page 11 of 20.

10. Industrial Facilities correction, affecting the Industrial Pretreatment Program requirement

Response 1

EPA acknowledges this comment and will respond to each individual point (1-10) as they are raised in more detail in the comments below.

Comment 2

Item 1 - Flow Reporting: With the new permit, it is respectfully requested that flows are to be reported as rolling monthly averages to be consistent with NPDES permits for other Massachusetts communities. The modification to using a monthly flow limit was made in the prior permit, and the Town requests the standard language be restored to the permit for flow.

Response 2

In 2007, EPA issued a permit modification to change flow monitoring from a 12-month rolling average to a monthly average, in response to Administrative Order Docket 06-33 ("the Order" or "the AO"). As stated, section II.A of the Statement of Basis for Rockland's 2007 Permit Modification, "EPA proposes to withdraw the annual average flow limit and reissue the condition as an average monthly limit of 2.5 MGD in order to more closely track the Town's efforts to reduce extraneous flows to its collection system. This change is also consistent with a request made by the Town during settlement negotiations that the rolling annual average limit be replaced with a monthly average limit."

The Rockland WWTP had 28 monthly average flow violations in the 60-month review period used for this permit reissuance (June 2016 – July 2021). This frequency of violations is consistent with the review period used during Rockland's 2006 permit renewal, when Rockland had flow violations in 16 out of 36 months, from January 2003 through December 2005. These continued flow violations indicate that Rockland has not made meaningful progress on resolving effluent flow issues and continues to need to be monitored more closely via a monthly effluent flow limit.

The comment does not provide a rationale for the requested change to a rolling annual average flow limit, other than noting that it would be consistent with NPDES permits for other Massachusetts communities. EPA acknowledges that many other Massachusetts dischargers have rolling annual average limits but considers the unique background and existing AO described above to justify the continuance of a monthly average limit in this case. Given the lack of improvement seen in effluent flow, EPA does not see a reason to change the approach adopted in 2007, and the effluent flow limit will remain as a monthly average limit in the Final Permit.

Comment 3

Item 2 -Effluent Flow: The draft permit refers to Effluent Flow in the permit limits. The Rockland I/WI/TP currently does not have an effluent flow meter, so this term is not accurate. The Town respectfully requests that the term be changed to "FLOW", as was included in the prior permit.

Response 3

EPA clarifies that influent flow and effluent flow, while related, are not identical. Flow is listed as an "Effluent Characteristic" in the permit and effluent flow must be measured. As stated in the Fact Sheet at 8,

> "…EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced, and the calculated effluent limitations may not be sufficiently protective (i.e., might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. To ensure that the assumptions underlying EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may ensure the validity of its "worst-case" wastewater effluent flow assumptions through imposition of permit conditions for effluent flow. In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs."

EPA notes the absence of sludge and particulate matter in effluent is going to make effluent flow different than influent. In general, effluent flow is lower than influent flow, and as such, measuring effluent flow may help the Facility with its effluent flow compliance issues. As effluent flow is the regulated pollutant, it must be measured directly by the Facility, and the Facility will need to install an effluent flow meter.

Based on the comment, it is clear that the Facility does not have an effluent flow meter and will need time to acquire and install one. As such, a 12-month compliance schedule for installation of an effluent flow meter has been included in the Final Permit, section I.G.3.

Comment 4

Item 3 -Aluminum: The Total Aluminum limit has been modified from 88 ug/L to 87.2 ug/L. It should be noted that Fact Sheet references that effluent concentrations for aluminum are well below permit limits. The data suggests that there is no reasonable potential to exceed the current limit (or the proposed limit). The apparent lack of reasonable potential suggests that this aluminum limit be eliminated from the permit.

Moreover, the Town disagrees with the need to lower the Total Aluminum limit when the facility consistently produces high quality effluent with no history of total Aluminum exceedances. Additionally, these arbitrary Total Aluminum limits are inconsistent with Massachusetts' proposed Surface Water Quality Standards (SWQS), which include a chronic criterion of 460 ug/L for the South Coastal Basin. As such, the resulting calculated (and appropriate) limits for aluminum will increase, further reinforcing the lack of reasonable potential for the plant effluent to cause an exceedance. EPA has not substantiated that aluminum is a water quality concern in the receiving water, and the proposed Massachusetts standards reinforce the position that no specific limit is needed.

We request that the Total Aluminum limit be removed from the permit. If the limit is retained, the 88 ug/1 within the current permit should not be reduced.

Response 4

The total aluminum limit in the Draft Permit is a water quality-based effluent limitation that reflects the Massachusetts Surface Water Quality Standards (SWQS) that are currently in effect for the purpose of NPDES permitting. MassDEP promulgated final revised SWQS, including revised aluminum criteria, on November 12, 2021. However, the revised SWQS still need to go through the EPA review and approval process before they can be used in NPDES permits. The SWQS that are in effect for the purpose of NPDES permitting at 314 CMR Section 4.05(e) use the National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002 as a basis for allowable receiving water concentrations not enumerated in previous sections of the chapter. According to the National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002, the acute and chronic criteria for total aluminum in freshwater are 87 μg/L and 750 μg/L currently.

EPA is obligated pursuant to 40 CFR § 122.44(d) to include any effluent limit in a permit that is necessary to comply with the water quality standards (WQSs) that are in effect at the time the permit is issued. If there is a reasonable potential to violate WQSs, then pursuant to 40 CFR § 122.44(d) an effluent limitation is "necessary," and EPA is obligated to include a limit in the permit. EPA does not forestall permit issuance, pending development, submission and approval of revised WQS, particularly where, as here, the previous permit has long since expired. To do so would subject the permitting process to significant delay and uncertainty. The criteria development and adoption process often take years. The Massachusetts' WQS now in effect require that EPA base effluent limitations for metals on the criteria published in the National Recommended Water Quality Criteria: 2002, EPA 822-R-02-047, November 2002, unless site-specific criteria are established or MassDEP determines that natural background concentrations are higher than the criteria (314 CMR § 4.05(5)(e)). MassDEP has not issued site-specific aluminum criteria for the French River or determined that natural background concentrations are higher than the current aluminum criteria.

Based on the reasons described above, the aluminum limit is necessary and will remain in the Final Permit. Once the Massachusetts Water Quality Standard revisions are approved by EPA, the Permittee may request a permit modification or permit reissuance to reevaluate the aluminum limit. EPA notes that because the existing aluminum limit is already effective, any future reevaluation must be consistent with anti-backsliding provisions found at CWA §§ 402(o) and 303(d)(4) and the Massachusetts antidegradation provisions found at 314 CMR 4.04.

Regarding the portion of the comment related to reasonable potential, the new limit was not set based on actual discharges from the Facility, but rather based on testing the adequacy of the limit from the 2006 Permit to continue to protect water quality standards. As stated in Fact Sheet section 5.1.11.2, "For any metal with an existing limit in the 2006 Permit, the same mass balance equation is used to determine if a more stringent limit would be required to continue to meet WQS under current conditions. The limit is determined to be the more stringent of either (1) the existing limit or (2) the calculated effluent concentration (Cd) allowable to meet WQS based on current conditions." If the facility were to discharge at the 2006 Permit limit of 88 μg/L under critical conditions, EPA determined that water quality violations may occur (as shown in Fact Sheet Appendix B). As such, the limit was lowered to a level where, should discharges occur at the new limit, water quality standards would be maintained.

This approach is further justified in Appendix B of the Fact Sheet, which stated the following:

> For any pollutant(s) with an existing WQBEL, EPA notes that the analysis described in 40 CFR § 122.44(d)(1)(i) has already been conducted in a previous permitting action demonstrating that there is reasonable potential to cause or contribute to an excursion of WQS. Given that the permit already contains a WQBEL based on the prior analysis and the pollutant(s) continue to be discharged from the facility, EPA has determined that there is still reasonable potential for the discharge of this pollutant(s) to cause or contribute to an excursion of WQS. Therefore, the WQBEL will be carried forward unless it is determined that a more stringent WQBEL is necessary to continue to protect WQS or that a less stringent WQBEL is allowable based on anti-backsliding regulations at CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). For these pollutant(s), if any, the mass balance calculation is not used to determine whether there is reasonable potential to cause or contribute to an excursion of WQS, but rather is used to determine whether the existing limit needs to be more stringent to continue to protect WQS.
>
> From a technical standpoint, when a pollutant is already being controlled because of a previously established WQBEL, EPA has determined that it is not appropriate to use new effluent data to reevaluate the need for the existing limit because the reasonable potential to cause or contribute to an excursion of WQS for the uncontrolled discharge was already established in a previous permit. If EPA were to conduct such an evaluation and find no reasonable potential for the controlled discharge to cause or contribute to an excursion of WQS, that finding

could be interpreted to suggest that the effluent limit should be removed. However, the new permit without the effluent limit would imply that existing controls are unnecessary, that controls could be removed and then the pollutant concentration could rise to a level where there is, once again, reasonable potential for the discharge to cause or contribute to an excursion of WQS. This could result in an illogical cycle of applying and removing pollutant controls with each permit reissuance. EPA's technical approach on this issue is in keeping with the Act generally and the NPDES regulations specifically, which reflect a precautionary approach to controlling pollutant discharges.

This comment does not result in any changes to the Final Permit.

Comment 5

<u>Item 4 - Total Chlorine Residual</u>: The existing permit has appropriate comments related to the effluent characteristic for Total Residual Chlorine which were not carried forward to this draft. It is requested that the following two statements be included from the previous permit language:

- "The permittee shall substitute three TRC grab samples per day, for any day that they are unable to comply with the continuous recording requirement."

- "For effluent limitations less than 20 ug/1, compliance/non-compliance will be determined based on the ML. Sample results of 20 ug/1 or less shall be reported as zero on the discharge monitoring report."

Response 5

Regarding the first statement, EPA agrees that this provision is appropriate to ensure TRC data is collected even when continuous monitoring equipment is not functioning properly. Therefore, the Final Permit has been revised to include the requested provision, "The permittee shall substitute three TRC grab samples per day, for any day that they are unable to comply with the continuous recording requirement."

Additionally, to ensure the three grab samples are representative of the discharge throughout the day, EPA has also included a requirement that each grab sample shall be taken at least 2 hours from the previous grab sample.

Regarding the second statement, the permit will not be changed. In section I.A of the Final Permit:

-Footnote 2 states, "In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part

136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

-Footnote 3 states, “When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter”

-Footnote 7 states “The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Monitoring for total residual chlorine (TRC) is only required for discharges that have been previously chlorinated or that contain residual chlorine. The compliance level for TRC is 20 µg/L.”

These three footnotes combine to say that the required ML for TRC testing is 20 µg/L, and that any reading below 20 µg/L should be reported as less than the ML (e.g., “< 20 µg/L” if the ML is 20 µg/L).

This second part of the comment does not result in any change to the Final Permit.

Comment 6

Item 5 – Phosphorus: The existing permit has a summer season Phosphorous limit of 0.2 mg/L. The draft permit proposes lowering this seasonal limit to 0.1 mg/L (100 ug/L). The Rockland WWTP consistently achieves a phosphorus effluent concentration within the 0.2 mg/L limit, yet a further reduction of the limit will result in a need for significant changes to the WWTP. The fact sheet does not provide specific information related to water quality impacts in the French Stream or South Coastal Basin related to phosphorus. We respectfully request that the summer season Phosphorous limit remain at 0.2 mg/L.

If the proposed lower phosphorus limit is retained in the new permit, the Town will require a longer period to implement this change efficiently. Under Section G., Special Conditions (on page 17 of 20 of the draft permit), a compliance schedule tor Total Phosphorus is provided with a total of thirty-six (36) months. We respectfully request that these periods be extended to forty-eight (48) months, with the specific milestones adjusted to fifteen (15) months, thirty-six (36) months, and forty-eight (48) months, respectively.

Response 6

The justification for a phosphorus limit of 0.1 mg/L is presented in Fact Sheet section 5.10.1.2, and the calculations are presented in Fact Sheet Appendix B. Within the justification for the new limit is the following passage,

> “EPA’s 1986 Quality Criteria for Water (the “Gold Book”) recommends maximum threshold concentrations that are designed to prevent or control adverse nutrient-related impacts from occurring. Specifically, the Gold Book recommends in-stream phosphorus concentrations of no greater than 0.05 mg/L in any stream entering a lake or reservoir, 0.1 mg/L for any stream not discharging directly to lakes or impoundments, and 0.025 mg/L within a lake or reservoir. For this segment of the French Stream, 0.1 mg/L would apply downstream of the discharge.”

Using this instream target, EPA conducted an analysis to determine whether a more stringent effluent limit would be necessary to ensure that the discharge does not cause or contribute to an excursion of Water Quality Standards (WQS). Given the lack of available dilution under critical low flow conditions (*i.e.*, dilution factor of 1.05), it was determined that the limit of 0.1 mg/L is necessary to continue to protect WQS in the receiving water.

Regarding the length of the compliance schedule, EPA agrees with the comment that there may be multiple pathways to achieve compliance and some of those pathways are achievable within 36 months whereas other pathways may take a longer time. EPA notes that a compliance schedule in a permit must comply with 40 CFR § 122.47(a) and (a)(1) which indicates that a permitting authority must make a reasonable determination that a schedule of compliance is "appropriate" and that the schedule proposed requires compliance "as soon as possible." Given the potential for compliance within 36 months through chemical addition, any extension of the schedule would not ensure that the schedule requires compliance "as soon as possible." Therefore, the compliance schedule in the Final Permit has not been changed. However, if the Permittee is unable to comply with the limit once it becomes effective, they may contact EPA's Enforcement and Compliance Assurance Division (ECAD) to discuss a potential administrative order with additional time to achieve the phosphorus limit through alternate means.

Comment 7

Item 6- PFAS: The draft permit includes additional requirements to sample for and report on per- and poly-fluoroalkyl substances (PFAS) in influent flow, effluent flow and sludge from the WWTP. As indicated in the fact sheet. an approved test for wastewater PFAS testing has yet to be developed. It is well known that PFAS components are present in the environment, but WWTPs should not be the target of enforcement. We support the need for limiting PFAS compounds in consumer goods and industrial uses. We understand that testing industrial users likely to contribute PFAS may be needed eventually. The Town of Rockland supports the need to provide for legislation to remove these components from commerce as the primary method of reducing the presence of these compounds in our environment.

The impacts of this monitoring requirement will be significant for all WWTPs. One of the major concerns with this monitoring requirement is the impact on sludge disposal. Once PFAS is demonstrated to be in wastewater sludge, the ability to properly dispose of sludge from not only this WWTP, but all Massachusetts WWTPs may be severely compromised. The number of facilities that can properly dispose of PFAS compounds is severely limited and will result in a significant cost increase for sludge disposal for all facilities (if they can get a contract for disposal). If facilities are not able to dispose of sludge in a timely manner, the environmental (and potential public health) impacts of stockpiling sludge on-site will be significant.

We respectfully request that the PFAS monitoring requirement be removed from the NPDES permit and that the focus of legislation related to PFAS be on removal from consumer products and industrial uses. At such time as those most important provisions are in place, a more reasonable approach to addressing the presence of PFAS compounds in wastewater may be appropriate.

Response 7

EPA has broad authority under the CWA and NPDES regulations to prescribe the collection of data and reporting requirements in NPDES Permits. See, e.g., CWA § 308. As discussed in the Fact Sheet at 37-39, the purpose of this monitoring and reporting requirement is "to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality-based effluent limits on a facility-specific basis." These permitting decisions may include whether there is reasonable potential to cause or contribute to a violation of the State water quality standards in the next permit reissuance, and if there is, to inform the development of numeric effluent limits or pollutant minimization practices, or some combination.

EPA notes that the concern regarding PFAS is a much broader issue than the scope of this NPDES permit. EPA is working to address PFAS, including source reduction, as outlined in EPA's 2019 PFAS Action Plan and the 2020 PFAS Action Plan Update[1]. Much work still needs to be done beyond the scope of this permit related to studying the impact to the environment, the impact to human health, and addressing source control of PFAS compounds. EPA agrees that reducing the source of PFAS is a necessary aspect of addressing the overall environmental impact, but not the only aspect. Given that PFAS has been in use since the 1940s and has been used in a wide array of consumer and industrial products, source reduction will not fully resolve the persistent impact of PFAS chemicals already in the environment. Therefore, in addition to source reduction EPA must also assess the potential environmental impact where PFAS may accumulate, such as at WWTFs.

The comment that sludge disposal costs may increase or that the ability to dispose of sludge may be compromised based on PFAS monitoring is speculative. The comment seems to suggest that as long as PFAS is not demonstrated to be in sludge then the Permittee can continue to dispose of the sludge as if it does not contain PFAS regardless of any potential impact to the environment in order to avoid potential risks associated with stockpiling sludge on-site. EPA agrees that stockpiling sludge on-site is not appropriate but notes that simply ignoring the likely presence of PFAS contamination in sludge is also not appropriate. Rather, EPA confirms that PFAS monitoring is necessary to better understand the level of PFAS in sludge and that this data should be used to inform future decisions regarding appropriate sludge disposal practices.

There are no changes to the Final Permit as a result of this comment.

Comment 8

Item 7 -Unauthorized Discharges: The draft permit discusses that any unauthorized discharges are to be posted on a publicly available website and that this information shall remain on the

[1] Available at https://www.epa.gov/pfas/epas-pfas-action-plan.

website for a minimum of 12 months. The Town respectfully requests to have this posting adjusted to a minimum of 3 months.

Response 8

EPA considers a minimum of 12 months to be reasonable to ensure that the public has open access to a full year of unauthorized discharge postings, to track such discharges over the full range of seasonal flow variations that occur each year. Given that the Town did not provide any rationale for this request, there are no changes to the Final Permit as a result of this comment.

Comment 9

Item 8 -Operation and Maintenance of the Sewer System:
The draft permit includes new provisions related to the operation and maintenance of the sewer system. The Town and its operations contractor have a current system in place to operate and maintain, and on occasion improve its wastewater collection system. These provisions are governed sufficiently by Massachusetts regulations and good practice, which have historically proven sufficient to meet the public interests. In fact, many of the required elements are already part of the necessary compliance with 314 CMR 12.00 (Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers), making the permit conditions redundant. Additional regulation of the system operations is not needed within the NPDES permit. We request that these redundant provisions be removed from the final permit.

Response 9

It is common for state regulations and federal regulations to have a certain level of overlap. Any overlapping requirements between Massachusetts' regulations and EPA's permit requirements should be easy to accomplish since the Town has presumably met those requirements already. To the extent the Permittee must update or amend its Operation and Maintenance (O&M) Plan to comply with the permit requirements, EPA suggests that the facility have a single O&M Plan that complies with all state and federal regulations in order to avoid any redundancy that may occur by having one plan that complies with state requirements and a separate plan that complies with federal regulations.

There are no changes to the Final Permit as a result of this comment.

Comment 10

Item 9 -Collection System Mapping: The Town respectfully requests that the second to last sentence of Section C.4 -Collection System (page 11 of 20) is adjusted to the following: 'The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by federal, state, or local agencies for review by federal, state, or local agencies, and not available for public access/viewing". This change will allow consistency with security provisions of the federal Infrastructure Protection acts.

Response 10

The provision at I.C.4 of the permit states "The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by federal, state, or local agencies." The comment requests the addition of "and not available for public access/viewing." EPA notes that the provision, as written in the Draft Permit, does not require the Permittee to make the map available to the public. Therefore, no change to the Final Permit is necessary as a result of this comment.

Comment 11

Item 10 -Industrial Facilities: There has been a local change in Industrial Users of the Rockland sewer system. It is noted that under Section 3.1, Location and Type of Facility (on page 11 of 37 of the Fact Sheet), the third paragraph refers to a no longer existent Significant User. There are now zero Significant Industrial Users in the Rockland system. Serano, Inc. closed their pretreatment facility operations in July 2011, and moved all research laboratories to a new facility in Billerica, MA.

Response 11

EPA acknowledges that the only Significant Industrial User is no longer in operation in Rockland. Based on this, the Permittee is no longer required to have a pretreatment program and the language in section I.E of the Final Permit no longer includes the pretreatment program requirement. Attachments C and D have also been removed from the Final Permit.

Although this requirement has been removed from the Final Permit, EPA encourages the Town to maintain a pretreatment program. In the event new users come into the area, the Town will already have the mechanisms in place to accommodate such industries without needing to reinitiate a pretreatment program. To maintain the program while there are no current industrial users, all the Town will need to do is submit a brief annual report stating there are no industrial users in the system.

Comment 12

The Town of Rockland is currently engaged in planning for the future of its wastewater collection and treatment systems. As part of these studies, the possibility has been identified of a need for more discharge capacity at the WWTP. The Town would like to engage EPA and DEP in a discussion related to the most appropriate method to address the capacity needs, including the possibility of a future permit change.

The Town of Rockland is committed to being a partner in protecting public health and the environment through proper support of the local and regional wastewater treatment works. We urge EPA to consider these comments and make the revisions to the permit requested herein.

We are available to discuss these comments at your convenience.

Response 12

As written in Fact Sheet Section 5.1.1, "EPA issued Administrative Order, Docket No. 06-33 ("2006 AO"), to the Town on September 29, 2006, in response to violations of flow limitations in the 2006 Permit and a previous NPDES permit, issued in 1999." Section IV.3 of the Order states:

"The Plan shall, at a minimum, include:

a. An itemized listing of the recommendations contained in any infiltration/inflow, sewer system evaluation survey, wastewater collection or treatment system capacity evaluation, or wastewater collection system ("Collection System") maintenance report prepared by, or on behalf of, the Town since January 1, 1995 and the status of the Town's implementation of each of the recommendations contained in the reports, including the date that the recommendation was implemented;

b. The Town's rationale for not implementing any specific recommendation contained in the above-referenced reports. For those recommendations that will be implemented in the future, the Town must provide a schedule for the recommendation's implementation;

c. A flow monitoring plan including an implementation schedule that assesses the effectiveness of the Town's completed sewer rehabilitation efforts;

d. The specific recommendations of the May, 2006 "Draft Town of Rockland, Massachusetts Infiltration and Inflow Control Plan" (the "Draft Report") prepared by Metcalf & Eddy that will be implemented by the Town. If the Town chooses not to implement a specific recommendation of the Draft Report, the Town must provide its rationale for the decision not to implement the recommendation. For those recommendations that will be implemented in the future, the Town shall provide a schedule for their implementation and estimate the capital and operation and maintenance costs associated with their implementation;

e. Provisions and a schedule for the development and implementation of an enforceable program for eliminating sump pump and roof leader connections from the Collection System that is based upon flow contributions to the Collection System;

f. Identification of the ten (10) largest water users located within the Town and measures that the Town will implement to encourage water use audits and conservation measures at these facilities; and

g. Provisions and a schedule for the implementation of additional infiltration/inflow controls and water conservation/reuse programs, as necessary, to achieve compliance with the Flow limits in the NPDES permit."

Given that the directives in the AO repeatedly mentioned Infiltration/Inflow, it is clear that EPA intended the Town to reduce Infiltration/Inflow as a means of meeting its NPDES permit limit for design flow.

Additionally, EPA notes that adjusting the effluent flow limit in the permit must be based on an actual increase in the design flow capacity of the facility as well as the completion of an antidegradation study that evaluates potential impacts to the receiving water of an increase in effluent flow. Due to effluent limits being based on design flow, and the potential need to maintain mass loads for pollutants such as phosphorus, a flow increase may result in a decrease in the Facility's dilution factor and a subsequent tightening of effluent limits. The Facility needs to consider this possibility and be prepared to meet the new, lower pollutant limits, before seriously engaging in plans to expand design flow. If the Facility still desires a higher design flow after considering and in combination with legitimate efforts to reduce I/I in accordance with the AO, EPA recommends developing a basis for the request, and working with MassDEP to conduct an antidegradation review. Relevant antidegradation provisions are discussed in Section 2.2.2 of the Fact Sheet. EPA can discuss these requirements in greater detail when the Town is ready to do so.

This comment results in no changes to the Final Permit.

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act as amended, 33 U.S.C. §§ 1251 et seq. (the "CWA"),

Town of Rockland, Massachusetts

is authorized to discharge from the facility located at

Rockland Wastewater Treatment Plant
587R Summer Street
Rockland, MA 02370

to receiving water named

French Stream
South Coastal Watershed

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

This permit shall become effective on the first day of the calendar month immediately following 60 days after signature.[1]

This permit expires at midnight, five years from the last day of the month preceding the effective date.

This permit supersedes the permit issued on January 27, 2006.

This permit consists of **Part I** including the cover page(s), **Attachment A** (Freshwater Acute Toxicity Test Procedure and Protocol, February 2011), **Attachment B** (Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013), **Attachment C** (Reassessment of Technically Based Industrial Discharge Limits), **Attachment D** (NPDES Permit Requirement for Industrial Pretreatment Annual Report) and **Part II** (NPDES Part II Standard Conditions, April 2018).

Signed this day of

____
Ken Moraff, Director
Water Division
Environmental Protection Agency
Region 1
Boston, MA

[1] Pursuant to 40 Code of Federal Regulations (CFR) § 124.15(b)(3), if no comments requesting a change to the Draft Permit are received, the permit will become effective upon the date of signature. Procedures for appealing EPA's Final Permit decision may be found at 40 CFR § 124.19.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated effluent through Outfall Serial Number 001 to the French Stream. The discharge shall be limited and monitored as specified below; the receiving water and the influent shall be monitored as specified below.

Effluent Characteristic	**Effluent Limitation**			**Monitoring Requirements**[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**[4]
Rolling Average Effluent Flow[5]	Report MGD[5]	---	---	Continuous	Recorder
Effluent Flow[5]	2.5 MGD	---	Report MGD	Continuous	Recorder
BOD_5 (May 1 – September 30)	6 mg/L 125 lb/day	6 mg/L 125 lb/day	10 mg/L 209 lb/day	2/Week	Composite
BOD_5 (October 1 – April 30)	20 mg/L 417 lb/day	20 mg/L 417 lb/day	30 mg/L 626 lb/day	2/Week	Composite
BOD_5 Removal	≥ 85 %	---	---	1/Month	Calculation
TSS (May 1 – September 30)	10 mg/L 209 lb/day	10 mg/L 209 lb/day	15 mg/L 313 lb/day	2/Week	Composite
TSS (October 1 – April 30)	20 mg/L 417 lb/day	20 mg/L 417 lb/day	30 mg/L 626 lb/day	2/Week	Composite
TSS Removal	≥ 85 %	---	---	1/Month	Calculation
pH Range[6]	6.5 - 8.3 S.U.			1/Day	Grab
Total Residual Chlorine[7,8]	11 µg/L	---	19 µg/L	1/Day	Grab
Escherichia coli[7,8]	126 cfu/100 mL	---	409 cfu/100 mL	3/Week	Grab
Total Copper	12 µg/L	---	19 µg/L	1/Month	Composite
Total Aluminum	87.2 µg/L	---	Report µg/L	1/Month	Composite
Dissolved Oxygen (May 1 – Sept 30)	≥ 7.4 mg/L			1/Day	Grab
Ammonia Nitrogen (April 1 – May 31)	2.5 mg/L	2.5 mg/L	5.7 mg/L	2/Week	Composite
Ammonia Nitrogen (June 1 – Sept 30)	1.0 mg/L	1.0 mg/L	1.5 mg/L	2/Week	Composite
Ammonia Nitrogen (Oct 1 – March 31)	3.3 mg/L	3.3 mg/L	5.7 mg/L	2/Week	Composite

Effluent Characteristic	**Effluent Limitation**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Total Kjeldahl Nitrogen[9] (April 1 – October 31) (November 1 – March 31)	Report mg/L Report mg/L	---	Report mg/L Report mg/L	1/Week 1/Month	Composite
Nitrate + Nitrite[9] (April 1 – October 31) (November 1 – March 31)	Report mg/L Report mg/L	---	Report mg/L Report mg/L	1/Week 1/Month	Composite
Total Nitrogen[9]	Report mg/L Report lb/day	---	Report mg/L	1/Month	Calculation
Total Phosphorus[10] (April 1 – October 31)	0.1 mg/L	---	Report mg/L	2/Week	Composite
Total Phosphorus (November 1 – March 31)	1.0 mg/L	---	Report mg/L	1/Week	Composite
Perfluorohexanesulfonic acid (PFHxS)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorononanoic acid (PFNA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanoic acid (PFOA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluoroheptanoic acid (PFHpA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorodecanoic acid (PFDA)[11]	---	---	Report ng/L	1/Quarter	Composite
Whole Effluent Toxicity (WET) Testing[12,13]					
LC_{50}	---	---	≥ 100 %	1/Quarter	Composite
C-NOEC	---	---	≥ 99 %	1/Quarter	Composite
Hardness	---	---	Report mg/L	1/Quarter	Composite
Ammonia Nitrogen	---	---	Report mg/L	1/Quarter	Composite
Total Aluminum	---	---	Report mg/L	1/Quarter	Composite
Total Cadmium	---	---	Report mg/L	1/Quarter	Composite
Total Copper	---	---	Report mg/L	1/Quarter	Composite
Total Nickel	---	---	Report mg/L	1/Quarter	Composite
Total Lead	---	---	Report mg/L	1/Quarter	Composite
Total Zinc	---	---	Report mg/L	1/Quarter	Composite
Total Organic Carbon	---	---	Report mg/L	1/Quarter	Composite

Ambient Characteristic[14]	**Reporting Requirements**			**Monitoring Requirements**[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**[4]
Hardness	---	---	Report mg/L	1/Quarter	Grab
Ammonia Nitrogen	---	---	Report mg/L	1/Quarter	Grab
Total Aluminum	---	---	Report mg/L	1/Quarter	Grab
Total Cadmium	---	---	Report mg/L	1/Quarter	Grab
Total Copper	---	---	Report mg/L	1/Quarter	Grab
Total Nickel	---	---	Report mg/L	1/Quarter	Grab
Total Lead	---	---	Report mg/L	1/Quarter	Grab
Total Zinc	---	---	Report mg/L	1/Quarter	Grab
Total Organic Carbon	---	---	Report mg/L	1/Quarter	Grab
Dissolved Organic Carbon[15]	---	---	Report mg/L	1/Quarter	Grab
pH[16]	---	---	Report S.U.	1/Quarter	Grab
Temperature[16]	---	---	Report °C	1/Quarter	Grab

Influent Characteristic	**Reporting Requirements**			**Monitoring Requirements**[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**[4]
BOD_5	Report mg/L	---	---	2/Month	Composite
TSS	Report mg/L	---	---	2/Month	Composite
Perfluorohexanesulfonic acid (PFHxS)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorononanoic acid (PFNA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanesulfonic acid (PFOS)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorooctanoic acid (PFOA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluoroheptanoic acid (PFHpA)[11]	---	---	Report ng/L	1/Quarter	Composite
Perfluorodecanoic acid (PFDA)[11]	---	---	Report ng/L	1/Quarter	Composite

Sludge Characteristic	**Reporting Requirements**			**Monitoring Requirements**[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**[4]
Perfluorohexanesulfonic acid (PFHxS)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluorononanoic acid (PFNA)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluorooctanesulfonic acid (PFOS)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluorooctanoic acid (PFOA)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluoroheptanoic acid (PFHpA)[17]	---	---	Report ng/g	1/Quarter	Composite[18]
Perfluorodecanoic acid (PFDA)[17]	---	---	Report ng/g	1/Quarter	Composite[18]

Footnotes:

1. All samples shall be collected in a manner to yield representative data. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented as an electronic attachment to the applicable discharge monitoring report. The Permittee shall report the results to the Environmental Protection Agency Region 1 (EPA) and the State of any additional testing above that required herein, if testing is in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: They may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

3. When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 μg/L, if the ML for a parameter is 50 μg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" to all non-detects for that reporting period and report the average of all the results.

4. A "grab" sample is an individual sample collected in a period of less than 15 minutes.

   A "composite" sample is a composite of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

5. The limit is a monthly average, reported in million gallons per day (MGD). The Permittee shall also report the annual rolling average, which will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the previous eleven months. Also report maximum daily flow in MGD.

6. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.).

7. The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. Monitoring for total residual chlorine (TRC) is only required for discharges that have been previously chlorinated or that contain residual chlorine. The compliance level for TRC is 20 μg/L.

   Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

8. The monthly average limit for *Escherichia coli* (*E. coli*) is expressed as a geometric mean. E. coli monitoring shall be conducted concurrently with TRC monitoring, if TRC monitoring is required.

   The *E. coli* limit shall become effective in accordance with the compliance schedule found at Part I.G.1.

9. Total Kjeldahl nitrogen and nitrate + nitrite samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen, as follows.

   Total Nitrogen (mg/L) = Total Kjeldahl Nitrogen (mg/L) + Nitrate + Nitrite (mg/L)

   Total Nitrogen (lb/day) = [(average monthly Total Nitrogen (mg/L) * total monthly effluent flow (Millions of Gallons (MG)) / # of days in the month] * 8.34

10. The phosphorus limit shall become effective in accordance with the compliance schedule found at Part I.G.2.

11. Report in nanograms per liter (ng/L). This reporting requirement for the listed per- and polyfluoroalkyl substances (PFAS) parameters takes effect the first full calendar quarter following 6 months after EPA notifies the Permittee that an EPA multi-lab validated method for wastewater is available.

12. The Permittee shall conduct acute toxicity tests (LC50) and chronic toxicity tests (C-NOEC) in accordance with test procedures and protocols specified in Attachment A and B of this permit. LC50 and C-NOEC are defined in Part II.E. of this permit. The Permittee shall test the daphnid, *Ceriodaphnia dubia*. Toxicity test samples shall be collected during the same weeks each time of calendar quarters ending March 31st, June 30th, September 30th, and December 31st. The complete report for each toxicity test shall

be submitted as an attachment to the DMR submittal that includes the results for that toxicity test.

13. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachment A and B**, Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

14. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachment A and B**. Minimum levels and test methods are specified in **Attachment A and B**, Part VI. CHEMICAL ANALYSIS.

15. Monitoring and reporting for dissolved organic carbon (DOC) are not requirements of the Whole Effluent Toxicity (WET) tests but are additional requirements. The Permittee may analyze the WET samples for DOC or may collect separate samples for DOC concurrently with WET sampling.

16. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

17. Report in nanograms per gram (ng/g). This reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter following 6 months after EPA notifies the permittee that an EPA multi-lab validated method for sludge is available.

18. Sludge sampling shall be as representative as possible based on guidance found at https://www.epa.gov/sites/production/files/2018-11/documents/potw-sludge-sampling-guidance-document.pdf.

Part I.A., continued.

2. The discharge shall not cause a violation of the water quality standards of the receiving water.

3. The discharge shall be free from pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

4. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical, chemical, or biological nature of the bottom.

5. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

6. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

7. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

8. The Permittee must provide adequate notice to EPA-Region 1 and the State of the following:

   a. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Part 301 or Part 306 of the Clean Water Act if it were directly discharging those pollutants or in a primary industry category (see 40 CFR Part 122 Appendix A as amended) discharging process water; and

   b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

   c. For purposes of this paragraph, adequate notice shall include information on:

      (1) The quantity and quality of effluent introduced into the POTW; and

      (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

9. Pollutants introduced into the POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

B. UNAUTHORIZED DISCHARGES

1. This permit authorizes discharges only from the outfall listed in Part I.A.1, in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit in accordance with Part II.D.1.e.(1) (24-hour reporting). See Part I.H below for reporting requirements.

2. The Permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge, except SSOs that do not impact a surface water or the public, on a publicly available website, and it shall remain on the website for a minimum of 12 months. Such notification shall include the location and description of the discharge; estimated volume; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue.

3. Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at https://www.mass.gov/how-to/sanitary-sewer-overflowbypassbackup-notification.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance (O&M) of the sewer system shall be in compliance with the Standard Conditions of Part II and the following terms and conditions. The Permittee shall complete the following activities for the collection system that it owns:

1. Maintenance Staff

The Permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Provisions to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

2. Preventive Maintenance Program

The Permittee shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

3. Infiltration/Inflow

The Permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant’s effluent limitations. Plans and programs to control I/I shall be described in the Collection System O&M Plan required pursuant to Section C.5. below.

4. Collection System Mapping

Within 30 months of the effective date of this permit, the Permittee shall prepare a map of the sewer collection system it owns. The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

a. All sanitary sewer lines and related manholes;

b. All combined sewer lines, related manholes, and catch basins;

c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combination manholes);

d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;

e. All pump stations and force mains;

f. The wastewater treatment facility(ies);

g. All surface waters (labeled);

h. Other major appurtenances such as inverted siphons and air release valves;

i. A numbering system that uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j. The scale and a north arrow; and

k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System O&M Plan

The Permittee shall develop, or update, as applicable and implement the Collection System O&M Plan it has previously submitted to EPA and the State. The Plan shall be available for review by federal, state and local agencies as requested. The Plan shall include:

a. A description of the collection system management goals, staffing, information management, and legal authorities;

b. A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities; and

c. A preventive maintenance and monitoring program for the collection system;

d. Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;

e. Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;

f. Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;

g. A description of the Permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof downspouts;

h. An educational public outreach program for all aspects of I/I control, particularly private inflow; and

i. An Overflow Emergency Response Plan to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The Permittee shall submit a summary report of activities related to the implementation of its Collection System O&M Plan during the previous calendar year. The report shall be submitted to EPA and the State annually by March 31. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year, including a quantification of I/I identified and removed;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit; and

f. If the average annual flow in the previous calendar year exceeded 80 percent of the facility's 2.5 MGD design flow (2.0 MGD), or there have been capacity related overflows, the report shall include:

(1) Plans for further potential flow increases describing how the Permittee will maintain compliance with the flow limit and all other effluent limitations and conditions; and

(2) A calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year.

D. ALTERNATE POWER SOURCE

In order to maintain compliance with the terms and conditions of this permit, the Permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works it owns and operates, as defined in Part II.E.1 of this permit.

E. INDUSTRIAL USERS AND PRETREATMENT PROGRAM

1. The Permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 90 days of the effective date of this permit, the Permittee shall prepare and submit a written technical evaluation to EPA analyzing the need to revise local limits. As part of this evaluation, the Permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety and collection system concerns. In preparing this evaluation, the Permittee shall complete and submit the attached form (see **Attachment C –** Reassessment of Technically Based Industrial Discharge Limits) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the Permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

2. The Permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the Permittee's

approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR Part 403. At a minimum, the Permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):

a. Carry out inspection, surveillance, and monitoring procedures that can determine independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP but in no case less than once per year and maintain adequate records.

b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.

c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.

d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.

3. The Permittee shall provide EPA and the State with an annual report describing the Permittee's pretreatment program activities for the twelve (12) month period ending 60 days prior to the due date in accordance with § 403.12(i). The annual report shall be consistent with the format described in **Attachment D** (NPDES Permit Requirement for Industrial Pretreatment Annual Report) of this permit and shall be submitted no later than **October 1** of each year.

4. The Permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR § 403.18(c).

5. The Permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR § 405 et seq.

6. The Permittee must modify its pretreatment program, if necessary, to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program. The Permittee must provide EPA, in writing, within 180 days of this permit's effective date proposed changes, if applicable, to the Permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the Permittee must address in its written submission the following areas: (1) Enforcement response plan; (2) revised sewer use ordinances; and (3) slug control evaluations. The Permittee will implement these proposed changes pending EPA Region1's approval under 40 CFR § 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.E.1.

7. Beginning the first full calendar quarter following 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater is available, the Permittee shall commence annual sampling of the following types of industrial discharges into the POTW:

    - Commercial Car Washes
    - Platers/Metal Finishers
    - Paper and Packaging Manufacturers
    - Tanneries and Leather/Fabric/Carpet Treaters
    - Manufacturers of Parts with Polytetrafluoroethylene (PTFE) or teflon type coatings (i.e. bearings)
    - Landfill Leachate
    - Centralized Waste Treaters
    - Contaminated Sites
    - Fire Fighting Training Facilities
    - Airports
    - Any Other Known or Expected Sources of PFAS

    Sampling shall be for the following PFAS chemicals:

Industrial User Effluent Characteristic	**Maximum Daily**	**Monitoring Requirements**	
		Frequency	**Sample Type**
Perfluorohexanesulfonic acid (PFHxS)	Report ng/L	1/year	Composite
Perfluorononanoic acid (PFNA)	Report ng/L	1/year	Composite
Perfluorooctanesulfonic acid (PFOS)	Report ng/L	1/year	Composite
Perfluorooctanoic acid (PFOA)	Report ng/L	1/year	Composite
Perfluoroheptanoic acid (PFHpA)	Report ng/L	1/year	Composite
Perfluorodecanoic acid (PFDA)	Report ng/L	1/year	Composite

The industrial discharges sampled, and the sampling results shall be summarized and included in the annual report (see Part I.E.3).

F. SLUDGE CONDITIONS

1. The Permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR § 503, which prescribe “Standards for the Use or Disposal of Sewage Sludge” pursuant to § 405(d) of the CWA, 33 U.S.C. § 1345(d).

2. If both state and federal requirements apply to the Permittee’s sludge use and/or disposal practices, the Permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices:

    a. Land application - the use of sewage sludge to condition or fertilize the soil

   b. Surface disposal - the placement of sewage sludge in a sludge only landfill

   c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR Part 503 do not apply to facilities that dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities that do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR Part 503 requirements include the following elements:

   a. General requirements

   b. Pollutant limitations

   c. Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)

   d. Management practices

   e. Record keeping

   f. Monitoring

   g. Reporting

   The specific 40 CFR Part 503 requirements that are applicable to the Permittee will depend on the use or disposal practice(s) followed and the quality of sludge produced by a facility. The EPA Region 1 guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the Permittee to assist it in determining the applicable requirements.

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year, as follows:

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

   Sampling of the sewage sludge shall use the procedures detailed in 40 CFR § 503.8.

7. Under 40 CFR § 503.9(r), the Permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the Permittee contracts with another "person who prepares sewage

sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the Permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the Permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the Permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR § 503 Subpart B.

8. The Permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48 (incineration)) by February 19 (see also "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted electronically using EPA's Electronic Reporting tool ("NeT") (see "Reporting Requirements" section below).

G. SPECIAL CONDITIONS

1. The effluent limit for *E. coli* shall be subject to a schedule of compliance whereby the limit takes effect 12 months after the effective date of the permit. During this first year, the Permittee must comply with interim fecal coliform limits of 200 cfu/100 mL (monthly average) and 400 cfu/100 mL (daily maximum).

2. Total Phosphorus Compliance Schedule (April 1 – October 31)

   The effluent limit for total phosphorus, effective from April 1 through October 31, shall be subject to a schedule of compliance whereby the limit takes effect 36 months after the effective date of the permit. For the period starting on the effective date of this permit and ending 36 months after the effective date, the Permittee shall continue to comply with the existing monthly average limit of 0.2 mg/L. The schedule includes one year to evaluate potential treatment process changes (such as chemical addition), one year to implement any process changes necessary to meet the more stringent limit of 0.1 mg/L, and one year to optimize the facility after those changes have been implemented to come into compliance with the new limit. The schedule of compliance is as follows:

   a. Within twelve (12) months of the effective date of the permit, the Permittee shall submit to EPA and MassDEP a status report evaluating the potential treatment process changes (such as chemical addition) necessary to achieve the permit limit.

   b. Within twenty-four (24) months of the effective date of the permit, the Permittee shall complete any process changes necessary to achieve the total phosphorus limit and submit a progress report to EPA and MassDEP detailing these changes.

   c. Within thirty-six (36) months of the effective date of the permit, the Permittee shall complete optimization of the plant and comply with the phosphorus limit. Additionally, the Permittee shall submit a final report that summarizes the process changes and plant optimization efforts.

H. REPORTING REQUIREMENTS

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

   The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and the State electronically using NetDMR no later than the 15th day of the following month. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or the State. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA as NetDMR attachments rather than as hard copies. See Part I.H.7. for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Industrial User and Pretreatment Related Reports

   a. Prior to 21 December 2025, all reports and information required of the Permittee in the Industrial Users and Pretreatment Program section of this permit shall be submitted to the Pretreatment Coordinator in EPA Region 1 Water Division (WD). Starting on 21 December 2025, these reports must be submitted electronically as NetDMR attachments and/or using EPA's NPDES Electronic Reporting Tool ("NeT"), or any other applicable approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. These requests, reports and notices include:

      (1) Annual Pretreatment Reports,

      (2) Pretreatment Reports Reassessment of Technically Based Industrial Discharge Limits Form,

      (3) Revisions to Industrial Discharge Limits,

      (4) Report describing Pretreatment Program activities, and

      (5) Proposed changes to a Pretreatment Program

   b. This information shall be submitted to EPA WD as a hard copy at the following address:

U.S. Environmental Protection Agency
Water Division
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. Submittal of Biosolids/Sewage Sludge Reports

   By February 19 of each year, the Permittee must electronically report their annual Biosolids/Sewage Sludge Report for the previous calendar year using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

5. Submittal of Requests and Reports to EPA Water Division (WD)

   a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA Water Division (WD):

      (1) Transfer of permit notice;

      (2) Request for changes in sampling location;

      (3) Request for reduction in testing frequency;

      (4) Report on unacceptable dilution water / request for alternative dilution water for WET testing.

   b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

6. Submittal of Reports to EPA Enforcement and Compliance Assurance Division (ECAD) in Hard Copy Form

   a. The following notifications and reports shall be signed and dated originals, submitted as hard copy, with a cover letter describing the submission:

      (1) Written notifications required under Part II.B.4.c, for bypasses, and Part II.D.1.e, for sanitary sewer overflows (SSOs). Starting on 21 December 2025, such notifications must be done electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

      (2) Collection System Operation and Maintenance Plan

      (3) Report on annual activities related to O&M Plan

This information shall be submitted to EPA ECAD at the following address:

U.S. Environmental Protection Agency
Enforcement and Compliance Assurance Division
Water Compliance Section
5 Post Office Square, Suite 100 (04-SMR)
Boston, MA 02109-3912

7. State Reporting

   Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management
8 New Bond Street
Worcester, Massachusetts 01606

8. Verbal Reports and Verbal Notifications

   a. Any verbal reports or verbal notifications, if required in Parts I and/or II of this permit, shall be made to both EPA and to the State. This includes verbal reports and notifications that require reporting within 24 hours (e.g., Part II.B.4.c.(2), Part II.B.5.c.(3), and Part II.D.1.e).

   b. Verbal reports and verbal notifications shall be made to:

EPA ECAD at 617-918-1510
and
MassDEP Emergency Response at 888-304-1133

I. STATE 401 CERTIFICATION CONDITIONS

This Permit is in the process of receiving state water quality certification issued by the State under § 401(a) of the CWA and 40 CFR § 124.53. EPA will incorporate appropriate State water quality certification requirements (if any) into the Final Permit.

ATTACHMENT A

USEPA REGION 1 FRESHWATER ACUTE TOXICITY TEST PROCEDURE AND PROTOCOL

I. GENERAL REQUIREMENTS

The permittee shall conduct acceptable acute toxicity tests in accordance with the appropriate test protocols described below:

- **Daphnid (<u>Ceriodaphnia</u> <u>dubia</u>) definitive 48 hour test.**
- **Fathead Minnow (<u>Pimephales</u> <u>promelas</u>) definitive 48 hour test.**

Acute toxicity test data shall be reported as outlined in Section VIII.

II. METHODS

The permittee shall use 40 CFR Part 136 methods. Methods and guidance may be found at:

http://water.epa.gov/scitech/methods/cwa/wet/disk2_index.cfm

The permittee shall also meet the sampling, analysis and reporting requirements included in this protocol. This protocol defines more specific requirements while still being consistent with the Part 136 methods. If, due to modifications of Part 136, there are conflicting requirements between the Part 136 method and this protocol, the permittee shall comply with the requirements of the Part 136 method.

III. SAMPLE COLLECTION

A discharge sample shall be collected. Aliquots shall be split from the sample, containerized and preserved (as per 40 CFR Part 136) for chemical and physical analyses required. The remaining sample shall be measured for total residual chlorine and dechlorinated (if detected) in the laboratory using sodium thiosulfate for subsequent toxicity testing. (<u>Note that EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection.</u>) Grab samples must be used for pH, temperature, and total residual chlorine (as per 40 CFR Part 122.21).

<u>Standard Methods for the Examination of Water and Wastewater</u> describes dechlorination of samples (APHA, 1992). Dechlorination can be achieved using a ratio of 6.7 mg/L anhydrous sodium thiosulfate to reduce 1.0 mg/L chlorine. If dechlorination is necessary, a thiosulfate control (maximum amount of thiosulfate in lab control or receiving water) must also be run in the WET test.

All samples held overnight shall be refrigerated at 1- 6^{o}C.

IV. DILUTION WATER

A grab sample of dilution water used for acute toxicity testing shall be collected from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. In the case where an alternate dilution water has been agreed upon an additional receiving water control (0% effluent) must also be tested.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable, an alternate standard dilution water of known quality with a hardness, pH, conductivity, alkalinity, organic carbon, and total suspended solids similar to that of the receiving water may be substituted **AFTER RECEIVING WRITTEN APPROVAL FROM THE PERMIT ISSUING AGENCY(S)**. Written requests for use of an alternate dilution water should be mailed with supporting documentation to the following address:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency-New England
5 Post Office Sq., Suite 100 (OEP06-5)
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
5 Post Office Sq., Suite 100 (OES04-4)
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at http://www.epa.gov/region1/enforcement/water/dmr.html *for further important details on alternate dilution water substitution requests.*

It may prove beneficial to have the proposed dilution water source screened for suitability prior to toxicity testing. EPA strongly urges that screening be done prior to set up of a full definitive toxicity test any time there is question about the dilution water's ability to support acceptable performance as outlined in the 'test acceptability' section of the protocol.

V. TEST CONDITIONS

The following tables summarize the accepted daphnid and fathead minnow toxicity test conditions and test acceptability criteria:

EPA NEW ENGLAND EFFLUENT TOXICITY TEST CONDITIONS FOR THE DAPHNID, <u>CERIODAPHNIA</u> <u>DUBIA</u> 48 HOUR ACUTE TESTS[1]

1.	Test type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1^{o}C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hour light, 8 hour dark
5.	Test chamber size	Minimum 30 ml
6.	Test solution volume	Minimum 15 ml
7.	Age of test organisms	1-24 hours (neonates)
8.	No. of daphnids per test chamber	5
9.	No. of replicate test chambers per treatment	4
10.	Total no. daphnids per test concentration	20
11.	Feeding regime	As per manual, lightly feed YCT and <u>Selenastrum</u> to newly released organisms while holding prior to initiating test
12.	Aeration	None
13.	Dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized water and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC
15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution

		series.
16.	Effect measured	Mortality-no movement of body or appendages on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples must first be used within 36 hours of collection.
19.	Sample volume required	Minimum 1 liter

Footnotes:

1. Adapted from EPA-821-R-02-012.
2. Standard prepared dilution water must have hardness requirements to generally reflect the characteristics of the receiving water.

EPA NEW ENGLAND TEST CONDITIONS FOR THE FATHEAD MINNOW (<u>PIMEPHALES</u> <u>PROMELAS</u>) 48 HOUR ACUTE TEST[1]

1.	Test Type	Static, non-renewal
2.	Temperature (^{o}C)	20 $\pm$ 1 ^{o} C or 25 $\pm$ 1^{o}C
3.	Light quality	Ambient laboratory illumination
4.	Photoperiod	16 hr light, 8 hr dark
5.	Size of test vessels	250 mL minimum
6.	Volume of test solution	Minimum 200 mL/replicate
7.	Age of fish	1-14 days old and age within 24 hrs of each other
8.	No. of fish per chamber	10
9.	No. of replicate test vessels per treatment	4
10.	Total no. organisms per concentration	40
11.	Feeding regime	As per manual, lightly feed test age larvae using concentrated brine shrimp nauplii while holding prior to initiating test
12.	Aeration	None, unless dissolved oxygen (D.O.) concentration falls below 4.0 mg/L, at which time gentle single bubble aeration should be started at a rate of less than 100 bubbles/min. (Routine D.O. check is recommended.)
13.	dilution water[2]	Receiving water, other surface water, synthetic water adjusted to the hardness and alkalinity of the receiving water (prepared using either Millipore Milli-Q^{R} or equivalent deionized and reagent grade chemicals according to EPA acute toxicity test manual) or deionized water combined with mineral water to appropriate hardness.
14.	Dilution series	$\geq$ 0.5, must bracket the permitted RWC

15.	Number of dilutions	5 plus receiving water and laboratory water control and thiosulfate control, as necessary. An additional dilution at the permitted effluent concentration (% effluent) is required if it is not included in the dilution series.
16.	Effect measured	Mortality-no movement on gentle prodding
17.	Test acceptability	90% or greater survival of test organisms in dilution water control solution
18.	Sampling requirements	For on-site tests, samples must be used within 24 hours of the time that they are removed from the sampling device. For off-site tests, samples are used within 36 hours of collection.
19.	Sample volume required	Minimum 2 liters

Footnotes:

1. Adapted from EPA-821-R-02-012
2. Standard dilution water must have hardness requirements to generally reflect characteristics of the receiving water.

VI. CHEMICAL ANALYSIS

At the beginning of a static acute toxicity test, pH, conductivity, total residual chlorine, oxygen, hardness, alkalinity and temperature must be measured in the highest effluent concentration and the dilution water. Dissolved oxygen, pH and temperature are also measured at 24 and 48 hour intervals in all dilutions. The following chemical analyses shall be performed on the 100 percent effluent sample and the upstream water sample for each sampling event.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3]	x		0.02
Alkalinity	x	x	2.0
pH	x	x	--
Specific Conductance	x	x	--
Total Solids	x		--
Total Dissolved Solids	x		--
Ammonia	x	x	0.1
Total Organic Carbon	x	x	0.5
Total Metals			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 2340B (hardness by calculation)
     - Method 2340C (titration)
2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.
   - APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
     - Method 4500-CL E Low Level Amperometric Titration
     - Method 4500-CL G DPD Colorimetric Method
3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing.

VII. TOXICITY TEST DATA ANALYSIS

LC50 Median Lethal Concentration (Determined at 48 Hours)

Methods of Estimation:

- Probit Method
- Spearman-Karber
- Trimmed Spearman-Karber
- Graphical

See the flow chart in Figure 6 on p. 73 of EPA-821-R-02-012 for appropriate method to use on a given data set.

No Observed Acute Effect Level (NOAEL)

See the flow chart in Figure 13 on p. 87 of EPA-821-R-02-012.

VIII. TOXICITY TEST REPORTING

A report of the results will include the following:

- Description of sample collection procedures, site description

- Names of individuals collecting and transporting samples, times and dates of sample collection and analysis on chain-of-custody

- General description of tests: age of test organisms, origin, dates and results of standard toxicant tests; light and temperature regime; other information on test conditions if different than procedures recommended. Reference toxicant test data should be included.

- All chemical/physical data generated. (Include minimum detection levels and minimum quantification levels.)

- Raw data and bench sheets.

- Provide a description of dechlorination procedures (as applicable).

- Any other observations or test conditions affecting test outcome.

ATTACHMENT B

FRESHWATER CHRONIC TOXICITY TEST PROCEDURE AND PROTOCOL

USEPA Region 1

I. GENERAL REQUIREMENTS

The permittee shall be responsible for the conduct of acceptable chronic toxicity tests using three fresh samples collected during each test period. The following tests shall be performed as prescribed in Part 1 of the NPDES discharge permit in accordance with the appropriate test protocols described below. (Note: the permittee and testing laboratory should review the applicable permit to determine whether testing of one or both species is required).

- **Daphnid (Ceriodaphnia dubia) Survival and Reproduction Test.**
- **Fathead Minnow (Pimephales promelas) Larval Growth and Survival Test.**

Chronic toxicity data shall be reported as outlined in Section VIII.

II. METHODS

Methods to follow are those recommended by EPA in: Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition. October 2002. United States Environmental Protection Agency. Office of Water, Washington, D.C., EPA 821-R-02-013. The methods are available on-line at http://www.epa.gov/waterscience/WET/ . Exceptions and clarification are stated herein.

III. SAMPLE COLLECTION AND USE

A total of three fresh samples of effluent and receiving water are required for initiation and subsequent renewals of a freshwater, chronic, toxicity test. The receiving water control sample must be collected immediately upstream of the permitted discharge's zone of influence. Fresh samples are recommended for use on test days 1, 3, and 5. However, provided a total of three samples are used for testing over the test period, an alternate sampling schedule is acceptable. The acceptable holding times until initial use of a sample are 24 and 36 hours for on-site and off-site testing, respectively. A written waiver is required from the regulating authority for any hold time extension. All test samples collected may be used for 24, 48 and 72 hour renewals after initial use. All samples held for use beyond the day of sampling shall be refrigerated and maintained at a temperature range of 0-6^{o} C.

All samples submitted for chemical and physical analyses will be analyzed according to Section VI of this protocol.

Sampling guidance dictates that, where appropriate, aliquots for the analysis required in this protocol shall be split from the samples, containerized and immediately preserved, or analyzed as per 40 CFR Part 136. EPA approved test methods require that samples collected for metals analyses be preserved immediately after collection. Testing for the presence of total residual chlorine (TRC) must be analyzed immediately or as soon as possible, for all effluent samples, prior to WET testing. TRC analysis may be performed on-site or by the toxicity testing laboratory and the samples must be dechlorinated, as necessary, using sodium thiosulfate prior to sample use for toxicity testing.

If any of the renewal samples are of sufficient potency to cause lethality to 50 percent or more of the test organisms in any of the test treatments for either species or, if the test fails to meet its permit limits, then chemical analysis for total metals (originally required for the initial sample only in Section VI) will be required on the renewal sample(s) as well.

IV. DILUTION WATER

Samples of receiving water must be collected from a location in the receiving water body immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location. Avoid collection near areas of obvious road or agricultural runoff, storm sewers or other point source discharges and areas where stagnant conditions exist. EPA strongly urges that screening for toxicity be performed prior to the set up of a full, definitive toxicity test any time there is a question about the test dilution water's ability to achieve test acceptability criteria (TAC) as indicated in Section V of this protocol. The test dilution water control response will be used in the statistical analysis of the toxicity test data. All other control(s) required to be run in the test will be reported as specified in the Discharge Monitoring Report (DMR) Instructions, Attachment F, page 2,Test Results & Permit Limits.

The test dilution water must be used to determine whether the test met the applicable TAC. When receiving water is used for test dilution, an additional control made up of standard laboratory water (0% effluent) is required. This control will be used to verify the health of the test organisms and evaluate to what extent, if any, the receiving water itself is responsible for any toxic response observed.

If dechlorination of a sample by the toxicity testing laboratory is necessary a "sodium thiosulfate" control, representing the concentration of sodium thiosulfate used to adequately dechlorinate the sample prior to toxicity testing, must be included in the test.

If the use of an alternate dilution water (ADW) is authorized, in addition to the ADW test control, the testing laboratory must, for the purpose of monitoring the receiving water, also run a receiving water control.

If the receiving water diluent is found to be, or suspected to be toxic or unreliable an ADW of known quality with hardness similar to that of the receiving water may be substituted. Substitution is species specific meaning that the decision to use ADW is made for each species and is based on the toxic response of that particular species. Substitution to an ADW is authorized in two cases. The first is the case where repeating a test due to toxicity in the site dilution water requires an **immediate decision** for ADW use be made by the permittee and toxicity testing laboratory. The second is in the case where two of the most recent documented incidents of unacceptable site dilution water toxicity requires ADW use in future WET testing.

For the second case, written notification from the permittee requesting ADW use **and** written authorization from the permit issuing agency(s) is required **prior to** switching to a long-term use of ADW for the duration of the permit.

Written requests for use of ADW must be mailed with supporting documentation to the following addresses:

Director
Office of Ecosystem Protection (CAA)
U.S. Environmental Protection Agency, Region 1
Five Post Office Square, Suite 100
Mail Code OEP06-5
Boston, MA 02109-3912

and

Manager
Water Technical Unit (SEW)
U.S. Environmental Protection Agency
Five Post Office Square, Suite 100
Mail Code OES04-4
Boston, MA 02109-3912

Note: USEPA Region 1 retains the right to modify any part of the alternate dilution water policy stated in this protocol at any time. Any changes to this policy will be documented in the annual DMR posting.

See the most current annual DMR instructions which can be found on the EPA Region 1 website at <u>http://www.epa.gov/region1/enforcementandassistance/dmr.html</u> *for further important details on alternate dilution water substitution requests.*

V. TEST CONDITIONS AND TEST ACCEPTABILITY CRITERIA

Method specific test conditions and TAC are to be followed and adhered to as specified in the method guidance document, EPA 821-R-02-013. If a test does not meet TAC the test must be repeated with fresh samples within 30 days of the initial test completion date.

V.1. Use of Reference Toxicity Testing

Reference toxicity test results and applicable control charts must be included in the toxicity testing report.

If reference toxicity test results fall outside the control limits established by the laboratory for a specific test endpoint, a reason or reasons for this excursion must be evaluated, correction made and reference toxicity tests rerun as necessary.

If a test endpoint value exceeds the control limits at a frequency of more than one out of twenty then causes for the reference toxicity test failure must be examined and if problems are identified corrective action taken. The reference toxicity test must be repeated during the same month in which the exceedance occurred.

If two consecutive reference toxicity tests fall outside control limits, the possible cause(s) for the exceedance must be examined, corrective actions taken and a repeat of the reference toxicity test must take place immediately. Actions taken to resolve the problem must be reported.

V.1.a. Use of Concurrent Reference Toxicity Testing

In the case where concurrent reference toxicity testing is required due to a low frequency of testing with a particular method, if the reference toxicity test results fall slightly outside of laboratory established control limits, but the primary test met the TAC, the results of the primary test will be considered acceptable. However, if the results of the concurrent test fall well outside the established **upper** control limits i.e. $\geq$3 standard deviations for IC25 values and $\geq$ two concentration intervals for NOECs, and even though the primary test meets TAC, the primary test will be considered unacceptable and must be repeated.

V.2. For the *C. dubia* test, the determination of TAC and formal statistical analyses must be performed using only the first three broods produced.

V.3. Test treatments must include 5 effluent concentrations and a dilution water control. An additional test treatment, at the permitted effluent concentration (% effluent), is required if it is not included in the dilution series.

VI. CHEMICAL ANALYSIS

As part of each toxicity test's daily renewal procedure, pH, specific conductance, dissolved oxygen (DO) and temperature must be measured at the beginning and end of each 24-hour period in each test treatment and the control(s).

The additional analysis that must be performed under this protocol is as specified and noted in the table below.

Parameter	Effluent	Receiving Water	ML (mg/l)
Hardness[1, 4]	x	x	0.5
Total Residual Chlorine (TRC)[2, 3, 4]	x		0.02
Alkalinity[4]	x	x	2.0
pH[4]	x	x	--
Specific Conductance[4]	x	x	--
Total Solids[6]	x		--
Total Dissolved Solids[6]	x		--
Ammonia[4]	x	x	0.1
Total Organic Carbon[6]	x	x	0.5
Total Metals[5]			
Cd	x	x	0.0005
Pb	x	x	0.0005
Cu	x	x	0.003
Zn	x	x	0.005
Ni	x	x	0.005
Al	x	x	0.02
Other as permit requires			

Notes:

1. Hardness may be determined by:

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  - -Method 2340B (hardness by calculation)
  - -Method 2340C (titration)

2. Total Residual Chlorine may be performed using any of the following methods provided the required minimum limit (ML) is met.

- APHA Standard Methods for the Examination of Water and Wastewater , 21st Edition
  - -Method 4500-CL E Low Level Amperometric Titration
  - -Method 4500-CL G DPD Colorimetric Method
- USEPA 1983. Manual of Methods Analysis of Water and Wastes
  - -Method 330.5

3. Required to be performed on the sample used for WET testing prior to its use for toxicity testing
4. Analysis is to be performed on samples and/or receiving water, as designated in the table above, from all three sampling events.
5. Analysis is to be performed on the initial sample(s) only unless the situation arises as stated in Section III, paragraph 4
6. Analysis to be performed on initial samples only

VII. TOXICITY TEST DATA ANALYSIS AND REVIEW

A. Test Review

1. Concentration / Response Relationship

A concentration/response relationship evaluation is required for test endpoint determinations from both Hypothesis Testing and Point Estimate techniques. The test report is to include documentation of this evaluation in support of the endpoint values reported. The dose-response review must be performed as required in Section 10.2.6 of EPA-821-R-02-013. Guidance for this review can be found at http://water.epa.gov/scitech/methods/cwa/ . In most cases, the review will result in one of the following three conclusions: (1) Results are reliable and reportable; (2) Results are anomalous and require explanation; or (3) Results are inconclusive and a retest with fresh samples is required.

2. Test Variability (Test Sensitivity)

This review step is separate from the determination of whether a test meets or does not meet TAC. Within test variability is to be examined for the purpose of evaluating test sensitivity. This evaluation is to be performed for the sub-lethal hypothesis testing endpoints reproduction and growth as required by the permit. The test report is to include documentation of this evaluation to support that the endpoint values reported resulted from a toxicity test of adequate sensitivity. This evaluation must be performed as required in Section 10.2.8 of EPA-821-R-02-013.

To determine the adequacy of test sensitivity, USEPA requires the calculation of test percent minimum significant difference (PMSD) values. In cases where NOEC determinations are made based on a non-parametric technique, calculation of a test PMSD value**,** for the sole purpose of assessing test sensitivity, shall be calculated using a comparable parametric statistical analysis technique. The calculated test PMSD is then compared to the upper and lower PMSD bounds shown for freshwater tests in Section 10.2.8.3, p. 52, Table 6 of EPA-821-R-02-013. The comparison will yield one of the following determinations.

- The test PMSD exceeds the PMSD upper bound test variability criterion in Table 6, the test results are considered highly variable and the test may not be sensitive enough to determine the presence of toxicity at the permit limit concentration (PLC). If the test results indicate that the discharge is not toxic at the PLC, then the test is considered insufficiently sensitive and must be repeated within 30 days of the initial test completion using fresh samples. If the test results indicate that the discharge is toxic at the PLC, the test is considered acceptable and does not have to be repeated.

- The test PMSD falls below the PMSD lower bound test variability criterion in Table 6, the test is determined to be very sensitive. In order to determine which treatment(s) are statistically significant and which are not, for the purpose of reporting a NOEC, the relative percent difference (RPD) between the control and each treatment must be calculated and compared to the lower PMSD boundary. See *Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program*, EPA 833-R-00-003, June 2002, Section 6.4.2. The following link: Understanding and Accounting for Method Variability in Whole Effluent Toxicity Applications Under the NPDES Program can be used to locate the USEPA website containing this document. If the RPD for a treatment falls below the PMSD lower bound, the difference is considered statistically insignificant. If the RPD for a treatment is greater that the PMSD lower bound, then the treatment is considered statistically significant.

- The test PMSD falls within the PMSD upper and lower bounds in Table 6, the sub-lethal test endpoint values shall be reported as is.

B. Statistical Analysis

1. General - Recommended Statistical Analysis Method

Refer to general data analysis flowchart, EPA 821-R-02-013, page 43

For discussion on Hypothesis Testing, refer to EPA 821-R-02-013, Section 9.6

For discussion on Point Estimation Techniques, refer to EPA 821-R-02-013, Section 9.7

2. *Pimephales promelas*

Refer to survival hypothesis testing analysis flowchart, EPA 821-R-02-013, page 79

Refer to survival point estimate techniques flowchart, EPA 821-R-02-013, page 80

Refer to growth data statistical analysis flowchart, EPA 821-R-02-013, page 92

3. *Ceriodaphnia dubia*

Refer to survival data testing flowchart, EPA 821-R-02-013, page 168

Refer to reproduction data testing flowchart, EPA 821-R-02-013, page 173

VIII. TOXICITY TEST REPORTING

A report of results must include the following:

- Test summary sheets (2007 DMR Attachment F) which includes:
  - Facility name
  - NPDES permit number
  - Outfall number
  - Sample type
  - Sampling method
  - Effluent TRC concentration
  - Dilution water used
  - Receiving water name and sampling location
  - Test type and species
  - Test start date
  - Effluent concentrations tested (%) and permit limit concentration
  - Applicable reference toxicity test date and whether acceptable or not
  - Age, age range and source of test organisms used for testing
  - Results of TAC review for all applicable controls
  - Test sensitivity evaluation results (test PMSD for growth and reproduction)
  - Permit limit and toxicity test results
  - Summary of test sensitivity and concentration response evaluation

In addition to the summary sheets the report must include:

- A brief description of sample collection procedures
- Chain of custody documentation including names of individuals collecting samples, times and dates of sample collection, sample locations, requested analysis and lab receipt with time and date received, lab receipt personnel and condition of samples upon receipt at the lab(s)
- Reference toxicity test control charts
- All sample chemical/physical data generated, including minimum limits (MLs) and analytical methods used
- All toxicity test raw data including daily ambient test conditions, toxicity test chemistry, sample dechlorination details as necessary, bench sheets and statistical analysis
- A discussion of any deviations from test conditions
- Any further discussion of reported test results, statistical analysis and concentration-response relationship and test sensitivity review per species per endpoint

ATTACHMENT C

EPA - New England

Reassessment of Technically Based Industrial Discharge Limits

Under 40 CFR §122.21(j)(4), all Publicly Owned Treatment Works (POTWs) with approved Industrial Pretreatment Programs (IPPs) shall provide the following information to the Director: a written evaluation of the need to revise local industrial discharge limits under 40 CFR §403.5(c)(1).

Below is a form designed by the U.S. Environmental Protection Agency (EPA - New England) to assist POTWs with approved IPPs in evaluating whether their existing Technically Based Local Limits (TBLLs) need to be recalculated. The form allows the permittee and EPA to evaluate and compare pertinent information used in previous TBLLs calculations against present conditions at the POTW.

Please read direction below before filling out form.

ITEM I.

* In Column (1), list what your POTW's influent flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present influent flow rate. Your current flow rate should be calculated using the POTW's average daily flow rate from the previous 12 months.

* In Column (1) list what your POTW's SIU flow rate was when your existing TBLLs were calculated. In Column (2), list your POTW's present SIU flow rate.

* In Column (1), list what dilution ratio and/or 7Q10 value was used in your old/expired NPDES permit. In Column (2), list what dilution ration and/or 7Q10 value is presently being used in your new/reissued NPDES permit.

  The 7Q10 value is the lowest seven day average flow rate, in the river, over a ten year period. The 7Q10 value and/or dilution ratio used by EPA in your new NPDES permit can be found in your NPDES permit "Fact Sheet."

* In Column (1), list the safety factor, if any, that was used when your existing TBLLs were calculated.

* In Column (1), note how your bio-solids were managed when your existing TBLLs were calculated. In Column (2), note how your POTW is presently disposing of its biosolids and how your POTW will be disposing of its biosolids in the future.

ITEM II.

* List what your existing TBLLs are - as they appear in your current Sewer Use Ordinance (SUO).

ITEM III.

* Identify how your existing TBLLs are allocated out to your industrial community. Some pollutants may be allocated differently than others, if so please explain.

ITEM IV.

* Since your existing TBLLs were calculated, identify the following in detail:

  (1) if your POTW has experienced any upsets, inhibition, interference or pass-through as a result of an industrial discharge.

  (2) if your POTW is presently violating any of its current NPDES permit limitations - include toxicity.

ITEM V.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in pounds per day) received in the POTW's influent. Current sampling data is defined as data obtained over the last 24 month period.

  All influent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* Based on your existing TBLLs, as presented in Item II., list in Column (2), for each pollutant the Maximum Allowable Headwork Loading (MAHL) values derived from an applicable environmental criteria or standard, e.g. water quality, sludge, NPDES, inhibition, etc. For more information, please see EPA's <u>Local Limit Guidance Document</u> (July 2004).

Item VI.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants (in micrograms per liter) present your POTW's effluent. Current sampling data is defined as data obtained during the last 24 month period.

(Item VI. continued)

All effluent data collected and analyzed must be in accordance with 40 CFR §136. Sampling data collected should be analyzed using the lowest possible detection method(s), e.g. graphite furnace.

* List in Column (2A) what the Water Quality Standards (WQS) were (in micrograms per liter) when your TBLLs were calculated, please note what hardness value was used at that time. Hardness should be expressed in milligram per liter of Calcium Carbonate.

List in Column (2B) the current WQSs or "Chronic Gold Book" values for each pollutant multiplied by the dilution ratio used in your new/reissued NPDES permit. For example, with a dilution ratio of 25:1 at a hardness of 25 mg/l - Calcium Carbonate (copper's chronic WQS equals 6.54 ug/l) the chronic NPDES permit limit for copper would equal 156.25 ug/l.

ITEM VII.

* In Column (1), list all pollutants (in micrograms per liter) limited in your new/reissued NPDES permit. In Column (2), list all pollutants limited in your old/expired NPDES permit.

ITEM VIII.

* Using current sampling data, list in Column (1) the average and maximum amount of pollutants in your POTW's biosolids. Current data is defined as data obtained during the last 24 month period. Results are to be expressed as total dry weight.

All biosolids data collected and analyzed must be in accordance with 40 CFR §136.

In Column (2A), list current State and/or Federal sludge standards that your facility's biosolids must comply with. Also note how your POTW currently manages the disposal of its biosolids. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria will be and method of disposal.

In general, please be sure the units reported are correct and all pertinent information is included in your evaluation. If you have any questions, please contact your pretreatment representative at EPA - New England.

REASSESSMENT OF TECHNICALLY BASED LOCAL LIMITS (TBLLs)

POTW Name & Address : ______________________________

NPDES PERMIT # : ______________________________

Date EPA approved current TBLLs : ______________________________

Date EPA approved current Sewer Use Ordinance : ______________________________

ITEM I.

In Column (1) list the conditions that existed when your current TBLLs were calculated. In Column (2), list current conditions or expected conditions at your POTW.

	Column (1) EXISTING TBLLs	Column (2) PRESENT CONDITIONS
POTW Flow (MGD)		
Dilution Ratio or 7Q10 (from NPDES Permit)		
SIU Flow (MGD)		
Safety Factor		N/A
Biosolids Disposal Method(s)		

ITEM II.

EXISTING TBLLs			
POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)	POLLUTANT	NUMERICAL LIMIT (mg/l) or (lb/day)

ITEM III.

Note how your existing TBLLs, listed in Item II., are allocated to your Significant Industrial Users (SIUs), i.e. uniform concentration, contributory flow, mass proportioning, other. Please specify by circling.

ITEM IV.

Has your POTW experienced any upsets, inhibition, interference or pass-through from industrial sources since your existing TBLLs were calculated?
If yes, explain.

____

____

Has your POTW violated any of its NPDES permit limits and/or toxicity test requirements?

If yes, explain.

____

____

ITEM V.

Using current POTW influent sampling data fill in Column (1). In Column (2), list your Maximum Allowable Headwork Loading (MAHL) values used to derive your TBLLs listed in Item II. In addition, please note the Environmental Criteria for which each MAHL value was established, i.e. water quality, sludge, NPDES etc.

Pollutant	Column (1) Influent Data Analyses Maximum (lb/day)	Average (lb/day)	Column (2) MAHL Values (lb/day)	Criteria
Arsenic				
Cadmium				
Chromium				
Copper				
Cyanide				
Lead				
Mercury				
Nickel				
Silver				
Zinc				
Other (List)				

ITEM VI.

Using current POTW effluent sampling data, fill in Column (1). In Column (2A) list what the Water Quality Standards (Gold Book Criteria) were at the time your existing TBLLs were developed. List in Column (2B) current Gold Book values multiplied by the dilution ratio used in your new/reissued NPDES permit.				
Pollutant	Column (1) Effluent Data Analyses Maximum (ug/l)	Average (ug/l)	Columns (2A) Water Quality Criteria (Gold Book) From TBLLs (ug/l)	(2B) Today (ug/l)
Arsenic				
*Cadmium				
*Chromium				
*Copper				
Cyanide				
*Lead				
Mercury				
*Nickel				
Silver				
*Zinc				
Other (List)				

*Hardness Dependent (mg/l - $CaCO_3$)

ITEM VII.

In Column (1), identify all pollutants limited in your new/reissued NPDES permit. In Column (2), identify all pollutants that were limited in your old/expired NPDES permit.			
Column (1) NEW PERMIT Pollutants Limitations (ug/l)		Column (2) OLD PERMIT Pollutants (ug/l) Limitations	

ITEM VIII.

Using current POTW biosolids data, fill in Column (1). In Column (2A), list the biosolids criteria that was used at the time your existing TBLLs were calculated. If your POTW is planing on managing its biosolids differently, list in Column (2B) what your new biosolids criteria would be and method of disposal.

Pollutant	Column (1) Biosolids Data Analyses Average (mg/kg)	Columns (2A) Biosolids Criteria From TBLLs (mg/kg)	(2B) New (mg/kg)
Arsenic			
Cadmium			
Chromium			
Copper			
Cyanide			
Lead			
Mercury			
Nickel			
Silver			
Zinc			
Molybdenum			
Selenium			
Other (List)			

ATTACHMENT D

NPDES PERMIT REQUIREMENT
FOR
INDUSTRIAL PRETREATMENT ANNUAL REPORT

The information described below shall be included in the pretreatment program annual reports:

1. An updated list of all industrial users by category, as set forth in 40 C.F.R. 403.8(f)(2)(i), indicating compliance or noncompliance with the following:
   - baseline monitoring reporting requirements for newly promulgated industries
   - compliance status reporting requirements for newly promulgated industries
   - periodic (semi-annual) monitoring reporting requirements,
   - categorical standards, and
   - local limits;

2. A summary of compliance and enforcement activities during the preceding year, including the number of:
   - significant industrial users inspected by POTW (include inspection dates for each industrial user),
   - significant industrial users sampled by POTW (include sampling dates for each industrial user),
   - compliance schedules issued (include list of subject users),
   - written notices of violations issued (include list of subject users),
   - administrative orders issued (include list of subject users),
   - criminal or civil suits filed (include list of subject users) and,
   - penalties obtained (include list of subject users and penalty amounts);

3. A list of significantly violating industries required to be published in a local newspaper in accordance with 40 C.F.R. 403.8(f)(2)(vii);

4. A narrative description of program effectiveness including present and proposed changes to the program, such as funding, staffing, ordinances, regulations, rules and/or statutory authority;

5. A summary of all pollutant analytical results for influent, effluent, sludge and any toxicity or bioassay data from the wastewater treatment facility. The summary shall include a comparison of influent sampling results versus threshold inhibitory concentrations for the Wastewater Treatment System and effluent sampling results versus water quality standards. Such a comparison shall be based on the sampling program described in the paragraph below or any similar sampling program described in this Permit.

At a minimum, annual sampling and analysis of the influent and effluent of the Wastewater Treatment Plant shall be conducted for the following pollutants:

a.) Total Cadmium	f.) Total Nickel
b.) Total Chromium	g.) Total Silver
c.) Total Copper	h.) Total Zinc
d.) Total Lead	i.) Total Cyanide
e.) Total Mercury	j.) Total Arsenic

The sampling program shall consist of one 24-hour flow-proportioned composite and at least one grab sample that is representative of the flows received by the POTW. The composite shall consist of hourly flow-proportioned grab samples taken over a 24-hour period if the sample is collected manually or shall consist of a minimum of 48 samples collected at 30 minute intervals if an automated sampler is used. Cyanide shall be taken as a grab sample during the same period as the composite sample. Sampling and preservation shall be consistent with 40 CFR Part 136.

6. A detailed description of all interference and pass-through that occurred during the past year;

7. A thorough description of all investigations into interference and pass-through during the past year;

8. A description of monitoring, sewer inspections and evaluations which were done during the past year to detect interference and pass-through, specifying parameters and frequencies;

9. A description of actions being taken to reduce the incidence of significant violations by significant industrial users; and,

10. The date of the latest adoption of local limits and an indication as to whether or not the permittee is under a State or Federal compliance schedule that includes steps to be taken to revise local limits.

NPDES PART II STANDARD CONDITIONS
(April 26, 2018)[1]

TABLE OF CONTENTS

[1] Updated July 17, 2018 to fix typographical errors.

A. GENERAL REQUIREMENTS

1. Duty to Comply

The Permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA or Act) and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

a. The Permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.

b. Penalties for Violations of Permit Conditions: The Director will adjust the civil and administrative penalties listed below in accordance with the Civil Monetary Penalty Inflation Adjustment Rule (83 Fed. Reg. 1190-1194 (January 10, 2018) and the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note. See Pub. L.114-74, Section 701 (Nov. 2, 2015)). These requirements help ensure that EPA penalties keep pace with inflation. Under the above-cited 2015 amendments to inflationary adjustment law, EPA must review its statutory civil penalties each year and adjust them as necessary.

(1) Criminal Penalties

(a) *Negligent Violations.* The CWA provides that any person who negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to criminal penalties of not less than $2,500 nor more than $25,000 per day of violation, or imprisonment of not more than 1 year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation or by imprisonment of not more than 2 years, or both.

(b) *Knowing Violations.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a fine of not less than $5,000 nor more than $50,000 per day of violation, or by imprisonment for not more than 3 years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment of not more than 6 years, or both.

(c) *Knowing Endangerment.* The CWA provides that any person who knowingly violates permit conditions implementing Sections 301, 302, 303, 306, 307, 308, 318, or 405 of the Act and who knows at that time that he or she is placing another person in imminent danger of death or serious bodily injury shall upon conviction be subject to a fine of not more than $250,000 or by imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in Section 309(c)(3)(B)(iii) of the Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions.

(d) *False Statement.* The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both. The Act further provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(2) *Civil Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to a civil penalty not to exceed the maximum amounts authorized by Section 309(d) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(3) *Administrative Penalties*. The CWA provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act is subject to an administrative penalty as follows:

(a) *Class I Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(A) of the Act, the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

(b) *Class II Penalty.* Not to exceed the maximum amounts authorized by Section 309(g)(2)(B) of the Act the 2015 amendments to the Federal Civil Penalties Inflation Adjustment Act of 1990, 28 U.S.C. § 2461 note, and 40 C.F.R. Part 19. *See* Pub. L.114-74, Section 701 (Nov. 2, 2015); 83 Fed. Reg. 1190 (January 10, 2018).

2. <u>Permit Actions</u>

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

3. Duty to Provide Information

The Permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

4. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from responsibilities, liabilities or penalties to which the Permittee is or may be subject under Section 311 of the CWA, or Section 106 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA).

5. Property Rights

This permit does not convey any property rights of any sort, or any exclusive privilege.

6. Confidentiality of Information

   a. In accordance with 40 C.F.R. Part 2, any information submitted to EPA pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or instructions or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, EPA may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in 40 C.F.R. Part 2 (Public Information).

   b. Claims of confidentiality for the following information will be denied:

      (1) The name and address of any permit applicant or Permittee;
      (2) Permit applications, permits, and effluent data.

   c. Information required by NPDES application forms provided by the Director under 40 C.F.R. § 122.21 may not be claimed confidential. This includes information submitted on the forms themselves and any attachments used to supply information required by the forms.

7. Duty to Reapply

If the Permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the Permittee must apply for and obtain a new permit. The Permittee shall submit a new application at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Director. (The Director shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)

8. State Authorities

Nothing in Parts 122, 123, or 124 precludes more stringent State regulation of any activity covered by the regulations in 40 C.F.R. Parts 122, 123, and 124, whether or not under an approved State program.

9. Other Laws

The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.

B. OPERATION AND MAINTENANCE OF POLLUTION CONTROLS

1. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a Permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

2. Need to Halt or Reduce Not a Defense

It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

3. Duty to Mitigate

The Permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

4. Bypass

a. Definitions

(1) *Bypass* means the intentional diversion of waste streams from any portion of a treatment facility.

(2) *Severe property damage* means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

b. *Bypass not exceeding limitations.* The Permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (c) and (d) of this Section.

c. Notice

(1) *Anticipated bypass*. If the Permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass. As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by state law.

(2) *Unanticipated bypass*. The Permittee shall submit notice of an unanticipated bypass as required in paragraph D.1.e. of this part (24-hour notice). As of December 21, 2020 all notices submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or required to do so by law.

d. *Prohibition of bypass.*

(1) Bypass is prohibited, and the Director may take enforcement action against a Permittee for bypass, unless:

(a) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventative maintenance; and

(c) The Permittee submitted notices as required under paragraph 4.c of this Section.

(2) The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed above in paragraph 4.d of this Section.

5. <u>Upset</u>

a. *Definition*. *Upset* means an exceptional incident in which there is an unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

b. *Effect of an upset.* An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph B.5.c. of this Section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

c. *Conditions necessary for a demonstration of upset.* A Permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the Permittee can identify the cause(s) of the upset;
(2) The permitted facility was at the time being properly operated; and
(3) The Permittee submitted notice of the upset as required in paragraph D.1.e.2.b. (24-hour notice).
(4) The Permittee complied with any remedial measures required under B.3. above.

d. *Burden of proof.* In any enforcement proceeding the Permittee seeking to establish the occurrence of an upset has the burden of proof.

C. MONITORING REQUIREMENTS

1. Monitoring and Records

a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

b. Except for records of monitoring information required by this permit related to the Permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least 5 years (or longer as required by 40 C.F.R. § 503), the Permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time.

c. Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;
(2) The individual(s) who performed the sampling or measurements;
(3) The date(s) analyses were performed;
(4) The individual(s) who performed the analyses;
(5) The analytical techniques or methods used; and
(6) The results of such analyses.

d. Monitoring must be conducted according to test procedures approved under 40 C.F.R. § 136 unless another method is required under 40 C.F.R. Subchapters N or O.

e. The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

2. Inspection and Entry

The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon presentation of credentials and other documents as may be required by law, to:

a. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location.

D. REPORTING REQUIREMENTS

1. Reporting Requirements

a. *Planned Changes*. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 C.F.R. § 122.29(b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements at 40 C.F.R. § 122.42(a)(1).

(3) The alteration or addition results in a significant change in the Permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

b. *Anticipated noncompliance*. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

c. *Transfers*. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the Permittee and incorporate such other requirements as may be necessary under the Clean Water Act. *See* 40 C.F.R. § 122.61; in some cases, modification or revocation and reissuance is mandatory.

d. *Monitoring reports*. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR) or forms provided or specified by the Director for reporting results of monitoring of sludge use or disposal practices. As of December 21, 2016 all reports and forms submitted in compliance with this Section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to report electronically if specified by a particular permit or if required to do so by State law.

(2) If the Permittee monitors any pollutant more frequently than required by the permit using test procedures approved under 40 C.F.R. § 136, or another method required for an industry-specific waste stream under 40 C.F.R. Subchapters N or O, the results of such monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Director.

(3) Calculations for all limitations which require averaging or measurements shall utilize an arithmetic mean unless otherwise specified by the Director in the permit.

e. *Twenty-four hour reporting.*

(1) The Permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Permittee becomes aware of the circumstances. A written report shall also be provided within 5 days of the time the Permittee becomes aware of the circumstances. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports must include the data described above (with the exception of time of discovery) as well as the type of event (combined sewer overflows, sanitary sewer overflows, or bypass events), type of sewer overflow structure (e.g., manhole, combined sewer overflow outfall), discharge volumes untreated by the treatment works treating domestic sewage, types of human health and environmental impacts of the sewer overflow event, and whether the noncompliance was related to wet weather. As of December 21, 2020 all

reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases Subpart D to Part 3), § 122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section.

(2) The following shall be included as information which must be reported within 24 hours under this paragraph.

(a) Any unanticipated bypass which exceeds any effluent limitation in the permit. *See* 40 C.F.R. § 122.41(g).
(b) Any upset which exceeds any effluent limitation in the permit.
(c) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Director in the permit to be reported within 24 hours. *See* 40 C.F.R. § 122.44(g).

(3) The Director may waive the written report on a case-by-case basis for reports under paragraph D.1.e. of this Section if the oral report has been received within 24 hours.

f. *Compliance Schedules.* Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

g. *Other noncompliance.* The Permittee shall report all instances of noncompliance not reported under paragraphs D.1.d., D.1.e., and D.1.f. of this Section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph D.1.e. of this Section. For noncompliance events related to combined sewer overflows, sanitary sewer overflows, or bypass events, these reports shall contain the information described in paragraph D.1.e. and the applicable required data in Appendix A to 40 C.F.R. Part 127. As of December 21, 2020 all reports related to combined sewer overflows, sanitary sewer overflows, or bypass events submitted in compliance with this section must be submitted electronically by the Permittee to the Director or initial recipient, as defined in 40 C.F.R. § 127.2(b), in compliance with this Section and 40 C.F.R. Part 3 (including, in all cases, Subpart D to Part 3), §122.22, and 40 C.F.R. Part 127. Part 127 is not intended to undo existing requirements for electronic reporting. Prior to this date, and independent of Part 127, Permittees may be required to electronically submit reports related to combined sewer overflows, sanitary sewer overflows, or bypass events under this section by a particular permit or if required to do so by state law. The Director may also require Permittees to electronically submit reports not related to combined sewer overflows, sanitary sewer overflows, or bypass events under this Section.

h. *Other information.* Where the Permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.

i. *Identification of the initial recipient for NPDES electronic reporting data*. The owner, operator, or the duly authorized representative of an NPDES-regulated entity is required to electronically submit the required NPDES information (as specified in Appendix A to 40 C.F.R. Part 127) to the appropriate initial recipient, as determined by EPA, and as defined in 40 C.F.R. § 127.2(b). EPA will identify and publish the list of initial recipients on its Web site and in the FEDERAL REGISTER, by state and by NPDES data group (see 40 C.F.R. § 127.2(c) of this Chapter). EPA will update and maintain this listing.

2. Signatory Requirement

   a. All applications, reports, or information submitted to the Director shall be signed and certified. *See* 40 C.F.R. §122.22.

   b. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

3. Availability of Reports.

   Except for data determined to be confidential under paragraph A.6. above, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the State water pollution control agency and the Director. As required by the CWA, effluent data shall not be considered confidential. Knowingly making any false statements on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the CWA.

E. DEFINITIONS AND ABBREVIATIONS

1. General Definitions
   For more definitions related to sludge use and disposal requirements, see EPA Region 1's NPDES Permit Sludge Compliance Guidance document (4 November 1999, modified to add regulatory definitions, April 2018).

   Administrator means the Administrator of the United States Environmental Protection Agency, or an authorized representative.

   Applicable standards and limitations means all, State, interstate, and federal standards and limitations to which a "discharge," a "sewage sludge use or disposal practice," or a related activity is subject under the CWA, including "effluent limitations," water quality standards, standards of performance, toxic effluent standards or prohibitions, "best management practices," pretreatment standards, and "standards for sewage sludge use or disposal" under Sections 301, 302, 303, 304, 306, 307, 308, 403 and 405 of the CWA.

   Application means the EPA standard national forms for applying for a permit, including any additions, revisions, or modifications to the forms; or forms approved by EPA for use in "approved States," including any approved modifications or revisions.

Approved program or *approved State* means a State or interstate program which has been approved or authorized by EPA under Part 123.

Average monthly discharge limitation means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.

Average weekly discharge limitation means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week.

Best Management Practices ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of "waters of the United States." BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Bypass see B.4.a.1 above.

C-NOEC or *"Chronic (Long-term Exposure Test) – No Observed Effect Concentration" means* the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specified time of observation.

Class I sludge management facility is any publicly owned treatment works (POTW), as defined in 40 C.F.R. § 501.2, required to have an approved pretreatment program under 40 C.F.R. § 403.8 (a) (including any POTW located in a State that has elected to assume local program responsibilities pursuant to 40 C.F.R. § 403.10 (e)) and any treatment works treating domestic sewage, as defined in 40 C.F.R. § 122.2, classified as a Class I sludge management facility by the EPA Regional Administrator, or, in the case of approved State programs, the Regional Administrator in conjunction with the State Director, because of the potential for its sewage sludge use or disposal practice to affect public health and the environment adversely.

Contiguous zone means the entire zone established by the United States under Article 24 of the Convention on the Territorial Sea and the Contiguous Zone.

Continuous discharge means a "discharge" which occurs without interruption throughout the operating hours of the facility, except for infrequent shutdowns for maintenance, process changes, or similar activities.

CWA means the Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Public Law 92-500, as amended by Public Law 95-217, Public Law 95-576, Public Law 96-483and Public Law 97-117, 33 U.S.C. 1251 *et seq*.

CWA and regulations means the Clean Water Act (CWA) and applicable regulations promulgated thereunder. In the case of an approved State program, it includes State program requirements.

Daily Discharge means the "discharge of a pollutant" measured during a calendar day or any other 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Direct Discharge means the "discharge of a pollutant."

Director means the Regional Administrator or an authorized representative. In the case of a permit also issued under Massachusetts' authority, it also refers to the Director of the Division of Watershed Management, Department of Environmental Protection, Commonwealth of Massachusetts.

Discharge

(a) When used without qualification, *discharge* means the "discharge of a pollutant."

(b) As used in the definitions for "interference" and "pass through," *discharge* means the introduction of pollutants into a POTW from any non-domestic source regulated under Section 307(b), (c) or (d) of the Act.

Discharge Monitoring Report ("DMR") means the EPA uniform national form, including any subsequent additions, revisions, or modifications for the reporting of self-monitoring results by Permittees. DMRs must be used by "approved States" as well as by EPA. EPA will supply DMRs to any approved State upon request. The EPA national forms may be modified to substitute the State Agency name, address, logo, and other similar information, as appropriate, in place of EPA's.

Discharge of a pollutant means:

(a) Any addition of any "pollutant" or combination of pollutants to "waters of the United States" from any "point source," or

(b) Any addition of any pollutant or combination of pollutants to the waters of the "contiguous zone" or the ocean from any point source other than a vessel or other floating craft which is being used as a means of transportation.

This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. This term does not include an addition of pollutants by any "indirect discharger."

Effluent limitation means any restriction imposed by the Director on quantities, discharge rates, and concentrations of "pollutants" which are "discharged" from "point sources" into "waters of the United States," the waters of the "contiguous zone," or the ocean.

Effluent limitation guidelines means a regulation published by the Administrator under section 304(b) of CWA to adopt or revise "effluent limitations."

Environmental Protection Agency ("EPA") means the United States Environmental Protection

Agency.

Grab Sample means an individual sample collected in a period of less than 15 minutes.

Hazardous substance means any substance designated under 40 C.F.R. Part 116 pursuant to Section 311 of CWA.

Incineration is the combustion of organic matter and inorganic matter in sewage sludge by high temperatures in an enclosed device.

Indirect discharger means a nondomestic discharger introducing "pollutants" to a "publicly owned treatment works."

Interference means a discharge (see definition above) which, alone or in conjunction with a discharge or discharges from other sources, both:

(a) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal; and

(b) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the SDWA), the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Landfill means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

Land application is the spraying or spreading of sewage sludge onto the land surface; the injection of sewage sludge below the land surface; or the incorporation of sewage sludge into the soil so that the sewage sludge can either condition the soil or fertilize crops or vegetation grown in the soil.

Land application unit means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for agricultural purposes or for treatment and disposal.

LC_{50} means the concentration of a sample that causes mortality of 50% of the test population at a specific time of observation. The LC_{50} = 100% is defined as a sample of undiluted effluent.

Maximum daily discharge limitation means the highest allowable "daily discharge."

Municipal solid waste landfill (MSWLF) unit means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 C.F.R. § 257.2. A MSWLF unit also may receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, very small quantity generator waste and industrial solid waste. Such a landfill may be publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A construction and demolition landfill that receives residential lead-based paint waste and does not receive any other household waste is not a MSWLF unit.

Municipality

(a) When used without qualification *municipality* means a city, town, borough, county, parish, district, association, or other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of CWA.

(b) As related to sludge use and disposal, *municipality* means a city, town, borough, county, parish, district, association, or other public body (including an intermunicipal Agency of two or more of the foregoing entities) created by or under State law; an Indian tribe or an authorized Indian tribal organization having jurisdiction over sewage sludge management; or a designated and approved management Agency under Section 208 of the CWA, as amended. The definition includes a special district created under State law, such as a water district, sewer district, sanitary district, utility district, drainage district, or similar entity, or an integrated waste management facility as defined in Section 201 (e) of the CWA, as amended, that has as one of its principal responsibilities the treatment, transport, use or disposal of sewage sludge.

National Pollutant Discharge Elimination System means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the CWA. The term includes an "approved program."

New Discharger means any building, structure, facility, or installation:

(a) From which there is or may be a "discharge of pollutants;"

(b) That did not commence the "discharge of pollutants" at a particular "site" prior to August 13, 1979;

(c) Which is not a "new source;" and

(d) Which has never received a finally effective NPDES permit for discharges at that "site."

This definition includes an "indirect discharger" which commences discharging into "waters of the United States" after August 13, 1979. It also includes any existing mobile point source (other than an offshore or coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas exploratory drilling rig or a coastal oil and gas developmental drilling rig) such as a seafood processing rig, seafood processing vessel, or aggregate plant, that begins discharging at a "site" for which it does not have a permit; and any offshore or coastal mobile oil and gas exploratory drilling rig or coastal mobile oil and gas developmental drilling rig that commences the discharge of pollutants after August 13, 1979, at a "site" under EPA's permitting jurisdiction for which it is not covered by an individual or general permit and which is located in an area determined by the Director in the issuance of a final permit to be in an area of biological concern. In determining whether an area is an area of biological concern, the Director shall consider the factors specified in 40 C.F.R. §§ 125.122 (a) (1) through (10).

An offshore or coastal mobile exploratory drilling rig or coastal mobile developmental drilling rig will be considered a "new discharger" only for the duration of its discharge in an area of biological concern.

New source means any building, structure, facility, or installation from which there is or may be a "discharge of pollutants," the construction of which commenced:

(a) After promulgation of standards of performance under Section 306 of CWA which are applicable to such source, or

(b) After proposal of standards of performance in accordance with Section 306 of CWA which are applicable to such source, but only if the standards are promulgated in accordance with Section 306 within 120 days of their proposal.

NPDES means "National Pollutant Discharge Elimination System."

Owner or operator means the owner or operator of any "facility or activity" subject to regulation under the NPDES programs.

Pass through means a Discharge (see definition above) which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).

Pathogenic organisms are disease-causing organisms. These include, but are not limited to, certain bacteria, protozoa, viruses, and viable helminth ova.

Permit means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of Parts 122, 123, and 124. "Permit" includes an NPDES "general permit" (40 C.F.R § 122.28). "Permit" does not include any permit which has not yet been the subject of final agency action, such as a "draft permit" or "proposed permit."

Person means an individual, association, partnership, corporation, municipality, State or Federal agency, or an agent or employee thereof.

Person who prepares sewage sludge is either the person who generates sewage sludge during the treatment of domestic sewage in a treatment works or the person who derives a material from sewage sludge.

pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25° Centigrade or measured at another temperature and then converted to an equivalent value at 25° Centigrade.

Point Source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff (see 40 C.F.R. § 122.3).

Pollutant means dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 *et seq.*)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. It does not mean:

(a) Sewage from vessels; or

(b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed of in a well, if the well is used either to facilitate production or for disposal purposes is approved by the authority of the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.

Primary industry category means any industry category listed in the NRDC settlement agreement (*Natural Resources Defense Council et al. v. Train*, 8 E.R.C. 2120 (D.D.C. 1976), *modified* 12 E.R.C. 1833 (D.D.C. 1979)); also listed in Appendix A of 40 C.F.R. Part 122.

Privately owned treatment works means any device or system which is (a) used to treat wastes from any facility whose operator is not the operator of the treatment works and (b) not a "POTW."

Process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product.

Publicly owned treatment works (POTW) means a treatment works as defined by Section 212 of the Act, which is owned by a State or municipality (as defined by Section 504(4) of the Act). This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastes of a liquid nature. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW Treatment Plant. The term also means the municipality as defined in Section 502(4) of the Act, which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

Regional Administrator means the Regional Administrator, EPA, Region I, Boston, Massachusetts.

Secondary industry category means any industry which is not a "primary industry category."

Septage means the liquid and solid material pumped from a septic tank, cesspool, or similar domestic sewage treatment system, or a holding tank when the system is cleaned or maintained.

Sewage Sludge means any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage. Sewage sludge includes, but is not limited to, solids removed during primary, secondary, or advanced waste water treatment, scum, septage, portable toilet pumpings, type III marine sanitation device pumpings (33 C.F.R. Part 159), and sewage sludge products. Sewage sludge does not include grit or screenings, or ash generated during the incineration of sewage sludge.

Sewage sludge incinerator is an enclosed device in which only sewage sludge and auxiliary fuel are fired.

Sewage sludge unit is land on which only sewage sludge is placed for final disposal. This does not include land on which sewage sludge is either stored or treated. Land does not include waters of the United States, as defined in 40 C.F.R. § 122.2.

Sewage sludge use or disposal practice means the collection, storage, treatment, transportation, processing, monitoring, use, or disposal of sewage sludge.

Significant materials includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substance designated under Section 101(14) of CERCLA; any chemical the facility is required to report pursuant to Section 313 of title III of SARA; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

Significant spills includes, but is not limited to, releases of oil or hazardous substances in excess of reportable quantities under Section 311 of the CWA (see 40 C.F.R. §§ 110.10 and 117.21) or Section 102 of CERCLA (*see* 40 C.F.R. § 302.4).

Sludge-only facility means any “treatment works treating domestic sewage” whose methods of sewage sludge use or disposal are subject to regulations promulgated pursuant to section 405(d) of the CWA, and is required to obtain a permit under 40 C.F.R. § 122.1(b)(2).

State means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Commonwealth of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, or an Indian Tribe as defined in the regulations which meets the requirements of 40 C.F.R. § 123.31.

Store or storage of sewage sludge is the placement of sewage sludge on land on which the sewage sludge remains for two years or less. This does not include the placement of sewage sludge on land for treatment.

Storm water means storm water runoff, snow melt runoff, and surface runoff and drainage.

Storm water discharge associated with industrial activity means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing, or raw materials storage areas at an industrial plant.

Surface disposal site is an area of land that contains one or more active sewage sludge units.

Toxic pollutant means any pollutant listed as toxic under Section 307(a)(1) or, in the case of “sludge use or disposal practices,” any pollutant identified in regulations implementing Section 405(d) of the CWA.

Treatment works treating domestic sewage means a POTW or any other sewage sludge or waste water treatment devices or systems, regardless of ownership (including federal facilities), used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated for the disposal of sewage sludge. This definition does not include septic tanks or similar devices.

For purposes of this definition, “domestic sewage” includes waste and waste water from humans or household operations that are discharged to or otherwise enter a treatment works. In States where there is no approved State sludge management program under Section 405(f) of the CWA, the Director may designate any person subject to the standards for sewage sludge use and disposal in 40 C.F.R. Part 503 as a "treatment works treating domestic sewage," where he or she finds that there is a potential for adverse effects on public health and the environment from poor sludge quality or poor sludge handling, use or disposal practices, or where he or she finds that such designation is necessary to ensure that such person is in compliance with 40 C.F.R. Part 503.

Upset see B.5.a. above.

Vector attraction is the characteristic of sewage sludge that attracts rodents, flies, mosquitoes, or other organisms capable of transporting infectious agents.

Waste pile or *pile* means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

Waters of the United States or waters of the U.S. means:

(a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;

(b) All interstate waters, including interstate "wetlands;"

(c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands", sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:

    (1) Which are or could be used by interstate or foreign travelers for recreational or other purpose;

    (2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

    (3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "Wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States. Waters of the United States do not include prior converted cropland.

Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA.

Wetlands means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Whole Effluent Toxicity (WET) means the aggregate toxic effect of an effluent measured directly by a toxicity test.

*Zone of Initial Dilution (*ZID) means the region of initial mixing surrounding or adjacent to the end of the outfall pipe or diffuser ports, provided that the ZID may not be larger than allowed by mixing zone restrictions in applicable water quality standards.

2. Commonly Used Abbreviations

BOD	Five-day biochemical oxygen demand unless otherwise specified
CBOD	Carbonaceous BOD
CFS	Cubic feet per second
COD	Chemical oxygen demand
Chlorine	
Cl_2	Total residual chlorine
TRC	Total residual chlorine which is a combination of free available chlorine (FAC, see below) and combined chlorine (chloramines, etc.)
TRO	Total residual chlorine in marine waters where halogen compounds are present
FAC	Free available chlorine (aqueous molecular chlorine, hypochlorous acid, and hypochlorite ion)
Coliform	
Coliform, Fecal	Total fecal coliform bacteria
Coliform, Total	Total coliform bacteria
Cont.	Continuous recording of the parameter being monitored, i.e. flow, temperature, pH, etc.
Cu. M/day or M^3/day	Cubic meters per day
DO	Dissolved oxygen

kg/day	Kilograms per day
lbs/day	Pounds per day
mg/L	Milligram(s) per liter
mL/L	Milliliters per liter
MGD	Million gallons per day
Nitrogen	
Total N	Total nitrogen
NH_3-N	Ammonia nitrogen as nitrogen
NO_3-N	Nitrate as nitrogen
NO_2-N	Nitrite as nitrogen
NO_3-NO_2	Combined nitrate and nitrite nitrogen as nitrogen
TKN	Total Kjeldahl nitrogen as nitrogen
Oil & Grease	Freon extractable material
PCB	Polychlorinated biphenyl
Surfactant	Surface-active agent
Temp. °C	Temperature in degrees Centigrade
Temp. °F	Temperature in degrees Fahrenheit
TOC	Total organic carbon
Total P	Total phosphorus
TSS or NFR	Total suspended solids or total nonfilterable residue
Turb. or Turbidity	Turbidity measured by the Nephelometric Method (NTU)
µg/L	Microgram(s) per liter
WET	“Whole effluent toxicity”
ZID	Zone of Initial Dilution

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION 1
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

FACT SHEET

DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE TO WATERS OF THE UNITED STATES PURSUANT TO THE CLEAN WATER ACT (CWA)

NPDES PERMIT NUMBER: MA0101923

PUBLIC NOTICE START AND END DATES: : August 25, 2021 – September 23, 2021

NAME AND MAILING ADDRESS OF APPLICANT:

Town of Rockland
242 Union St
Rockland, MA 02370

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Rockland Wastewater Treatment Plant
587R Summer St
Rockland, MA 02370

RECEIVING WATER AND CLASSIFICATION:

French Stream (MA94-03)
South Coastal Watershed
Class B – Warm Water Fishery

Table of Contents

Appendices

1.0 Proposed Action

The above-named applicant (the "Permittee") has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of a National Pollutant Discharge Elimination System (NPDES) permit to discharge from the Rockland Wastewater Treatment Plant (the "Facility") into the French Stream.

The permit currently in effect was issued on January 27, 2006 with an effective date of July 1, 2006 (the "2006 Permit"). A Permit modification in 2007 became effective on April 1, 2007 and the 2006 Permit expired on June 30, 2011. The Permittee filed an application for permit reissuance with EPA dated January 5, 2011, as required by 40 Code of Federal Regulations (CFR) § 122.6. Since the permit application was deemed timely and complete by EPA on April 15, 2011, the Facility's 2006 Permit has been administratively continued pursuant to 40 CFR § 122.6 and § 122.21(d).

2.0 Statutory and Regulatory Authority

Congress enacted the Federal Water Pollution Control Act, codified at 33 U.S.C. § 1251-1387 and commonly known as the Clean Water Act (CWA), "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." CWA § 101(a). To achieve this objective, the CWA makes it unlawful for any person to discharge any pollutant into the waters of the United States from any point source, except as authorized by specific permitting sections of the CWA, one of which is § 402. *See* CWA §§ 301(a), 402(a). Section 402(a) established one of the CWA's principal permitting programs, the NPDES Permit Program. Under this section, EPA may "issue a permit for the discharge of any pollutant or combination of pollutants" in accordance with certain conditions. CWA § 402(a). NPDES permits generally contain discharge limitations and establish related monitoring and reporting requirements. *See* CWA § 402(a)(1) and (2). The regulations governing EPA's NPDES permit program are generally found in 40 CFR §§ 122, 124, 125, and 136.

"Congress has vested in the Administrator [of EPA] broad discretion to establish conditions for NPDES permits" in order to achieve the statutory mandates of Section 301 and 402. *Arkansas v. Oklahoma,* 503 U.S. 91, 105 (1992). *See also* 40 CFR §§ 122.4(d), 122.44(d)(1), and 122.44(d)(5). CWA §§ 301 and 306 provide for two types of effluent limitations to be included in NPDES permits: "technology-based" effluent limitations (TBELs) and "water quality-based" effluent limitations (WQBELs). *See* CWA §§ 301, and 304(d); 40 CFR Parts 122, 125, 131.

2.1 Technology-Based Requirements

Technology-based limitations, generally developed on an industry-by-industry basis, reflect a specified level of pollutant reducing technology available and economically achievable for the type of facility being permitted. *See* CWA § 301(b). As a class, publicly owned treatment works (POTWs) must meet performance-based requirements based on available wastewater treatment technology. *See* CWA § 301(b)(1)(B). The performance level for POTWs is referred to as "secondary treatment." Secondary treatment is comprised of technology-based requirements expressed in terms of biochemical oxygen demand (BOD_5), total suspended solids (TSS) and pH. *See* 40 CFR Part 133.

Under CWA § 301(b)(1), POTWs must have achieved effluent limits based upon secondary treatment technology by July 1, 1977. Since all statutory deadlines for meeting various treatment technology-based effluent limitations established pursuant to the CWA have expired, when technology-based effluent limits are included in a permit, compliance with those limitations is from the date the issued permit becomes effective. *See* 40 CFR § 125.3(a)(1).

2.2 Water Quality-Based Requirements

The CWA and federal regulations also require that permit effluent limits based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water. This is necessary when less stringent TBELs would interfere with the attainment or maintenance of water quality criteria in the receiving water. *See* CWA § 301(b)(1)(C) and 40 CFR §§ 122.44(d)(1), 122.44(d)(5).

2.2.1 Water Quality Standards

The CWA requires that each state develop water quality standards (WQSs) for all water bodies within the State. *See* CWA § 303 and 40 CFR § 131.10-12. Generally, WQSs consist of three parts: 1) the designated use or uses assigned for a water body or a segment of a water body; 2) numeric or narrative water quality criteria sufficient to protect the assigned designated use(s); and 3) antidegradation requirements to ensure that once a use is attained it will not be degraded and to protect high quality and National resource waters. *See* CWA § 303(c)(2)(A) and 40 CFR § 131.12. The applicable State WQSs can be found in 314 of the Code of Massachusetts Regulations, Chapter 4 (314 CMR 4.00).

As a matter of state law, state WQSs specify different water body classifications, each of which is associated with certain designated uses and numeric and narrative water quality criteria. When using chemical-specific numeric criteria to develop permit limitations, acute and chronic aquatic life criteria and human health criteria are used and expressed in terms of maximum allowable in-stream pollutant concentrations. In general, aquatic-life acute criteria are considered applicable to daily time periods (maximum daily limit) and aquatic-life chronic criteria are considered applicable to monthly time periods (average monthly limit). Chemical-specific human health criteria are typically based on lifetime chronic exposure and, therefore, are typically applicable to average monthly limits.

When permit effluent limitation(s) are necessary to ensure that the receiving water meets narrative water quality criteria, the permitting authority must establish effluent limits in one of the following three ways: 1) based on a “calculated numeric criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and fully protect the designated use,” 2) based on a “case-by-case basis” using CWA § 304(a) recommended water quality criteria, supplemented as necessary by other relevant information; or, 3) in certain circumstances, based on use of an indicator parameter. *See* 40 CFR § 122.44(d)(1)(vi)(A-C).

2.2.2 Antidegradation

Federal regulations found at 40 CFR § 131.12 require states to develop and adopt a statewide antidegradation policy that maintains and protects existing in-stream water uses and the level of water quality necessary to protect these existing uses. In addition, the antidegradation policy ensures maintenance of high quality waters which exceed levels necessary to support propagation of fish, shellfish, and wildlife and to support recreation in and on the water, unless the State finds that allowing degradation is necessary to accommodate important economic or social development in the area in which the waters are located.

Massachusetts' statewide antidegradation policy, entitled "Antidegradation Provisions" is found in the State's WQSs at 314 CMR 4.04. Massachusetts guidance for the implementation of this policy is in an associated document entitled "Implementation Procedure for the Anti-Degradation Provisions of the State Water Quality Standards," dated October 21, 2009. According to the policy, no lowering of water quality is allowed, except in accordance with the antidegradation policy, and all existing in-stream uses, and the level of water quality necessary to protect the existing uses of a receiving water body must be maintained and protected.

This permit is being reissued with effluent limitations sufficiently stringent to satisfy the State's antidegradation requirements, including the protection of the existing uses of the receiving water.

2.2.3 Assessment and Listing of Waters and Total Maximum Daily Loads

The objective of the CWA is to restore and maintain the chemical, physical and biological integrity of the Nation's waters. To meet this goal, the CWA requires states to develop information on the quality of their water resources and report this information to EPA, the U.S. Congress, and the public. To this end, EPA released guidance on November 19, 2001, for the preparation of an integrated "List of Waters" that could combine reporting elements of both § 305(b) and § 303(d) of the CWA. The integrated list format allows states to provide the status of all their assessed waters in one list. States choosing this option must list each water body or segment in one of the following five categories: 1) unimpaired and not threatened for all designated uses; 2) unimpaired waters for some uses and not assessed for others; 3) insufficient information to make assessments for any uses; 4) impaired or threatened for one or more uses but not requiring the calculation of a Total Maximum Daily Load (TMDL); and 5) impaired or threatened for one or more uses and requiring a TMDL.

A TMDL is a planning tool and potential starting point for restoration activities with the ultimate goal of attaining water quality standards. A TMDL essentially provides a pollution budget designed to restore the health of an impaired water body. A TMDL typically identifies the source(s) of the pollutant from point sources and non-point sources, determines the maximum load of the pollutant that the water body can tolerate while still attaining WQSs for the designated uses, and allocates that load among to the various sources, including point source discharges, subject to NPDES permits. *See* 40 CFR § 130.7.

For impaired waters where a TMDL has been developed for a particular pollutant and the TMDL includes a waste load allocation (WLA) for a NPDES permitted discharge, the effluent limitation in the permit must be "consistent with the assumptions and requirements of any available WLA". 40 CFR § 122.44(d)(1)(vii)(B).

2.2.4 Reasonable Potential

Pursuant to CWA § 301(b)(1)(C) and 40 CFR § 122.44(d)(1), NPDES permits must contain any requirements in addition to TBELs that are necessary to achieve water quality standards established under § 303 of the CWA. *See also* 33 U.S.C. § 1311(b)(1)(C). In addition, limitations "must control any pollutant or pollutant parameter (conventional, non-conventional, or toxic) which the permitting authority determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any water quality standard, including State narrative criteria for water quality." 40 CFR § 122.44(d)(1)(i). To determine if the discharge causes, or has the reasonable potential to cause, or contribute to an excursion above any WQS, EPA considers: 1) existing controls on point and non-point sources of pollution; 2) the variability of the pollutant or pollutant parameter in the effluent; 3) the sensitivity of the species to toxicity testing (when evaluating whole effluent toxicity); and 4) where appropriate, the dilution of the effluent by the receiving water. *See* 40 CFR § 122.44(d)(1)(ii).

If the permitting authority determines that the discharge of a pollutant will cause, has the reasonable potential to cause, or contribute to an excursion above WQSs, the permit must contain WQBELs for that pollutant. *See* 40 CFR § 122.44(d)(1)(i).

2.2.5 State Certification

EPA may not issue a permit unless the State Water Pollution Control Agency with jurisdiction over the receiving water(s) either certifies that the effluent limitations contained in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate the State WQSs, the State waives, or is deemed to have waived, its right to certify. *See* 33 U.S.C. § 1341(a)(1). Regulations governing state certification are set forth in 40 CFR § 124.53 and § 124.55. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the Draft Permit will be certified.

If the State believes that conditions more stringent than those contained in the Draft Permit are necessary to meet the requirements of either CWA §§ 208(e), 301, 302, 303, 306 and 307, or applicable requirements of State law, the State should include such conditions in its certification and, in each case, cite the CWA or State law provisions upon which that condition is based. Failure to provide such a citation waives the right to certify as to that condition. EPA includes properly supported State certification conditions in the NPDES permit. The only exception to this is that the permit conditions/requirements regulating sewage sludge management and implementing CWA § 405(d) are not subject to the State certification requirements. Reviews and appeals of limitations and conditions attributable to State certification shall be made through the applicable procedures of the State and may not be made through EPA's permit appeal procedures of 40 CFR Part 124.

In addition, the State should provide a statement of the extent to which any condition of the Draft Permit can be made less stringent without violating the requirements of State law. Since the State's certification is provided prior to final permit issuance, any failure by the State to provide this statement waives the State's right to certify or object to any less stringent condition.

It should be noted that under CWA § 401, EPA's duty to defer to considerations of State law is intended to prevent EPA from relaxing any requirements, limitations or conditions imposed by State law. Therefore, "[a] State may not condition or deny a certification on the grounds that State law allows a less stringent permit condition." 40 CFR § 124.55(c). In such an instance, the regulation provides that, "The Regional Administrator shall disregard any such certification conditions or denials as waivers of certification." *Id.* EPA regulations pertaining to permit limitations based upon WQSs and State requirements are contained in 40 CFR §§ 122.4(d) and 122.44(d).

2.3 Effluent Flow Requirements

Sewage treatment plant discharge is encompassed within the definition of "pollutant" and is subject to regulation under the CWA. The CWA defines "pollutant" to mean, *inter alia*, "municipal...waste" and "sewage…discharged into water." 33 U.S.C. § 1362(6).

Generally, EPA uses effluent flow both to determine whether an NPDES permit needs certain effluent limitations and to calculate the limitations themselves. EPA practice is to use effluent flow as a reasonable and important worst-case condition in EPA's reasonable potential and WQBEL calculations to ensure compliance with WQSs under § 301(b)(1)(C). Should the effluent flow exceed the flow assumed in these calculations, the in-stream dilution would be reduced, and the calculated effluent limitations may not be sufficiently protective (i.e. might not meet WQSs). Further, pollutants that do not have the reasonable potential to exceed WQSs at the lower discharge flow may have reasonable potential at a higher flow due to the decreased dilution. In order to ensure that the assumptions underlying EPA's reasonable potential analyses and permit effluent limitation derivations remain sound for the duration of the permit, EPA may ensure the validity of its "worst-case" wastewater effluent flow assumptions through imposition of permit conditions for effluent flow.[1] In this regard, the effluent flow limitation is a component of WQBELs because the WQBELs are premised on a maximum level flow. The effluent flow limit is also necessary to ensure that other pollutants remain at levels that do not have a reasonable potential to exceed WQSs.

The limitation on wastewater effluent flow is within EPA's authority to condition a permit to carry out the objectives of the Act. *See* CWA §§ 402(a)(2) and 301(b)(1)(C); 40 CFR §§ 122.4(a) and (d), 122.43 and 122.44(d). A condition on the discharge designed to ensure the WQBEL and reasonable potential calculations account for "worst case" conditions is encompassed by the references to "condition" and "limitations" in CWA §§ 402 and 301 and implementing regulations, as they are designed to assure compliance with applicable water quality regulations, including antidegradation. Regulating the quantity of pollutants in the discharge through a restriction on the quantity of wastewater effluent is consistent with the overall structure and purposes of the CWA.

In addition, as provided in Part II.B.1 of this permit and 40 CFR § 122.41(e), the Permittee is required to properly operate and maintain all facilities and systems of treatment and control. Operating the facility's wastewater treatment systems as designed includes operating within the facility's design wastewater effluent flow.

EPA has also included the effluent flow limit in the permit to minimize or prevent infiltration and inflow (I/I) that may result in unauthorized discharges and compromise proper operation and

[1] EPA's regulations regarding "reasonable potential" require EPA to consider "where appropriate, the dilution of the effluent in the receiving water," *id* 40 CFR §122.44(d)(1)(ii). *Both* the effluent flow and receiving water flow may be considered when assessing reasonable potential. *In re Upper Blackstone Water Pollution Abatement Dist.,* 14 E.A.D. 577. 599 (EAB 2010). EPA guidance directs that this "reasonable potential: analysis be based on "worst-case" conditions. *See In re Washington Aquaduct Water Supply Sys. 11 E.A.D. 565, 584 (EAB 2004)*

maintenance of the facility. Improper operation and maintenance may result in non-compliance with permit effluent limitations. Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes or deteriorated joints. Inflow is extraneous flow added to the collection system that enters the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity available for treatment and the operating efficiency of the treatment works and to properly operate and maintain the treatment works.

Furthermore, the extraneous flow due to significant I/I greatly increases the potential for sanitary sewer overflows (SSOs) in separate systems. Consequently, the effluent flow limit is a permit condition that relates to the permittee's duty to mitigate (*i.e.*, minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment) and to properly operate and maintain the treatment works. *See* 40 CFR §§ 122.41(d), (e).

2.4 Monitoring and Reporting Requirements

2.4.1 Monitoring Requirements

Sections 308(a) and 402(a)(2) of the CWA and the implementing regulations at 40 CFR Parts 122, 124, 125, and 136 authorize EPA to include monitoring and reporting requirements in NPDES permits.

The monitoring requirements included in this permit have been established to yield data representative of the Facility's discharges in accordance with CWA §§ 308(a) and 402(a)(2), and consistent with 40 CFR §§ 122.41(j), 122.43(a), 122.44(i) and 122.48. The Draft Permit specifies routine sampling and analysis requirements to provide ongoing, representative information on the levels of regulated constituents in the discharges. The monitoring program is needed to enable EPA and the State to assess the characteristics of the Facility's effluent, whether Facility discharges are complying with permit limits, and whether different permit conditions may be necessary in the future to ensure compliance with technology-based and water quality-based standards under the CWA. EPA and/or the State may use the results of the chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to CWA § 304(a)(1), State water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including, but not limited to, those pollutants listed in Appendix D of 40 CFR Part 122.

NPDES permits require that the approved analytical procedures found in 40 CFR Part 136 be used for sampling and analysis unless other procedures are explicitly specified. Permits also include requirements necessary to comply with the *National Pollutant Discharge Elimination System (NPDES): Use of Sufficiently Sensitive Test Methods for Permit Applications and Reporting Rule*.[2] This Rule requires that where EPA-approved methods exist, NPDES applicants must use sufficiently sensitive EPA-approved analytical methods when quantifying the presence of pollutants in a discharge. Further, the permitting authority must prescribe that only sufficiently sensitive EPA-approved methods be used for analyses of pollutants or pollutant parameters under

[2] Fed. Reg. 49,001 (Aug 19, 2014).

the permit. The NPDES regulations at 40 CFR § 122.21(e)(3) (completeness), 40 CFR § 122.44(i)(1)(iv) (monitoring requirements) and/or as cross referenced at 40 CFR § 136.1(c) (applicability) indicate that an EPA-approved method is sufficiently sensitive where:

- The method minimum level[3] (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or

- In the case of permit applications, the ML is above the applicable water quality criterion, but the amount of the pollutant or pollutant parameter in a facility's discharge is high enough that the method detects and quantifies the level of the pollutant or parameter in the discharge; or

- The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter.

2.4.2 Reporting Requirements

The Draft Permit requires the Permittee to report monitoring results obtained during each calendar month to EPA and the State electronically using NetDMR. The Permittee must submit a Discharge Monitoring Report (DMR) for each calendar month no later than the 15th day of the month following the completed reporting period.

NetDMR is a national web-based tool enabling regulated CWA permittees to submit DMRs electronically via a secure internet application to EPA through the Environmental Information Exchange Network. NetDMR has eliminated the need for participants to mail in paper forms to EPA under 40 CFR §§ 122.41 and 403.12. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. Further information about NetDMR can be found on EPA's NetDMR support portal webpage.[4]

With the use of NetDMR, the Permittee is no longer required to submit hard copies of DMRs and reports to EPA and the State unless otherwise specified in the Draft Permit. In most cases, reports required under the permit shall be submitted to EPA as an electronic attachment through NetDMR. Certain exceptions are provided in the permit, such as for providing written notifications required under the Part II Standard Conditions.

2.5 Standard Conditions

The standard conditions, included as Part II of the Draft Permit, are based on applicable regulations found in the Code of Federal Regulations. *See generally* 40 CFR Part 122.

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[3] The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL). Minimum levels may be obtained in several ways: They may be published in a method; they may be sample concentrations equivalent to the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a lab, by a factor. EPA is considering the following terms related to analytical method sensitivity to be synonymous: "quantitation limit," "reporting limit," "level of quantitation," and "minimum level." *See* Fed. Reg. 49,001 (Aug. 19, 2014).

[4] https://netdmr.zendesk.com/hc/en-us/articles/209616266-EPA-Region-1-NetDMR-Information

2.6 Anti-backsliding

The CWA's anti-backsliding requirements prohibit a permit from being renewed, reissued or modified to include with less stringent limitations or conditions than those contained in a previous permit except in compliance with one of the specified exceptions to those requirements. *See* CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). Anti-backsliding provisions apply to effluent limits based on technology, water quality and/or state certification requirements.

All proposed limitations in the Draft Permit are at least as stringent as limitations included in the 2006 Permit unless specific conditions exist to justify relaxation in accordance with CWA § 402(o) or § 303(d)(4). Discussion of any less stringent limitations and corresponding exceptions to anti-backsliding provisions is provided in the sections that follow.

3.0 Description of Facility and Discharge

3.1 Location and Type of Facility

The location of the treatment plant and the outfall 001 to the French Stream are shown in Figure 1. The longitude and latitude of the outfall is 42º 08' N, 70º 55' W.

The Rockland Wastewater Treatment Facility (WWTF) is an advanced wastewater treatment facility that is engaged in the collection and treatment of municipal and commercial wastewater. Currently, the Facility serves approximately 18,000 residents in the Town of Rockland (all of the town's population) and 350 residents in the Town of Abington (approximately 5% of the Town's population) with the collection system primarily focused in the town center (Hanover St corridor).

The Facility has a design flow of 2.50 MGD, the annual average daily flow reported in the 2011 application was 2.66 MGD and the average for the last 5 years has been 2.43 MGD. The system is a separate system with no combined sewers. Wastewater is comprised of mostly domestic sewage with some commercial sewage and some septage.

There is 1 industrial user that discharges to the POTW: Serono Incorporated, consisting of process (2,500 gpd) and non-process wastewater (16,000 gpd) which contributes an average of 18,500 gallons per day. Pollutants introduced into POTWs by a non-domestic source shall not pass through the POTW or interfere with the operation or performance of the treatment works.

A quantitative description of the discharge in terms of effluent parameters, based on monitoring data submitted by the permittee from June 2016 through May 2021 is provided in Appendix A of this Fact Sheet.

3.1.1 Treatment Process Description

The facility is an advanced secondary treatment plant with seasonal phosphorus removal and nitrification. Raw wastewater enters the plant through an influent pump station followed by an aerated grit chamber. Flow then goes to a splitter box and to 4 primary settling tanks. From the settling tanks, it flows to 8 nitrification tanks and two nitrification settling tanks. Flow bypasses 2 secondary aeration tanks and two secondary settling tanks. Many older plants with similar designs have been reconfigured to accomplish both secondary treatment and nitrification in the same units, rather than in two stages. After nitrification and secondary treatment, flow goes to two chlorine contact tanks followed by dechlorination. Chlorination is by sodium hypochlorite, with dechlorination by sodium bisulfite. The effluent is reaerated by passing over a cascade, and then flows to a 700-foot man-made channel which, in turn, flows into the French Stream.

When flow to the treatment plant exceeds the range of 6 to 6.5 MGD, excess flow is diverted by portable pumps to the surplus secondary aeration tanks and secondary settling tanks. The excess influent is fed back into the headworks when the high flows abate. During high flow events when this storage capacity is exceeded, the flow is directed from the headworks and/or the manhole prior to the headworks and is sent directly to the chlorine contact chamber. Such bypasses are not permitted and must be reported pursuant to federal bypass regulations at 40 CFR §122.41(m).

Waste sludge is pumped from the clarifiers' return sludge lines to an aerated sludge holding tank and then dewatered following chemical addition. The dried sludge is transported under contract with a private hauler for incineration. The mass of sludge shipped for incineration in 2010 was 286.9 dry metric tons.

3.1.2 Collection System Description

The Rockland WWTF is served by a separate sewer system. A separate sanitary sewer conveys domestic, industrial and commercial sewage, but not stormwater. It is part of a "two pipe system" consisting of separate sanitary sewers and storm sewers. The two systems have no interconnections; the sanitary sewer leads to the wastewater treatment plant and the storm sewers discharge to a local water body.

4.0 Description of Receiving Water and Dilution

4.1 Receiving Water

The Rockland WWTF discharges through Outfall 001 into a man-made channel that feeds into the French Stream, a tributary of the North River, within Segment MA94-03. This segment is 5.8 miles in length and travels from the southeast side of South Weymouth Naval Air Station to the confluence with Drinkwater River in Hanover, MA. The Drinkwater River then flows into the North River. The North River is part of the South Coastal Watershed, which discharges to Massachusetts Bay.

French Stream is classified as a Class B warm water fishery in the Massachusetts WQSs, 314 Code of Massachusetts Regulations ("CMR") 4.05(4)(a). The MA WQS at 314 CMR 4.05(3)(b) state that Class B "*waters are designated as habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation. They shall be a source of public water supply (i.e., where designated and with appropriate treatment). They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. They shall also have consistently good aesthetic value.*"

French Stream is listed in the final *Massachusetts Year 2016 Integrated List of Waters* ("303(d) List") as a Category 5 "Waters Requiring a TMDL."[5] The pollutant requiring a TMDLs are dissolved oxygen, E. Coli, Fecal Coliform, Fish Bioassessments, Total Phosphorus, and Whole Effluent Toxicity. A TMDL[6] has been developed for E. Coli and Fecal Coliform, but no TMDL has been developed for this segment for any of the other listed impairments.

4.2 Ambient Data

A summary of the ambient data collected in the receiving water in the vicinity of the outfall that is referenced in this Fact Sheet can be found in Appendix A of this Fact Sheet.

4.3 Available Dilution

To ensure that discharges do not cause or contribute to violations of WQS under all expected conditions, WQBELs are derived assuming critical conditions for the receiving water.[7] The critical flow in rivers and streams is some measure of the low flow of that river or stream. State WQSs require that for rivers and streams, the lowest condition is the lowest mean flow for seven consecutive days, recorded once in 10 years, or 7-day 10-year low flow ("7Q10"). *See* 314 CMR 4.03(3)(a).

MassDEP calculated the 7Q10 for the French Stream by using the USGS StreamStats[8] for Massachusetts watershed delineation tool.[9] The 7Q10 flow immediately upstream of the discharge was determined to be 0.18 cfs. The dilution factor (DF) was calculated using the design flow (Q_d) and the critical 7Q10 flow in the receiving water upstream of the discharge (Q_s) as follows:

$$DF = (Q_s + Q_d)/Q_d$$

Where:

Q_s = 7Q10 flow, in cfs
Q_d = Design flow, in cfs

Therefore:

$$DF = (0.18 \text{ cfs} + 3.9 \text{ cfs}) / 3.9 \text{ cfs} = 1.05$$

EPA notes that this is slightly higher than the dilution factor of 1.01 used in the 2006 Permit.

5.0 Proposed Effluent Limitations and Conditions

The proposed effluent limitations and conditions derived under the CWA and State WQSs are described below. These proposed effluent limitations and conditions, the basis of which are discussed throughout this Fact Sheet, may be found in Part I of the Draft Permit.

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[5] *Massachusetts Year 2016 Integrated List of Waters,* MassDEP Division of Watershed Management Watershed Planning Program, Worcester, Massachusetts, December 2019.
[6] Final Pathogen TMDL for the South Coastal Watershed, August 2014, Mass DEP, https://ofmpub.epa.gov/waters10/attains_impaired_waters.show_tmdl_document?p_tmdl_doc_blobs_id=67200
[7] EPA Permit Writer's Manual, Section 6.2.4
[8] See Appendix C – Rockland WWTP 7Q10 Summary
[9] USGS StreamStats for Massachusetts Interactive Map: http://water.usgs.gov/osw/streamstats.massachusetts.html

5.1 Effluent Limitations and Monitoring Requirements

In addition to the State and Federal regulations described in Section 2, data submitted by the permittee in its permit application, in monthly discharge monitoring reports (DMRs) and in WET test reports from June 2016 to May 2021 (the "review period") were used to identify the pollutants of concern and to evaluate the discharge during the effluent limitations development process (*See* Appendix A).The reasonable potential analysis is included in Appendix B and results are discussed in the sections below.

5.1.1 Effluent Flow

The effluent flow limit in the 2006 Permit is 2.5 MGD, as a 12-month rolling average flow, based on the Facility's design flow.

EPA issued Administrative Order, Docket No. 06-33 ("2006 AO"), to the Town on September 29, 2006, in response to violations of flow limitations in the 2006 Permit and a previous NPDES permit, issued in 1999. On February 15, 2007, EPA issued a modification to the 2006 Permit that changed the permitted flow limitation from a 12-month rolling average to a monthly average limitation ("2007 Permit Modification"), in order to maintain tighter monitoring and limits on possible flow violations. In the review period for this permit (June 2016 – May 2021), the Rockland WWTP reported monthly average flow violations in 28 of the 60 months. EPA also notes that the rolling 12-month average flows presented in Appendix A show 13 out of the 60 months in the review period had values above the 2.5 MGD design flow. Therefore, regardless of the averaging period, the facility is experiencing significant I/I, which results in ongoing exceedances of the facility's design flow. As noted by the MA Department of Fish and Game in the Response to Comments on the 2007 Permit Modification at 6:

> "Maintaining an actual monthly average limit will prove to be a valuable tool to mark progress on reducing surges in flow to the plant associated with wet weather events. The monthly limitation provides a truer measure of the advancements being made to bring [down] influent flows than an annual averaging method to calculate a monthly average. It is our belief the monthly average will better facilitate the plant reaching a reasonable influent level during wet weather/melt water events thus enabling the facility to treat flows effectively."

Given that I/I continue to be ongoing issues at the facility resulting in flow violations, the Draft Permit continues the 2.5 MGD monthly average flow limit from the 2006 Permit. The Draft Permit requires that flow be measured continuously and that the rolling annual average flow, as well as the average monthly and maximum daily flow for each month be reported. The rolling annual average flow is calculated as the average of the flow for the reporting month and 11 previous months.

5.1.2 Biochemical Oxygen Demand (BOD_5)

5.1.2.1 BOD_5 Concentration Limits

The summer BOD_5 limits in the 2006 Permit (effective May 1 through September 30) were included in the 1987 Rockland permit as state certification requirements under Section 401 of the CWA; the average monthly limit is 6 mg/L, the weekly average limit is 6 mg/L, and the daily maximum limit is 10 mg/L. The winter BOD_5 limits in the 2006 Permit (effective October 1 through April 30) were introduced in the 1993 permit; the average monthly limit is 20 mg/L, the weekly average limit is 20 mg/L, and the daily maximum limit is 30 mg/L.

The DMR data during the review period shows that there have been no violations of BOD_5 concentration limits.

The Draft Permit proposes the same BOD_5 concentration limits as in the 2006 Permit, in accordance with anti-backsliding and antidegradation requirements. The monitoring frequency remains twice per week.

5.1.2.2 BOD5 Mass Limits

The winter and summer mass-based BOD_5 limits in the 2006 Permit of 125 lb/day (average monthly), 125 lb/day (average weekly), and 209 lb/day (daily maximum) were based on the 1987 permitted concentration limits and the design flow of the Facility. The winter mass-based limits of 417 lb/day (average monthly), 417 lb/day (average weekly), and 626 lb/day (daily maximum) were based on the permitted concentration limits in the 1993 permit and the design flow of the facility.

The DMR data from the review period shows that there have been no exceedances of BOD_5 mass limits.

BOD_5 Mass Loading Calculations:

$$L = C_d * Q_d * 8.34$$

Where:

L = Maximum allowable load in lb/day
C_d = Maximum allowable effluent concentration, in mg/L
Q_d = Annual average design flow of Facility, in MGD
8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to lb/day

Summer Limits:

Average Monthly:	6 mg/L * 2.50 MGD * 8.34 = 125 lb/day
Average Weekly:	6 mg/L * 2.50 MGD * 8.34 = 125 lb/day
Daily Maximum:	10 mg/L * 2.50 MGD * 8.34 = 209 lb/day

Winter Limits:

Average Monthly:	20 mg/L * 2.50 MGD * 8.34 = 417 lb/day
Average Weekly:	20 mg/L * 2.50 MGD * 8.34 = 417 lb/day
Daily Maximum:	30 mg/L * 2.50 MGD * 8.34 = 626 lb/day

The mass limits and the sampling frequency of twice per week are carried forward into the Draft Permit.

5.1.3 Total Suspended Solids (TSS)

5.1.3.1 TSS Concentration Limits

The summer TSS limits in the 2006 Permit (effective May 1 through September 30) were included in the 1987 Rockland permit as state certification requirements under Section 401 of the

CWA; the average monthly limit is 10 mg/L, the weekly average limit is 10 mg/L, and the daily maximum limit is 15 mg/L. The winter TSS limits in the 2006 Permit (effective October 1 through April 30) were introduced in the 1993 permit; the average monthly limit is 20 mg/L, the weekly average limit is 20 mg/L, and the daily maximum limit is 30 mg/L.

The DMR data during the review period shows that there have been no violations of TSS concentration limits.

The Draft Permit proposes the same TSS concentration limits as in the 2006 Permit, in accordance with anti-backsliding and antidegradation requirements. The monitoring frequency remains twice per week.

5.1.3.2 TSS Mass Limits

The winter and summer mass-based TSS limits in the 2006 Permit of 209 lb/day (average monthly), 209 lb/day (average weekly), and 313 lb/day (daily maximum) were based on the 1987 permitted concentration limits and the design flow of the Facility. The winter mass-based limits of 417 lb/day (average monthly), 417 lb/day (average weekly), and 626 lb/day (daily maximum) were based on the permitted concentration limits in the 1993 permit and the design flow of the facility.

The DMR data from the review period shows that there has been one exceedance of the TSS mass weekly average limit.

TSS Mass Loading Calculations:

$$L = C_d * Q_d * 8.34$$

Where:
- L = Maximum allowable load, in lb/day
- C_d = Maximum allowable effluent concentration, in mg/L
- Q_d = Annual average design flow of Facility, in MGD
- 8.34 = Factor to convert effluent concentration in mg/L and design flow in MGD to lb/day

Summer Limits:

Average Monthly:	10 mg/L * 2.50 MGD * 8.34 = 209 lb/day
Average Weekly:	10 mg/L * 2.50 MGD * 8.34 = 209 lb/day
Daily Maximum:	15 mg/L * 2.50 MGD * 8.34 = 313 lb/day

Winter Limits:

Average Monthly:	20 mg/L * 2.50 MGD * 8.34 = 417 lb/day
Average Weekly:	20 mg/L * 2.50 MGD * 8.34 = 417 lb/day
Daily Maximum:	30 mg/L * 2.50 MGD * 8.34 = 626 lb/day

The mass limits and the sampling frequency of twice per week are carried forward into the Draft Permit.

5.1.4 Eighty-Five Percent (85%) BOD_5 and TSS Removal Requirement

In accordance with the provisions of 40 CFR § 133.102(a)(3), and (b)(3), the 2006 Permit requires that the 30-day average percent removal for BOD_5 and TSS be not less than 85%. The

DMR data during the review period shows that the median BOD_5 and TSS removal percentages are 98% and 99%, respectively. There were no exceedances of the 85% removal requirement for BOD_5 or TSS during that period.

The requirement to achieve 85% BOD_5 and TSS removal has been carried forward into the Draft Permit.

5.1.5 pH

Consistent with the requirements of Massachusetts WQS at 314 CMR 4.05(3)(b)(3), the Permit requires that the pH of the effluent is not less than 6.5 or greater than 8.3 standard units at any time. The monitoring frequency is once per day. The DMR data during the review period show that there have been no exceedances of the pH limitations.

The pH requirements in the 2006 Permit are carried forward into the Draft Permit as there has been no change in the WQS with regards to pH. The limitations are based on CWA 301(b)(1)(C) and 40 CFR § 122.44(d).

5.1.6 Bacteria

The 2006 Permit includes effluent limitations for bacteria using fecal coliform bacteria as the indicator bacteria with a monthly limit of 200 colony forming units (cfu)/100 mL and a daily maximum limit of 400 cfu/100 mL. These limits were based on the applicable WQS at the time the permit was issued.

Consistent with the South Coastal Watershed TMDL[10] and Massachusetts' bacteria criteria at 314 CMR 4.05(3)(b)4.a, the bacteria limits proposed in the Draft Permit are 126 colonies *E. coli*/100 ml as a geometric mean and 409 colonies *E. coli*/100 ml maximum daily value (this is the 90% distribution of the geometric mean of 126 colonies/100 ml[11]). The bacteria limits apply year-round and the monitoring frequency is three per week. Due to the 2007 update in the Massachusetts bacteria criteria for freshwaters from fecal coliform to *E. coli*, the fecal coliform limits will be removed in the Draft Permit.

Given that this is a new limit, a one-year compliance schedule has been included in the Draft Permit to allow the Permittee time optimize disinfection at the facility to ensure compliance with the limit. During this first year, the Permittee must comply with interim fecal coliform limits of 200 cfu/100 mL (monthly average) and 400 cfu/100 mL (daily maximum).

5.1.7 Dissolved Oxygen

The 2006 Permit includes a dissolved oxygen minimum limit of 7.4 mg/L, effective May 1 through September 30. This requirement was established to assure that dissolved oxygen levels remain above the state water quality standard of 5.0 mg/L particularly during low flow periods. Mass DEP determined that the minimum effluent DO must be 7.4 mg/L as part of a load allocation for the Rockland STP, as stated in a 1974 memorandum from Glenn Haas to Russell

[10] Final Pathogen TMDL for the South Coastal Watershed, August 2014, Mass DEP, https://ofmpub.epa.gov/waters10/attains_impaired_waters.show_tmdl_document?p_tmdl_doc_blobs_id=67200
[11] MassDEP, "Draft 6/25/2007 Guidance on Implementation of Proposed Primary Contact Recreation Bacteria in Massachusetts Surface Water Quality Standards, 314 CMR 4.00," 2007, p. 11, Table 2.

Issac (See also MassDEP letter to Al Curran of M&E, dated, June 10, 1975). The DMR data during the review period show that there have been no violations of the DO limitations.

The Draft Permit carries forward the seasonal minimum effluent DO limitation of 7.4 mg/L, effective May 1 through September 30.

5.1.8 Total Residual Chlorine

The Permittee uses chlorine disinfection. The 2006 Permit includes effluent limitations for total residual chlorine (TRC) of 11 μg/L (average monthly) and 19 μg/L (maximum daily). The DMR data during the review period show that there have been no exceedances of the TRC limitations.

The TRC permit limits are based on the instream chlorine criteria defined in *National Recommended Water Quality Criteria: 2002*, EPA 822R-02-047 (November 2002), as adopted by the MassDEP into the state water quality standards at 314 CMR 4.05(5)(e). These freshwater instream criteria for chlorine are 11 μg/L (chronic) and 19 μg/L (acute). Because the upstream chlorine is assumed to be zero in this case, the water quality-based chlorine limits are calculated as the criteria times the dilution factor, as follows:

Chronic criteria * dilution factor = Chronic limit
11 μg/L * 1.05 = 11.6 μg/L (average monthly)

Acute criteria * dilution factor = Acute limit
19 μg/L * 1.05 = 20 μg/L (maximum daily)

Although these limits are slightly less stringent that the limits in the 2006 Permit (based on the revised dilution factor), the limits in the 2006 Permit are carried forward based on anti-backsliding requirements discussed in Section 2.6 above.

5.1.9 Ammonia

The 2006 Permit includes the following ammonia effluent limitations:

	Average Monthly	Average Weekly	Maximum Daily
October 1 - March 31	3.3 mg/L	3.3 mg/L	5.7 mg/L
April 1 - May 31	2.5 mg/L	2.5 mg/L	5.7 mg/L
June 1 - September 30	1.0 mg/L	1.0 mg/L	1.5 mg/L

The DMR data during the review period shows there were 6 exceedances of the ammonia limits. The effluent data and ambient data (taken upstream of the Rockland outfall in the French Stream) from within the review period are presented in Appendix A.

The ammonia criteria in EPA's *National Recommended Water Quality Criteria,* 2002 (EPA 822-R-02-047) document are included by reference in the Massachusetts WQS (*See* 314 CMR 4.05(5)(e)). The freshwater acute criterion is dependent on pH and the freshwater chronic criterion is dependent on pH, temperature and whether early life stages of fish are present in the receiving water. The marine water quality criteria are dependent on pH and temperature.

In determining whether the discharge has the reasonable potential to cause or contribute to excursions above the instream water quality criteria for ammonia, EPA used the mass balance equation presented in Appendix B for both warm and cold weather conditions to project the ammonia concentration downstream of the discharge. If there is reasonable potential, this mass balance equation is also used to determine the limit that is required in the permit.

EPA notes that since the 2006 Permit already contained limits for ammonia, the same mass balance equation is used to determine if a more stringent limit would be required to continue to meet WQS under current conditions. The limit is determined to be the more stringent of either (1) the existing limit or (2) the calculated effluent concentration (C_d) allowable to meet WQS based on current conditions.

To determine the applicable ammonia criteria, EPA assumes a warm weather (April 1 – September 30) temperature of 25° C and a cold weather (October 1 – March 31) temperature of 5° C. EPA used the ambient pH monitoring shown in Appendix A, which indicates that the median pH is 7.07 S.U.

Based on the information and assumptions described above, Appendix B presents the applicable ammonia criteria, the details of the mass balance equation, the reasonable potential determination, and, if necessary, the limits required in the Draft Permit. As shown, there is no need for more stringent limits to continue to protect WQS so the existing limits are being carried forward for the reasons specified in Appendix B.

Effluent and ambient monitoring for ammonia will continue to be required in the quarterly WET tests.

5.1.10 Nutrients

Nutrients are compounds containing nitrogen and phosphorus. Although nitrogen and phosphorus are essential for plant growth, high concentrations of these nutrients can cause eutrophication, a condition in which aquatic plant and algal growth is excessive. Plant and algae respiration and decomposition reduces dissolved oxygen in the water, creating poor habitat for fish and other aquatic animals. Recent studies provide evidence that both phosphorus and nitrogen can play a role in the eutrophication of certain ecosystems. However, typically phosphorus is the limiting nutrient triggering eutrophication in freshwater ecosystems and nitrogen in marine or estuarine ecosystems. Given that this discharge is to a freshwater ecosystem which also reaches a marine ecosystem farther downstream, both phosphorus and nitrogen are nutrients of concern evaluated below.

5.1.10.1 Total Nitrogen

The Rockland WWTF discharges into a man-made channel that feeds into the French Stream, which flows to the Drinkwater River, then into the North River, which discharges to Massachusetts Bay. The 2006 Permit did not require monitoring for total nitrogen. However, data is necessary to determine whether there is reasonable potential for nitrogen discharges from the Facility to cause or contribute to a violation of the Massachusetts narrative nutrient criteria in Massachusetts Bay, particularly data that characterizes aquatic life designated uses that may be affected in this area so that the narrative criteria can be interpreted numerically. In the meantime, EPA finds that quantifying the load of total nitrogen from this Facility (as well as all other facilities in the watershed that discharge significant levels of nitrogen) is an important step to understanding the impact of nitrogen loading in the Massachusetts Bay.

The Draft Permit includes new weekly monitoring and reporting requirements for total nitrate plus total nitrite, total Kjeldahl nitrogen (TKN) and total nitrogen from April through October and monthly monitoring and reporting from November through March. The monitoring data will provide additional information on the loading of nitrogen and the impact to Massachusetts Bay.

5.1.10.2 Total Phosphorus

While phosphorus is an essential nutrient for the growth of aquatic plants, it can stimulate rapid plant growth in freshwater ecosystems when it is present in high quantities.

The excessive growth of aquatic plants and algae within freshwater systems negatively impacts water quality and can interfere with the attainment of designated uses by: 1) increasing oxygen demand within the water body to support an increase in both plant respiration and the biological breakdown of dead organic (plant) matter;[12] 2) causing an unpleasant appearance and odor; 3) interfering with navigation and recreation, for instance, by fouling engines and propellers, making waters unappealing to swimmers, and interfering with fishing lures and equipment; 4) reducing water clarity; 5) reducing the quality and availability of suitable habitat for aquatic life; and 6) producing toxic cyanobacteria during certain algal blooms. Cultural (or accelerated) eutrophication is the term used to describe dense and excessive plant growth in a water body that results from nutrients entering the system as a result of human activities. Discharges from municipal and industrial wastewater treatment plants, agriculture runoff, and stormwater are examples of human-derived (*i.e.*, anthropogenic) sources of nutrients in surface waters. See generally, *Nutrient Criteria Technical Guidance Manual – Rivers and Streams*, EPA July 2000 [EPA-822-B-00-002], Chapters 1 and 3.

The MA WQS under 314 CMR 4.05(5)(c) requires that, unless naturally occurring, surface waters must be free from nutrients that cause or contribute to impairment of the existing or designated uses, and the concentration of phosphorus may not exceed site specific criteria developed in a TMDL. Nutrients are also prohibited in concentrations that would cause or contribute to cultural eutrophication. Cultural eutrophication also results in exceedances of other nutrient-related water quality standards such as low dissolved oxygen, decreased water clarity, objectionable odors, and surface scum. The MA WQS at 314 CMR 4.05(3)(b)(1) requires that dissolved oxygen not be less than 6.0 mg/L in cold water fisheries or 5.0 mg/L in warm water fisheries. Further, the MA WQS at 4.05(3)(b)(5), (6) and (8) state that waters must be free from "floating, suspended, and settleable solids," free from "color and turbidity in concentrations or combinations that are aesthetically objectionable…", and have no taste and odor "in such concentrations or combinations that are aesthetically objectionable, that would impair any use

[12] "Algae" includes phytoplankton (microscopic algae measured by levels of chlorophyll a), macroalgae (commonly referred to as seaweed), and other plants stimulated by nutrient over-enrichment. Excessive algal growth contributes to low levels of dissolved oxygen through increased plant respiration and decomposition of dead plant matter. Notably, during the day, algae provide oxygen to the water as a by-product of photosynthesis. At night, however, when photosynthesis ceases but plant respiration continues, dissolved oxygen levels decline. Additionally, as these algae die, they are decomposed by bacteria that consume yet more oxygen. When dissolved oxygen levels are low, aquatic organisms become stressed and die, and overall aquatic health is degraded.

assigned to this Class, or that would cause tainting or undesirable flavors in the edible portions of aquatic life." To prevent cultural eutrophication, the MA WQS at 4.05(5)(c) states that "Any existing point source discharge containing nutrients in concentrations that would cause or contribute to cultural eutrophication, including the excessive growth of aquatic plants or algae, in any surface water shall be provided with the most appropriate treatment as determined by the Department, including, where necessary, highest and best practical treatment (HBPT) for POTWs and BAT for non POTWs, to remove such nutrients to ensure protection of existing and designated uses." Also see Part 2.2.2 of this Fact Sheet above regarding antidegradation and existing uses which may be impacted by nutrient over-enrichment.

When permitting nutrient discharges, EPA analyzes available information from a reasonably conservative standpoint, as it regards one key function of a nutrient limit as preventative. This protective approach is appropriate because, once begun, the cycle of eutrophication can be difficult to reverse due to the tendency of nutrients to be retained in the sediments. For this reason, time is of the essence when permitting for nutrients, so EPA acts on the best information reasonably available when developing the draft permit, and does not generally delay permit issuance pending collection of new data or development of new models. This approach is also consistent with the requirement for NPDES permits to be revisited and reissued at regular intervals, with permit terms not to exceed five years.

When translating narrative phosphorus criteria into numeric values (and establishing WQBELs, if necessary), EPA looks to a wide range of materials, including nationally recommended criteria and other relevant materials, such as EPA nutrient technical guidance and information published under Section 304(a) of the CWA, peer-reviewed scientific literature and site-specific surveys and data to determine instream targets that are protective of water quality. See 40 CFR § 122.44(d)(1)(vi)(A), (B).

EPA has produced several guidance documents, described below, that recommend a range of total ambient phosphorus concentrations that are sufficiently stringent to control cultural eutrophication and other adverse nutrient-related impacts, with 0.1 mg/L representing the upper end of this range. These guidance documents recommend protective in-stream phosphorus concentrations based on two different analytical approaches. An effects-based approach provides a threshold value above which adverse effects (*i.e.*, water quality impairments) are likely to occur. This approach applies empirical observations of a causal variable (*i.e.*, phosphorus) and a response variable (*i.e.*, chlorophyll-a as a measure of algal biomass) associated with designated use impairments. Alternatively, reference-based values are statistically derived from a comparison within a population of rivers in the same ecoregion class. They are a quantitative set of river characteristics (physical, chemical and biological) that represent conditions in waters in that ecoregion that are minimally impacted by human activities (*i.e.*, reference conditions), and thus by definition representative of water without cultural eutrophication. Dischargers in Massachusetts and New Hampshire are located within either Ecoregion VII, Nutrient-Poor, Largely Glaciated Upper Midwest and Northeast or Ecoregion XIV, Eastern Coastal Plains. The recommended total phosphorus criteria for these ecoregions are 10 µg/L and 31.25 µg/L, respectively. While reference conditions reflect in-stream phosphorus concentrations that are sufficiently low to meet the requirements necessary to support designated uses, they may also represent levels of water quality beyond what is necessary to support such uses.

EPA follows an effects-based approach. EPA's 1986 *Quality Criteria for Water* (the "Gold Book") recommends maximum threshold concentrations that are designed to prevent or control adverse nutrient-related impacts from occurring. Specifically, the Gold Book recommends in-stream phosphorus concentrations of no greater than 0.05 mg/L in any stream entering a lake or reservoir, 0.1 mg/L for any stream not discharging directly to lakes or impoundments, and 0.025 mg/L within a lake or reservoir. For this segment of the French Stream, 0.1 mg/L would apply downstream of the discharge.

The Gold Book recommended value of 0.1 mg/L is coterminous with the range of published, peer-review values presented in a more recent EPA technical guidance manual, *Nutrient Criteria Technical Guidance Manual – Rivers and Streams*, EPA July 2000 [EPA-822-B-00-002], Chapter 7 Table 4 (a simplified version of this table is shown as Table 1 below), which contains recommended threshold ambient concentrations (all more stringent than 0.1 mg/L) drawn from the scientific literature that are sufficiently stringent to control periphyton and plankton (two types of aquatic plant growth associated with eutrophication). This guidance indicates that in-stream phosphorus concentrations between 0.01 mg/L and 0.09 mg/L will be sufficient to control periphyton growth and concentrations between 0.035 mg/L and 0.070 mg/L will be sufficient to control plankton.

Table 1: Recommended Nutrient Levels to Prevent Eutrophic Impairment

PERIPHYTON Maximum			
TP (µg/L)	**Chlorophyll a (µg/L)**	**Impairment Risk**	**Source**
38-90	100-200	nuisance growth	Dodds et al. 1997
75	200	eutrophy	Dodds et al. 1998
20	150	nuisance growth	Clark Fork River Tri-State Council, MT
20		*Cladophora* nuisance growth	Chetelat et al. 1999
10-20		*Cladophora* nuisance growth	Stevenson unpubl. Data
PLANKTON Mean			
TP (µg/L)	**Chlorophyll a (µg/L)**	**Impairment Risk**	**Source**
42	8	eutrophy	Van Nieuwenhuyse and Jones 1996
70	15	chlorophyll action level	OAR 2000
35	8	eutrophy	OECD 1992 (for lakes)

The published, peer-reviewed phosphorus targets are thus 0.1 mg/L or below, irrespective of the methodological approach employed. In addition to opting for the less stringent of the available approaches (*i.e.*, effects-based in favor of reference-based), EPA has chosen to apply the upper end of the range of all available published nutrient thresholds. However, as the Gold Book notes, there are natural conditions of a water body that can result in either increased or reduced eutrophic response to phosphorus inputs; in some waters more stringent phosphorus reductions may be needed, while in some others a higher total phosphorus threshold could be assimilated without inducing a eutrophic response. EPA is not aware of any site-specific factors relevant to the receiving water that would result in it being unusually more or less susceptible to phosphorus loading.

Prior to a consideration of site-specific information and data relevant to the discharge, EPA observes that its overall approaches to establishing both phosphorus and nitrogen effluent limitations in NPDES permits have been extensively adjudicated over the past fifteen years, and they have been found to be reasonable and upheld by both the Environmental Appeals Board and the United States Court of Appeals for the First Circuit. Petitions for certiorari have twice been denied by the United States Supreme Court for Region 1 nutrient permitting (total phosphorus and total nitrogen) decisions under 40 CFR § 122.44(d)(1)(vi) in recent years. Should the public wish to review these decisions, they are available here:

City of Taunton v. EPA (EAB and First Circuit, Supreme Court cert. denied)

https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Case~Name/0A045314B61E682785257FA80054E600/$File/Denying%20Review%20Vol-17.pdf
https://yosemite.epa.gov/oa/eab_web_docket.nsf/A568248B44D1C63785258053005AEDD0/$File/Opinion%207.9.2018%20(46%20pages).pdf

Upper Blackstone Water Pollution Abatement Dist. v. EPA (EAB and First Circuit, Supreme Court cert. denied)

https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Case~Name/A44361EC4C211B0685257865006EA1EC/$File/Upper%20Blackstone.pdf
https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/2D0D249E441A18F185257B6600725F04/$File/October%2018%202017.pdf

In re City of Lowell, MA (2020)

https://yosemite.epa.gov/OA/EAB_WEB_Docket.nsf/Filings%20By%20Appeal%20Number/6D63DE203BB980D2852585960069906D/$File/City%20of%20Lowell.pdf

In re Town of Newmarket Wastewater Treatment Plant (2013)

https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/Case~Name/97CCD304C9B7E58585257C3500799108/$File/Newmarket%20Decision%20Vol%2016.pdf

In re City of Attleboro MA Wastewater Treatment Plant (2009)

https://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/NPDES%20Permit%20Appeals%20(CWA)/D506EBEE22A1035E8525763300499A78/$File/Attleboro.pdf

EPA adheres to the overarching decision-making framework for nutrient permitting established by these precedents: administrative and judicial bodies have expressly found EPA's approach to be reasonable under the Act and, for its part, EPA has found the approach in its experience to be workable, expeditious, as well as demonstrably effective in addressing nutrient pollution, in a manner that is neither overly stringent, nor overly lax. While drawing on information from the scientific literature and national and regional EPA guidance, EPA also accounts for site-specific facts and circumstances surrounding the discharge and receiving waters in arriving at the permit result. EPA acknowledges that there are a range of alternative technical approaches and opinions when permitting for nutrients to ensure that uses for the waters designated by the state for its citizens are achieved; while some of these may have merit, EPA's existing approach has been proven to have merit and provides predictability for the regulated community.

Sampling data from 2006[13], summarized in Table 2, reported five summer in-stream phosphorus concentrations collected at Station W0898 located 4200 feet upstream of the Rockland WWTP.

Table 2: Instream total phosphorus concentrations (mg/L)

	W-0898 4200' upstream of WWTP
6/21/2006	0.024
7/06/2006	0.041
8/02/2006	0.022
9/06/2006	0.030
10/11/2006	0.031

EPA notes that since the 2006 Permit already contained a limit for phosphorus, EPA uses the mass balance equation presented in Appendix B to determine if a more stringent limit would be required to continue to meet WQS under current conditions. The limit is determined to be the more stringent of either (1) the existing limit or (2) the calculated effluent concentration (C_d) allowable to meet WQS based on current conditions.

Based on the phosphorus criterion described above, the ambient data presented above, the upstream 7Q10 flow, and the design flow of the Facility, Appendix B presents the details of the mass balance equation, the determination of whether the existing limit needs to be more stringent in order to continue to protect WQS. EPA notes that based on the very low 7Q10 and small dilution factor, the ambient phosphorus data presented above does not have any impact on the calculations. As shown, it was determined that the projected downstream concentration is 190 µg/L, which exceeds the instream target of 100 µg/L. Therefore, 2006 Permit had a limit of 0.2 mg/L and EPA determined that a more stringent limit of 0.1 mg/L (applicable from April 1 through October 31) is necessary to continue to protect WQS for the reasons specified in Appendix B. Additionally, the 2006 permit contains a winter (November 1- March 31) total phosphorus limit of 1.0 mg/l that is being carried forward. However, the 2006 Permit requirement to monitor for orthophosphorus is no longer necessary and has been removed in the Draft Permit.

Based on the phosphorus data during the review period (ranging from 0.1 to 0.2 mg/L), EPA anticipates that the Facility will be unable to achieve the warm weather effluent limit of 0.1 mg/L upon the effective date of the permit. However, given that the effluent data ranges from 0.1 to 0.2 mg/L, EPA anticipates that the Facility may be able to come into compliance through chemical addition and/or optimization efforts and that a major facility upgrade is likely not necessary. Therefore, a 3-year compliance schedule has been included in the Draft Permit, *See* Part I.G.2. The schedule includes one year to evaluate potential treatment process changes (such

[13] https://www.mass.gov/guides/water-quality-monitoring-program-data

as chemical addition), one year to implement any process changes necessary to meet the limit, and an additional year to optimize the facility after those changes have been implemented. A status report is due every 12 months. If it is determined after the first year of evaluation that a major upgrade is necessary or if the Permittee is unable to comply with the limit once it becomes effective, the Permittee should reach out to EPA's Enforcement and Compliance Assurance Division (ECAD) to adjust the schedule to accommodate for additional time to achieve the phosphorus limit through alternate means.

5.1.11 Metals

5.1.11.1 Applicable Metals Criteria

State water quality criteria for cadmium, copper, lead, nickel and zinc are established in terms of dissolved metals. However, many inorganic components of domestic wastewater, including metals, are in particulate form, and differences in the chemical composition between the effluent and the receiving water affects the partitioning of metals between the particulate and dissolved fractions as the effluent mixes with the receiving water, often resulting in a transition from the particulate to dissolved form (*The Metals Translator: Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion* (USEPA 1996 [EPA-823-B96-007]). Consequently, quantifying only the dissolved fraction of metals in the effluent prior to discharge may not accurately reflect the biologically-available portion of metals in the receiving water. Regulations at 40 CFR § 122.45(c) require, with limited exceptions, that effluent limits for metals in NPDES permits be expressed as total recoverable metals.

The criteria for cadmium, lead, nickel and zinc are hardness-dependent using the equations in EPA's National Recommended Water Quality Criteria: 2002, which are incorporated into the Massachusetts WQS by reference. The estimated hardness of the French Stream downstream of the treatment plant is calculated using the critical low flow (7Q10), the design flow of the treatment plant, and the median hardness for both the receiving water upstream of the discharge and the treatment plant effluent. Effluent and receiving water data are presented in Appendix A. Using the mass balance equation discussed in Appendix B, the resulting downstream hardness is 140.4 mg/L and the corresponding criteria are also presented in Appendix B.

The Massachusetts WQSs at 314 CMR 4.06, Table 28 list site specific criteria for copper in the French Stream from River mile 3.3 to 0.0 (its mouth at the confluence with the Drinkwater River, Hanover). The site-specific criteria listed for the French Stream are an acute copper criterion of 25.7 μg/L and a chronic copper criterion of 18.1 μg/L. These criteria will be applied as presented in Appendix B.

Massachusetts aluminum criteria are not hardness-dependent and are expressed as total recoverable aluminum.

5.1.11.2 Reasonable Potential Analysis and Limit Derivation

To determine whether the effluent has the reasonable potential to cause or contribute to an exceedance above the in-stream water quality criteria for each metal, EPA uses the mass balance equation presented in Appendix B to project the concentration downstream of the discharge and, if applicable, to determine the limit required in the permit.

For any metal with an existing limit in the 2006 Permit, the same mass balance equation is used to determine if a more stringent limit would be required to continue to meet WQS under current conditions. The limit is determined to be the more stringent of either (1) the existing limit or (2) the calculated effluent concentration (C_d) allowable to meet WQS based on current conditions.

Based on the information described above, the results of this analysis for each metal are presented in Appendix B.

As shown, there is no reasonable potential to cause or contribute to an excursion of WQS for cadmium, lead, nickel, and zinc, so the Draft Permit does not propose any new limits for these metals.

Additionally, there is no need for a more stringent copper limit to continue to protect WQS, so the existing limits are being carried forward for the reasons specified in Appendix B.

Finally, the 2006 Permit had a chronic aluminum limit of 88 µg/L and EPA determined that a more stringent chronic aluminum limit of 87.2 µg/L is necessary to continue to protect WQS for the reasons specified in Appendix B. EPA notes that the maximum aluminum concentration during the review period was 33 µg/L, so EPA anticipates that the facility will be in compliance with this slightly lower limit and a compliance schedule it not necessary.

Effluent and ambient monitoring for each of these metals will continue to be required in the WET tests.

5.1.12 Whole Effluent Toxicity (WET)

CWA §§ 402(a)(2) and 308(a) provide EPA and States with the authority to require toxicity testing. Section 308 specifically describes biological monitoring methods as techniques that may be used to carry out objectives of the CWA. WET testing is conducted to ensure that the additivity, antagonism, synergism and persistence of the pollutants in the discharge do not cause toxicity, even when the pollutants are present at low concentrations in the effluent. The inclusion of WET requirements in the Draft Permit will assure that the Facility does not discharge combinations of pollutants into the receiving water in amounts that would be toxic to aquatic life or human health.

In addition, under CWA § 301(b)(1)(C), discharges are subject to effluent limitations based on WQSs. Under CWA §§ 301, 303 and 402, EPA and the States may establish toxicity-based limitations to implement the narrative water quality criteria calling for "no toxics in toxic amounts". *See also* 40 CFR § 122.44(d)(1). The Massachusetts WQSs at 314 CMR 4.05(5)(e) state, "All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife."

National studies conducted by EPA have demonstrated that domestic sources, as well as industrial sources, contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. Some of these constituents may cause synergistic effects, even if they are present in low concentrations. Because of the source variability and contribution of toxic constituents in domestic and industrial sources, reasonable potential may exist for this discharge to cause or contribute to an exceedance of the "no toxics in toxic amounts" narrative water quality standard.

In accordance with current EPA guidance and State policy[14], whole effluent chronic effects are regulated by limiting the highest measured continuous concentration of an effluent that causes no observed chronic effect on a representative standard test organism, known as the chronic No Observed Effect Concentration (C-NOEC). Whole effluent acute effects are regulated by limiting the concentration that is lethal to 50% of the test organisms, known as the LC_{50}. This policy recommends that permits for discharges having a dilution factor less than 10 require acute and chronic toxicity testing four times per year for two species. Additionally, for discharges with dilution factors less than 10, the C-NOEC effluent limit should be greater than or equal to 100%/DF and the LC_{50} limit should be greater than or equal to 100%.

The chronic and acute WET limits in the 2006 Permit are C-NOEC greater than or equal to 99% and LC_{50} greater than or equal to 100%, respectively, using the daphnid (*Ceriodaphnia dubia*) as the test species. EPA has previously approved a reduction to one test species. During the review period the facility exceeded the chronic WET limit twice (See Appendix A).

Based on the potential for toxicity from domestic and industrial contributions, the state narrative water quality criterion, the dilution factor of 1.05, and in accordance with 40 CFR § 122.44(d), the Draft Permit continues the effluent limits from the 2006 Permit including the test organism and the testing frequency. EPA notes that the updated DF of 1.05 would result in a C-NOEC limit of 95% (*i.e.*, 100/1.05 = 0.95) but the limit of 99% is carried forward based on anti-backsliding requirements discussed in Section 2.6 above. Toxicity testing must be performed in accordance with the updated EPA Region 1 WET test procedures and protocols specified in Attachments A, *Freshwater Acute Toxicity Test Procedure and Protocol* (February 2011) and Attachment B, *Freshwater Chronic Toxicity Test Procedure and Protocol* (March 2013) of the Draft Permit.

In addition, EPA's 2018 *National Recommended Water Quality Criteria* for aluminum are calculated based on water chemistry parameters that include dissolved organic carbon (DOC), hardness and pH. Since aluminum monitoring is required as part of each WET test, an accompanying new testing and reporting requirement for DOC, in conjunction with each WET test, is warranted in order to assess potential impacts of aluminum in the receiving water.

5.1.13 Per- and polyfluoroalkyl substances (PFAS)

As explained at https://www.epa.gov/pfas, PFAS are a group of synthetic chemicals that have been in use since the 1940s. PFAS are found in a wide array of consumer and industrial products. PFAS manufacturing and processing facilities, facilities using PFAS in production of other products, airports, and military installations can be contributors of PFAS releases into the air, soil, and water. Due to their widespread use and persistence in the environment, most people in the United States have been exposed to PFAS. Exposure to some PFAS above certain levels may

[14] *Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters.* February 23, 1990.

increase risk of adverse health effects.[15] EPA is collecting information to evaluate the potential impacts that discharges of PFAS from wastewater treatment plants may have on downstream drinking water, recreational and aquatic life uses.

<u>Background Information for Massachusetts</u>

On October 20, 2020, MassDEP published final regulations establishing a drinking water standard, or a Maximum Contaminant Level (MCL) of 20 parts per trillion (ppt) for the sum of the following six PFAS. *See* 310 CMR 22.00.

- Perfluorohexanesulfonic acid (PFHxS)
- Perfluoroheptanoic acid (PFHpA)
- Perfluorononanoic acid (PFNA)
- Perfluorooctanesulfonic acid (PFOS)
- Perfluorooctanoic acid (PFOA)
- Perfluorodecanoic acid (PFDA)

Although the Massachusetts water quality standards do not include numeric criteria for PFAS, the Massachusetts narrative criterion for toxic substances at 314 CMR 4.05(5)(e) states:

> All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life or wildlife.

The narrative criterion is further elaborated at 314 CMR 4.05(5)(e)2 which states:

> Human Health Risk Levels. Where EPA has not set human health risk levels for a toxic pollutant, the human health-based regulation of the toxic pollutant shall be in accordance with guidance issued by the Department of Environmental Protection's Office of Research and Standards. The Department's goal is to prevent all adverse health effects which may result from the ingestion, inhalation, or dermal absorption of toxins attributable to waters during their reasonable use as designated in 314 CMR 4.00.

Since PFAS chemicals are persistent in the environment and may lead to adverse human health and environmental effects, the Draft Permit requires that the Facility conduct quarterly influent, effluent and sludge sampling for PFAS chemicals and annual sampling of certain industrial users, the first full calendar quarter beginning six months after EPA has notified the Permittee that appropriate, multi-lab validated test methods are made available by EPA to the public.

The purpose of this monitoring and reporting requirement is to better understand potential discharges of PFAS from this facility and to inform future permitting decisions, including the potential development of water quality-based effluent limits on a facility specific basis. EPA is authorized to require this monitoring and reporting by CWA § 308(a), which states:

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[15] EPA, *EPA's Per- and Polyfluoroalkyl Substances (PFAS) Action Plan,* EPA 823R18004, February 2019. Available at: https://www.epa.gov/sites/production/files/2019-02/documents/pfas_action_plan_021319_508compliant_1.pdf

> "SEC. 308. (a) Whenever required to carry out the objective of this Act, including but not limited to (1) developing or assisting in the development of any effluent limitation, or other limitation, prohibition, or effluent standard, pretreatment standard, or standard of performance under this Act; (2) determining whether any person is in violation of any such effluent limitation, or other limitation, prohibition or effluent standard, pretreatment standard, or standard of performance; (3) any requirement established under this section; or (4) carrying out sections 305, 311, 402, 404 (relating to State permit programs), 405, and 504 of this Act—
>
> (A) the Administrator shall require the owner or operator of any point source to (i) establish and maintain such records, (ii) make such reports, (iii) install, use, and maintain such monitoring equipment or methods (including where appropriate, biological monitoring methods), (iv) sample such effluents (in accordance with such methods, at such locations, at such intervals, and in such manner as the Administrator shall prescribe), and (v) provide such other information as he may reasonably require;".

Since an EPA method for sampling and analyzing PFAS in wastewater and sludge is not currently available, the PFAS sampling requirement in the Draft Permit includes a compliance schedule which delays the effective date of this requirement until the first full calendar quarter beginning 6 months after EPA has notified the Permittee that a multi-lab validated method for wastewater and biosolids is made available to the public on EPA's CWA methods program websites. For wastewater see https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-chemical and https://www.epa.gov/cwa-methods. For biosolids, see https://www.epa.gov/cwa-methods/other-clean-water-act-test-methods-biosolids. EPA expects these methods will be available by the end of 2021. This approach is consistent with 40 CFR § 122.44(i)(1)(iv)(B) which states that in the case of pollutants or pollutant parameters for which there are no approved methods under 40 CFR Part 136 or methods are not otherwise required under 40 CFR chapter I, subchapter N or O, monitoring shall be conducted according to a test procedure specified in the permit for such pollutants or pollutant parameters.

5.2 Industrial Pretreatment Program

The Permittee is required to administer a pretreatment program under 40 CFR part 403. *See also* CWA § 307; 40 CFR 122.44(j). The permittee's pretreatment program received EPA approval on September 28, 1990 and, as a result, appropriate pretreatment program requirements were incorporated into the previous permit, which were consistent with that approval and federal pretreatment regulations in effect when the permit was issued.

The Federal Pretreatment Regulations in 40 CFR part 403 were amended in October 1988, in July 1990, and again in October 2005. Those amendments established new requirements for implementation of pretreatment programs. Upon reissuance of this NPDES permit, the permittee is obligated to modify its pretreatment program to be consistent with current Federal Regulations. The activities that the permittee must address include, but are not limited to, the following: 1) develop and enforce EPA-approved specific effluent limits (technically-based local limits); 2) revise the local sewer-use ordinance or regulation, as appropriate, to be consistent with Federal Regulations; 3) develop an enforcement response plan; 4) implement a slug control evaluation program; 5) track significant noncompliance for industrial users; and 6) establish a definition of and track significant industrial users.

These requirements are necessary to ensure continued compliance with the POTW's NPDES permit and its sludge use or disposal practices.

In addition to the requirements described above, the Draft Permit requires the permittee to submit to EPA in writing, within 180 days of the permit's effective date, a description of proposed changes to permittee's pretreatment program deemed necessary to assure conformity with current federal pretreatment regulations. These requirements are included in the Draft Permit to ensure that the pretreatment program is consistent and up-to-date with all pretreatment requirements in effect. Lastly, the permittee must continue to submit, annually by October 1st, a pretreatment report detailing the activities of the program for the twelve-month period ending 60 days prior to the due date.

5.3 Sludge Conditions

Section 405(d) of the Clean Water Act requires that EPA develop technical standards regarding the use and disposal of sewage sludge. On February 19, 1993, EPA promulgated technical standards. These standards are required to be implemented through permits. The conditions in the permit satisfy this requirement.

5.4 Infiltration/Inflow (I/I)

Infiltration is groundwater that enters the collection system though physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems. Significant I/I in a collection system may displace sanitary flow, reducing the capacity and the efficiency of the treatment works and may cause bypasses to secondary treatment. It greatly increases the potential for sanitary sewer overflows (SSOs) in separate systems, and combined sewer overflows (CSOs) in combined systems.

The Draft Permit includes a requirement for the permittee to control infiltration and inflow (I/I) within the sewer collections system it owns and operates. The permittee shall continue to implement an I/I removal program commensurate with the severity of I/I in the collection system. This program may be scaled down in sections of the collection system that have minimal I/I.

The standard permit conditions for ‘Proper Operation and Maintenance,’ found at 40 CFR § 122.41(e), require the proper operation and maintenance of permitted wastewater systems and related facilities to achieve compliance with permit conditions. The requirements at 40 CFR § 122.41(d) impose a ‘duty to mitigate,’ which requires the permittee to “take all reasonable steps to minimize or prevent any discharge in violation of the permit that has a reasonable likelihood of adversely affecting human health or the environment. EPA maintains that an I/I removal program is an integral component of ensuring permit compliance with the requirements of the permit under the provisions at 40 CFR § 122.41(d) and (e).

5.5 Operation and Maintenance of the Sewer System

General requirements for proper operation and maintenance, and mitigation have been included in Part II of the permit. Specific permit conditions have also been included in Part I.C. and I.D. of the Draft Permit. These requirements include mapping of the wastewater collection system, preparing and implementing a collection system operation and maintenance plan, reporting of unauthorized discharges including SSOs, maintaining an adequate maintenance staff, performing preventive maintenance, controlling inflow and infiltration to separate sewer collection systems (combined systems are not subject to I/I requirements) to the extent necessary to prevent SSOs and I/I related effluent exceedances at the Wastewater Treatment Facility, and maintaining alternate power where necessary. These requirements are included to minimize the occurrence of permit exceedances that have a reasonable likelihood of adversely affecting human health or the environment.

Several of the requirements in the Draft Permit are not included in the 2006 Permit, including collection system mapping and preparation of a collection system operation and maintenance plan. EPA has determined that these additional requirements are necessary to ensure the proper operation and maintenance of the collection system and has included schedules in the Draft Permit for completing these requirements.

5.6 Standard Conditions

The standard conditions of the permit are based on 40 CFR §122, Subparts A, C, and D and 40 CFR § 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

6.0 Federal Permitting Requirements

6.1 Endangered Species Act

Section 7(a) of the Endangered Species Act of 1973, as amended (ESA), grants authority and imposes requirements on Federal agencies regarding endangered or threatened species of fish, wildlife, or plants (listed species) and any habitat of such species that has been designated as critical under the ESA (a "critical habitat").

Section 7(a)(2) of the ESA requires every federal agency, in consultation with and with the assistance of the Secretary of Interior, to ensure that any action it authorizes, funds or carries out, in the United States or upon the high seas, is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat. The United States Fish and Wildlife Service (USFWS) administers section 7 consultations for freshwater species. The National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) administers section 7 consultations for marine and anadromous species.

The Federal action being considered in this case is EPA's proposed NPDES permit for the Rockland WWTF's discharges of pollutants. The Draft Permit is intended to replace the 2006 Permit in governing the Facility. As the federal agency charged with authorizing the discharge from this Facility, EPA determines potential impacts to federally listed species and initiates consultation with the Services when required under § 7(a)(2) of the ESA.

EPA has reviewed the federal endangered or threatened species of fish, wildlife, and plants in the expected action area of the outfall to determine if EPA's proposed NPDES permit could potentially impact any such listed species in this section of the French Stream (MA94-03).

Regarding protected species under the jurisdiction of NOAA Fisheries, a number of anadromous and marine species and life stages are present in Massachusetts waters. Various life stages of protected fish, sea turtles and whales have been documented in coastal and inland waters, either seasonally or year-round. In general, adult and subadult life stages of Atlantic sturgeon (*Acipenser oxyrinchus*) and adult shortnose sturgeon (*Acipenser brevirostrom*) are present in coastal waters. These sturgeon life stages are also found in some river systems in Massachusetts, along with early life stages of protected sturgeon and juvenile shortnose sturgeon. Protected sea turtles, including adult and juvenile life stages of leatherback sea turtles (*Dermochelys coriacea*), loggerhead sea turtles (*Caretta caretta*), Kemp's ridley sea turtles (*Lepidochelys kempii*) and green sea turtles (*Chelonia mydas*) are found in coastal waters and bays in Massachusetts. Adult and juvenile life stages of North Atlantic right whales (*Eubalaena glacialis*) and fin whales (*Balaenoptera physalus*) have also been documented in coastal waters and bays. In addition, this coastal area has been designated as critical habitat for North Atlantic right whale feeding.

In this case, the Facility's outfall and action area are over 15 river miles upstream from Massachusetts coastal waters where protected marine species are found. Also, while Atlantic sturgeon have been documented in the North River, their farthest upstream expected occurrence is over six miles from the Rockland WWTF's discharge and is also separated by obstacles to fish passage in the French Stream. Therefore, there are no known federally listed threatened or endangered species or their critical habitat under the jurisdiction of NOAA Fisheries in the action area of the Rockland WWTF's discharge.[16] Because the action area of the discharge is not expected to overlap with threatened or endangered species or critical habitat, consultation with NOAA Fisheries under section 7 of the ESA is not required for this federal action.

For protected species under the jurisdiction of the USFWS, the dwarf wedgemussel (*Alasmidonta heterodon*), a listed endangered species, has been documented in Massachusetts in the Connecticut River watershed. Information obtained from the USFWS indicates that the dwarf wedgemussel is not found in the French Stream or the North River. The Plymouth redbelly turtle (*Pseudemys rubriventris bangsi*) is an endangered species found in the North River Watershed. However, the expected presence of the Plymouth redbelly turtle does not overlap with the action area of the Rockland WWTF's discharge.

However, one terrestrial listed threatened species, the northern long-eared bat (*Myotis septentrionalis*) was identified as potentially occurring in the action area of the Rockland WWTF's discharge.[17] According to the USFWS, the threatened northern long-eared bat is found in the following habitats based on seasons, "winter – mines and caves; summer – wide variety of forested habitats." This species is not considered aquatic. However, because the Facility's

[16] See §7 resources for NOAA Fisheries at https://www.fisheries.noaa.gov/resource/map/greater-atlantic-region-esa-section-7-mapper.

[17] See §7 resources for USFWS at https://ecos.fws.gov/ipac/.

projected action area in the French Stream in Rockland overlaps with the general statewide range of the northern long-eared bat, EPA prepared an Effects Determination Letter for the Rockland WWTF NPDES Permit Reissuance and submitted it to USFWS. Based on the information submitted by EPA, the USFWS notified EPA by letter, dated August 6, 2021, that the permit reissuance is consistent with activities analyzed in the USFWS January 5, 2016, Programmatic Biological Opinion (PBO).[18] The PBO outlines activities that are excepted from "take" prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.). The USFWS consistency letter concluded EPA's consultation responsibilities for the Rockland WWTF NPDES permitting action under ESA section 7(a)(2) with respect to the northern long-eared bat. No further ESA section 7 consultation is required with USFWS.

At the beginning of the public comment period, EPA notified USFWS and NOAA Fisheries Protected Resources Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

No ESA consultation is required as a result of this permitting action. However, initiation of consultation is required and shall be requested by the EPA or by USFWS/NOAA Fisheries where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the analysis; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this analysis; or (c) If a new species is listed or critical habitat designated that may be affected by the identified action. No take is anticipated or exempted. If there is any incidental take of a listed species, initiation of consultation would be required.

6.2 Essential Fish Habitat

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (*see* 16 U.S.C. § 1801 *et seq.*, 1998), EPA is required to consult with the NOAA Fisheries if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat." 16 U.S.C. § 1855(b).

The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." 16 U.S.C. § 1802(10). "Adverse impact" means any impact that reduces the quality and/or quantity of EFH 50 CFR § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), or site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.
EFH is only designated for fish species for which federal Fisheries Management Plans exist. *See* 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

[18] USFWS Event Code: 05E1NE00-2021-E-13247, August 6, 2021.

Based on available EFH information, including the NOAA Fisheries EFH Mapper,[19] EPA has determined that the French Stream is not covered by the EFH designation for coastal or riverine systems at latitude 42º 08' N, longitude 70º 55' W. Therefore, consultation with NOAA Fisheries Habitat and Ecosystem Services Division under the Magnuson-Stevens Fishery Conservation and Management Act is not required.

At the beginning of the public comment period, EPA notified NOAA Fisheries Habitat and Ecosystem Services Division that the Draft Permit and Fact Sheet were available for review and provided a link to the EPA NPDES Permit website to allow direct access to the documents.

7.0 Public Comments, Hearing Requests and Permit Appeals

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, to:

Douglas MacLean
EPA Region 1
5 Post Office Square, Suite 100 (06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1608
Email: maclean.douglas@epa.gov

Prior to the close of the public comment period, any person, may submit a written request to EPA for a public hearing to consider the Draft Permit. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held if the criteria stated in 40 CFR § 124.12 are satisfied. In reaching a final decision on the Draft Permit, EPA will respond to all significant comments in a Response to Comments document attached to the Final Permit and make these responses available to the public at EPA's Boston office and on EPA's website.

Following the close of the comment period, and after any public hearings, if such hearings are held, EPA will issue a Final Permit decision, forward a copy of the final decision to the applicant, and provide a copy or notice of availability of the final decision to each person who submitted written comments or requested notice. Within 30 days after EPA serves notice of the issuance of the Final Permit decision, an appeal of the federal NPDES permit may be commenced by filing a petition for review of the permit with the Clerk of EPA's Environmental Appeals Board in accordance with the procedures at 40 CFR § 124.19.

8.0 Administrative Record

Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston

[19] NOAA EFH Mapper available at http://www.habitat.noaa.gov/protection/efh/efhmapper/

office. However, any documents relating to this draft can be requested from the individual listed above.

The administrative record on which this Draft Permit is based may be accessed at EPA's Boston office by appointment, Monday through Friday, excluding holidays from Douglas MacLean, EPA Region1, 5 Post Office Square, Suite-100 (06-4), Boston, MA 02109-3912 or via email to maclean.douglas@epa.gov.

August 2021
Date

Ken Moraff, Director
Water Division
U.S. Environmental Protection Agency

Figure 1: Location of the Rockland WWTP

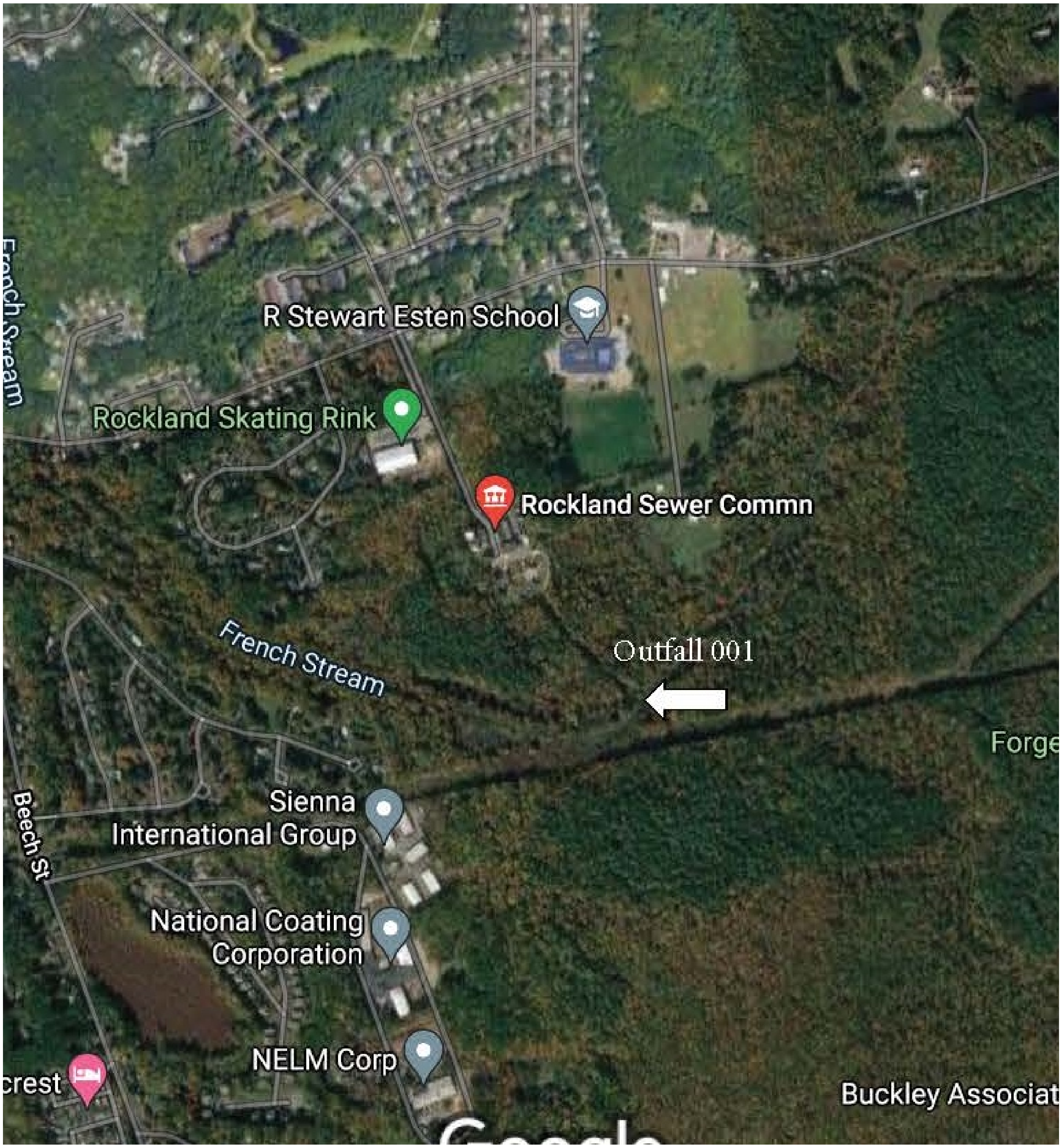


Figure 2: Flow diagram

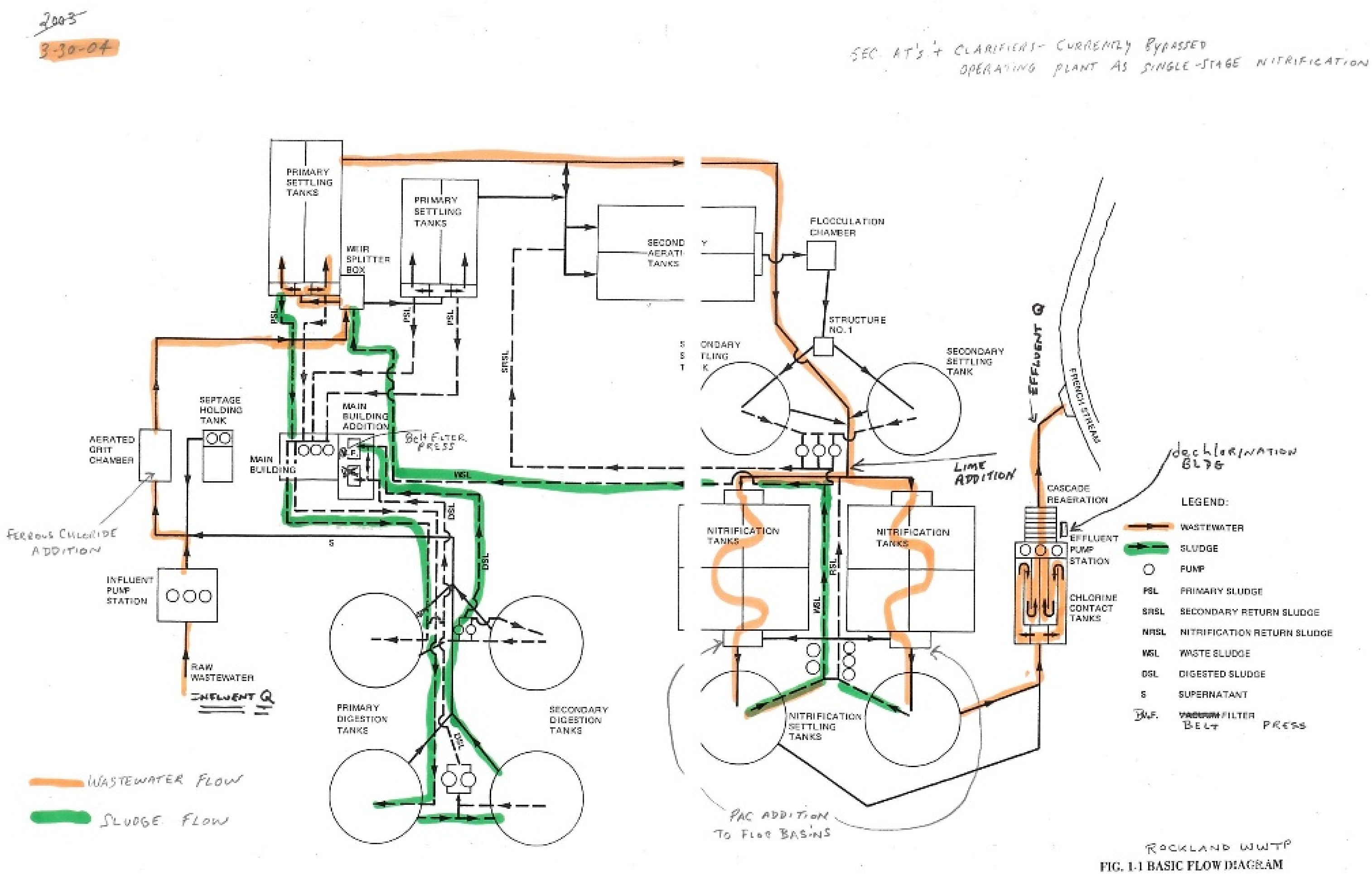


FIG. 1-1 BASIC FLOW DIAGRAM

Outfall 001

Parameter	Flow	Flow	Flow	BOD5	BOD5	BOD5	BOD5	BOD5
	Annual Rolling Ave	Monthly Ave	Daily Max	Monthly Ave	Monthly Ave	Monthly Ave	Monthly Ave	Weekly Ave
Units	MGD	MGD	MGD	lb/d	lb/d	mg/L	mg/L	lb/d
Effluent Limit	Report	2.5	Report	125	417	20	6	125
Minimum	**2**	**1.3**	**1.5**	**28**	**35**	**2**	**2**	**27**
Maximum	**2.8**	**4.3**	**6.1**	**95**	**204**	**7**	**4**	**107**
Median	**2.4**	**2.5**	**3.2**	**35**	**103**	**4**	**2**	**48**
No. of Violations	**N/A**	**28**	**N/A**	**0**	**0**	**0**	**0**	**0**
6/30/2016	2.2	1.7	2	35			2	71
7/31/2016	2.2	1.4	1.6	38			3	53
8/31/2016	2.1	1.4	1.5	36			3	46
9/30/2016	2.1	1.3	1.5	39			3	59
10/31/2016	2.1	1.5	1.8		53	4		
11/30/2016	2.1	1.6	1.8		62	4		
12/31/2016	2.1	1.9	2.2		64	4		
1/31/2017	2.1	**3**	4.7		106	4		
2/28/2017	2	**3**	3.5		109	4		
3/31/2017	2	**2.8**	3.6		107	5		
4/30/2017	2.1	**3.6**	6.1		82	3		
5/31/2017	2.2	**2.7**	3.5	55			2	62
6/30/2017	2.2	2.5	4	43			2	63
7/31/2017	2.3	1.8	2.1	34			2	44
8/31/2017	2.3	1.5	1.7	34			3	63
9/30/2017	2.3	1.4	1.7	33			3	44
10/31/2017	2.3	1.6	2.2		50	4		
11/30/2017	2.3	2	2.4		37	2		
12/31/2017	2.3	2.1	2.4		85	5		
1/31/2018	2.3	**2.9**	5.4		158	7		
2/28/2018	2.3	**3.1**	3.9		110	4		
3/31/2018	2.4	**4.1**	5.7		204	6		
4/30/2018	2.4	**3.1**	3.8		142	5		
5/31/2018	2.4	2.4	3.1	77			4	87
6/30/2018	2.3	1.7	2.1	33			2	107
7/31/2018	2.3	1.5	1.9	29			2	32
8/31/2018	2.3	1.5	1.6	28			2	40
9/30/2018	2.3	1.8	2.7	50			3	78
10/31/2018	2.4	**2.8**	4.3		103	5		
11/30/2018	2.6	**4.3**	5.5		103	3		

Outfall 001

Parameter	Flow	Flow	Flow	BOD5	BOD5	BOD5	BOD5	BOD5
	Annual Rolling Ave	Monthly Ave	Daily Max	Monthly Ave	Monthly Ave	Monthly Ave	Monthly Ave	Weekly Ave
Units	MGD	MGD	MGD	lb/d	lb/d	mg/L	mg/L	lb/d
Effluent Limit	Report	2.5	Report	125	417	20	6	125
12/31/2018	2.7	3.1	4.3		118	5		
1/31/2019	2.7	3.3	4.8		148	5		
2/28/2019	2.7	3	3.7		118	5		
3/31/2019	2.7	3.2	4.2		117	4		
4/30/2019	2.7	3.3	4.9		125	4		
5/31/2019	2.7	2.7	3.6	61			3	101
6/30/2019	2.7	2.1	2.5	51			3	71
7/31/2019	2.8	1.9	2.4	37			2	48
8/31/2019	2.8	1.6	1.9	31			2	44
9/30/2019	2.7	1.6	1.8	35			3	46
10/31/2019	2.7	1.9	2.5		37	2		
11/30/2019	2.5	2.5	3.6		67	3		
12/31/2019	2.6	3.9	5.7		197	6		
1/31/2020	2.5	2.7	3.8		80	4		
2/29/2020	2.5	2.5	2.8		137	6		
3/31/2020	2.5	2.7	3.8		90	4		
4/30/2020	2.5	4.1	6.1		115	3		
5/31/2020	2.5	3.1	4.3	95			4	99
6/30/2020	2.5	2	2.5	34			2	35
7/31/2020	2.5	1.6	1.8	28			2	28
8/31/2020	2.5	1.5	1.7	28			2	27
9/30/2020	2.5	1.5	1.7	31			2	32
10/31/2020	2.5	1.7	2.2		35	3		
11/30/2020	2.5	2.2	2.7		42	2		
12/31/2020	2.4	3.4	5.4		91	3		
1/31/2021	2.4	2.8	3.3		103	4		
2/28/2021	2.5	3.3	4.5		160	5		
3/31/2021	2.5	2.7	3.6		78	3		
4/30/2021	2.4	3.1	4.6		58	2		
5/31/2021	2.4	2.6	3.3	42			2	45

Outfall 001

Parameter	BOD5	BOD5	BOD5	BOD5	BOD5	BOD5	BOD5	BOD5
	Weekly Ave	Weekly Ave	Weekly Ave	Daily Max	Daily Max	Daily Max	Daily Max	Monthly Ave Min
Units	**lb/d**	**mg/L**	**mg/L**	**lb/d**	**lb/d**	**mg/L**	**mg/L**	**%**
Effluent Limit	**417**	**20**	**6**	**209**	**626**	**10**	**30**	**85**
Minimum	**42**	**3**	**2**	**30**	**50**	**2**	**3**	**94**
Maximum	**302**	**12**	**6**	**164**	**468**	**7**	**19**	**99**
Median	**138**	**5**	**3**	**60**	**172**	**4**	**6**	**98**
No. of Violations	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
6/30/2016			5	55		4		99
7/31/2016			5	76		7		99
8/31/2016			4	47		4		99
9/30/2016			5	73		6		99
10/31/2016	106	8			183		14	98
11/30/2016	73	5			96		7	98
12/31/2016	87	6			126		8	98
1/31/2017	138	5			172		6	98
2/28/2017	128	5			154		6	97
3/31/2017	166	6			199		8	97
4/30/2017	110	3			119		3	98
5/31/2017			3	78		3		99
6/30/2017			2	71		2		99
7/31/2017			3	47		3		99
8/31/2017			5	79		6		99
9/30/2017			4	48		4		99
10/31/2017	66	5			76		6	99
11/30/2017	42	3			53		3	99
12/31/2017	133	7			152		8	98
1/31/2018	195	12			223		14	95
2/28/2018	160	7			177		7	94
3/31/2018	275	8			468		11	94
4/30/2018	190	7			220		9	96
5/31/2018			4	125		7		98
6/30/2018			6	42		3		99
7/31/2018			2	42		3		99
8/31/2018			3	38		3		99
9/30/2018			5	106		7		99
10/31/2018	224	10			324		15	96
11/30/2018	146	4			183		5	98

Outfall 001

Parameter	BOD5	BOD5	BOD5	BOD5	BOD5	BOD5	BOD5	BOD5
	Weekly Ave	Weekly Ave	Weekly Ave	Daily Max	Daily Max	Daily Max	Daily Max	Monthly Ave Min
Units	lb/d	mg/L	mg/L	lb/d	lb/d	mg/L	mg/L	%
Effluent Limit	417	20	6	209	626	10	30	85
12/31/2018	178	8			195		8	97
1/31/2019	189	6			210		7	95
2/28/2019	166	6			195		7	97
3/31/2019	144	5			183		6	97
4/30/2019	231	6			320		8	97
5/31/2019			3	97		4		98
6/30/2019			4	105		6		98
7/31/2019			2	60		3		99
8/31/2019			3	47		3		99
9/30/2019			3	65		5		99
10/31/2019	43	3			50		3	99
11/30/2019	97	4			108		5	98
12/31/2019	302	9			450		13	96
1/31/2020	155	5			133		6	98
2/29/2020	253	12			420		19	96
3/31/2020	130	4			139		6	98
4/30/2020	140	4			175		5	97
5/31/2020			5	164		6		97
6/30/2020			2	47		3		99
7/31/2020			2	30		2		99
8/31/2020			2	38		3		99
9/30/2020			4	63		5		99
10/31/2020	48	3			70		5	99
11/30/2020	48	3			61		4	99
12/31/2020	97	4			134		5	97
1/31/2021	131	5			130		6	97
2/28/2021	239	7			287		8	95
3/31/2021	133	5			149		5	97
4/30/2021	71	3			73		3	98
5/31/2021			2	50		2		99

Outfall 001

Parameter	TSS	TSS	TSS	TSS	TSS	TSS	TSS	TSS
	Monthly Ave	Monthly Ave	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave	Weekly Ave	Weekly Ave
Units	lb/d	lb/d	mg/L	mg/L	lb/d	lb/d	mg/L	mg/L
Effluent Limit	**209**	**417**	**10**	**20**	**209**	**417**	**10**	**20**
Minimum	**31**	**47**	**2**	**3**	**44**	**54**	**3**	**3**
Maximum	**123**	**231**	**5**	**7**	**280**	**272**	**8**	**10**
Median	**45**	**92**	**3**	**4**	**59**	**146**	**4**	**5**
No. of Violations	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**
6/30/2016	35		2		104		7	
7/31/2016	41		4		50		4	
8/31/2016	45		4		49		4	
9/30/2016	58		5		84		8	
10/31/2016		52		4		65		5
11/30/2016		62		5		69		5
12/31/2016		77		5		79		5
1/31/2017		92		4		112		4
2/28/2017		113		5		145		5
3/31/2017		136		6		161		6
4/30/2017		152		5				7
5/31/2017	91		4		111		5	
6/30/2017	60		3		92		4	
7/31/2017	46		3		48		3	
8/31/2017	38		3		69		5	
9/30/2017	47		4		66		6	
10/31/2017		57		4		59		5
11/30/2017		53		3		71		5
12/31/2017		70		4		136		7
1/31/2018		122		5		166		6
2/28/2018		168		6		182		7
3/31/2018		223		7		263		7
4/30/2018		124		5				6
5/31/2018	59		3		82		4	
6/30/2018	39		3		57		3	
7/31/2018	31		2		45		3	
8/31/2018	42		3		47		4	
9/30/2018	65		4		108		6	
10/31/2018		80		4		147		7
11/30/2018		91		3		154		4

Outfall 001

Parameter	TSS	TSS	TSS	TSS	TSS	TSS	TSS	TSS
	Monthly Ave	Monthly Ave	Monthly Ave	Monthly Ave	Weekly Ave	Weekly Ave	Weekly Ave	Weekly Ave
Units	lb/d	lb/d	mg/L	mg/L	lb/d	lb/d	mg/L	mg/L
Effluent Limit	209	417	10	20	209	417	10	20
12/31/2018		78		3		90		4
1/31/2019		156		6		272		10
2/28/2019		138		5		164		6
3/31/2019		132		5		256		10
4/30/2019		112		4				5
5/31/2019	76		3		128		4	
6/30/2019	43		2		81		4	
7/31/2019	48		3		59		4	
8/31/2019	37		3		47		4	
9/30/2019	36		3		50		4	
10/31/2019		50		3		64		5
11/30/2019		65		3		74		4
12/31/2019		127		4		174		5
1/31/2020		81		3		158		5
2/29/2020		95		5		183		9
3/31/2020		110		4		195		6
4/30/2020		231		7				8
5/31/2020	123		5		**280**		8	
6/30/2020	45		3		45		4	
7/31/2020	43		3		46		4	
8/31/2020	47		4		45		5	
9/30/2020	45		3		44		4	
10/31/2020		52		4		68		5
11/30/2020		47		3		54		3
12/31/2020		76		3		79		3
1/31/2021		70		3		122		4
2/28/2021		121		4		148		5
3/31/2021		102		4		218		8
4/30/2021		85		3				6
5/31/2021	56		3		62		4	

Outfall 001

Parameter	TSS	TSS	TSS	TSS	TSS	pH	pH	Fecal Coliform
	Daily Max	Daily Max	Daily Max	Daily Max	Monthly Ave Min	Minimum	Maximum	Monthly Ave
Units	lb/d	lb/d	mg/L	mg/L	%	SU	SU	#/100mL
Effluent Limit	**313**	**626**	**15**	**30**	**85**	**6.5**	**8.3**	**200**
Minimum	**53**	**65**	**3**	**4**	**95**	**6.5**	**7.2**	**4**
Maximum	**205**	**357**	**10**	**15**	**99**	**7.5**	**8.2**	**107**
Median	**72**	**183**	**5**	**7**	**99**	**7**	**7.6**	**27.5**
No. of Violations	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
6/30/2016	72		5		99	7.5	7.9	46
7/31/2016	54		5		99	7.3	7.8	84
8/31/2016	60		5		99	7.1	7.8	45
9/30/2016	110		10		99	7.2	7.8	25
10/31/2016		65		5	99	7.2	7.6	18
11/30/2016		73		5	99	7.3	7.7	19
12/31/2016		88		6	98	7.4	7.7	37
1/31/2017		129		4	98	7.2	7.6	18
2/28/2017		203		7	98	7.1	7.6	13
3/31/2017		178		7	98	7	7.6	9
4/30/2017		279		7	98	7	7.3	8
5/31/2017	137		6		98	7	7.5	12
6/30/2017	129		6		99	7.2	7.6	14
7/31/2017	65		4		99	7.2	7.6	30
8/31/2017	72		6		99	7	7.8	63
9/30/2017	75		7		99	7	7.6	40
10/31/2017		86		5	99	7.1	7.7	38
11/30/2017		94		6	99	7.1	7.6	21
12/31/2017		174		9	98	7.1	7.7	11
1/31/2018		207		8	97	7	7.7	47
2/28/2018		212		8	95	6.7	7.3	44
3/31/2018		274		10	95	6.5	7.5	19
4/30/2018		295		10	98	6.9	7.4	9
5/31/2018	96		4		99	6.9	7.5	4
6/30/2018	53		4		99	7.2	7.7	12
7/31/2018	58		5		99	6.9	7.9	64
8/31/2018	60		5		99	6.5	7.9	59
9/30/2018	112		6		99	6.9	7.5	107
10/31/2018		188		9	99	6.9	8.2	63
11/30/2018		158		5	99	6.9	7.5	37

Outfall 001

Parameter	TSS	TSS	TSS	TSS	TSS	pH	pH	Fecal Coliform
	Daily Max	Daily Max	Daily Max	Daily Max	Monthly Ave Min	Minimum	Maximum	Monthly Ave
Units	lb/d	lb/d	mg/L	mg/L	%	SU	SU	#/100mL
Effluent Limit	**313**	**626**	**15**	**30**	**85**	**6.5**	**8.3**	**200**
12/31/2018		104		4	99	6.8	7.5	48
1/31/2019		330		14	98	6.9	7.2	81
2/28/2019		309		11	97	6.8	7.3	15
3/31/2019		239		10	97	6.8	7.4	14
4/30/2019		174		6	98	6.9	7.3	15
5/31/2019	120		5		98	7	7.5	12
6/30/2019	58		3		99	7.3	7.7	20
7/31/2019	67		4		99	7	7.8	58
8/31/2019	56		4		99	6.9	7.8	84
9/30/2019	61		5		99	6.7	7.9	88
10/31/2019		75		6	98	7.1	7.7	45
11/30/2019		87		4	99	7.1	7.5	28
12/31/2019		208		6	99	6.9	7.4	32
1/31/2020		176		6	99	7	7.4	11
2/29/2020		304		15	98	7	7.7	8
3/31/2020		211		7	97	6.9	7.4	4
4/30/2020		357		10	95	6.8	7.3	27
5/31/2020	205		7		97	6.9	7.5	9
6/30/2020	80		5		99	6.8	7.4	17
7/31/2020	70		5		99	6.8	7.4	68
8/31/2020	76		6		99	6.6	7.6	52
9/30/2020	53		4		99	7	7.9	91
10/31/2020		85		6	99	7	7.8	70
11/30/2020		72		4	99	7.3	7.7	28
12/31/2020		183		6	98	7.3	7.6	27
1/31/2021		118		5	98	7.2	7.7	25
2/28/2021		183		7	97	6.9	7.5	32
3/31/2021		250		9	97	7.1	7.5	8
4/30/2021		244		10	98	7.2	7.5	25
5/31/2021	80		4		98	7.2	7.6	28

Outfall 001

Parameter	Fecal Coliform	TRC	TRC	DO	Ammonia	Ammonia	Ammonia	Ammonia
	Daily Max	Monthly Ave	Daily Max	Minimum	Monthly Ave	Monthly Ave	Monthly Ave	Weekly Ave
Units	**#/100mL**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Effluent Limit	**400**	**0.011**	**0.019**	**7.4**	**1**	**2.5**	**3.3**	**1**
Minimum	**14**	**0**	**0**	**7.4**	**0.2**	**0.2**	**0.2**	**0.2**
Maximum	**398**	**0**	**0**	**9.4**	**0.7**	**1.1**	**1.7**	**1.6**
Median	**158**	**0**	**0**	**8**	**0.45**	**0.6**	**0.6**	**0.8**
No. of Violations	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
6/30/2016	324	0	0	8.1	0.5			1
7/31/2016	384	0	0	7.5	0.5			0.8
8/31/2016	396	0	0	7.7	0.4			0.7
9/30/2016	396	0	0	7.6	0.7			1
10/31/2016	142	0	0				0.4	
11/30/2016	228	0	0				0.9	
12/31/2016	394	0	0				0.4	
1/31/2017	110	0	0				0.4	
2/28/2017	22	0	0				0.6	
3/31/2017	144	0	0				0.5	
4/30/2017	37	0	0			0.3		
5/31/2017	36	0	0	9.4		0.4		
6/30/2017	46	0	0	9.1	0.3			0.5
7/31/2017	164	0	0	8.2	0.4			0.5
8/31/2017	362	0	0	7.8	0.5			0.8
9/30/2017	398	0	0	7.5	0.6			0.7
10/31/2017	82	0	0				0.8	
11/30/2017	58	0	0				0.5	
12/31/2017	24	0	0				0.9	
1/31/2018	382	0	0				0.7	
2/28/2018	286	0	0				0.2	
3/31/2018	266	0	0				0.5	
4/30/2018	39	0	0			1.1		
5/31/2018	46	0	0	9.4		0.9		
6/30/2018	34	0	0	8.6	0.2			1
7/31/2018	378	0	0	8.1	0.5			**1.6**
8/31/2018	290	0	0	7.7	0.6			0.9
9/30/2018	368	0	0	7.8	0.3			1
10/31/2018	358	0	0				0.9	
11/30/2018	366	0	0				0.3	

Outfall 001

Parameter	Fecal Coliform	TRC	TRC	DO	Ammonia	Ammonia	Ammonia	Ammonia
	Daily Max	Monthly Ave	Daily Max	Minimum	Monthly Ave	Monthly Ave	Monthly Ave	Weekly Ave
Units	**#/100mL**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**
Effluent Limit	**400**	**0.011**	**0.019**	**7.4**	**1**	**2.5**	**3.3**	**1**
12/31/2018	348	0	0				0.6	
1/31/2019	362	0	0				0.5	
2/28/2019	87	0	0				0.8	
3/31/2019	44	0	0				0.9	
4/30/2019	220	0	0			0.7		
5/31/2019	44	0	0	9.4		0.7		
6/30/2019	55	0	0	9	0.6			1.2
7/31/2019	322	0	0	8	0.6			0.9
8/31/2019	326	0	0	7.6	0.3			0.8
9/30/2019	232	0	0	7.5	0.6			0.9
10/31/2019	166	0	0				0.3	
11/30/2019	57	0	0				0.3	
12/31/2019	142	0	0				1.2	
1/31/2020	62	0	0				0.8	
2/29/2020	48	0	0				1.4	
3/31/2020	14	0	0				1.3	
4/30/2020	312	0	0			0.5		
5/31/2020	31	0	0	9.3		1		
6/30/2020	39	0	0	8.6	0.2			0.3
7/31/2020	204	0	0	7.7	0.2			0.2
8/31/2020	92	0	0	7.4	0.4			0.8
9/30/2020	324	0	0	7.6	0.3			0.5
10/31/2020	152	0	0				0.3	
11/30/2020	152	0	0				0.4	
12/31/2020	92	0	0				0.6	
1/31/2021	374	0	0				1.7	
2/28/2021	380	0	0				0.8	
3/31/2021	27	0	0				0.5	
4/30/2021	202	0	0			0.3		
5/31/2021	123	0	0	8.7		0.2		

Outfall 001

Parameter	Ammonia	Ammonia	Ammonia	Ammonia	TP	TP	TP	TP
	Weekly Ave	Weekly Ave	Daily Max	Daily Max	Monthly Ave	Monthly Ave	Monthly Ave	Daily Max
Units	mg/L	mg/L	mg/L	mg/L	lb/d	mg/L	mg/L	lb/d
Effluent Limit	2.5	3.3	1.5	5.7	Report	0.2	1	Report
Minimum	0.4	0.4	0.2	0.2	1.3	0.1	0.2	2
Maximum	3.8	2.2	3.1	7.3	22	0.2	0.8	47
Median	0.95	1.2	1.1	1.4	4	0.2	0.5	5
No. of Violations	1	0	2	1	N/A	0	0	N/A
6/30/2016			1.1		2	0.14		2
7/31/2016			1.2		2	0.14		2
8/31/2016			1		2	0.15		3
9/30/2016			1.2		2	0.2		3
10/31/2016		0.8		1	2	0.2		3
11/30/2016		1.4		1.5	3		0.2	4
12/31/2016		0.8		1.2	6		0.4	7
1/31/2017		0.6		1.1	17		0.6	47
2/28/2017		0.8		1.3	15		0.6	20
3/31/2017		1.2		1.8	11		0.4	17
4/30/2017	0.6			0.8	7	0.2		12
5/31/2017	0.6			0.9	4	0.2		5
6/30/2017			0.7		3	0.13		4
7/31/2017			0.8		2	0.1		2
8/31/2017			1.1		2	0.14		2
9/30/2017			1		2	0.2		3
10/31/2017		1.3		2.4	2	0.2		3
11/30/2017		1.2		1.4	3		0.2	4
12/31/2017		1.7		3.1	5		0.3	7
1/31/2018		1.4		1.7	9		0.4	13
2/28/2018		0.4		0.3	12		0.4	15
3/31/2018		1.4		1.6	16		0.5	21
4/30/2018	1.5			1.6	6	0.2		8
5/31/2018	1			2.1	3	0.2		4
6/30/2018			0.2		3	0.2		4
7/31/2018			3.1		2	0.2		3
8/31/2018			1.2		2	0.2		3
9/30/2018			1.1		4	0.2		4
10/31/2018		2.2		3.3	3	0.1		5
11/30/2018		0.4		0.5	6		0.2	8

Outfall 001

Parameter	Ammonia	Ammonia	Ammonia	Ammonia	TP	TP	TP	TP
	Weekly Ave	Weekly Ave	Daily Max	Daily Max	Monthly Ave	Monthly Ave	Monthly Ave	Daily Max
Units	mg/L	mg/L	mg/L	mg/L	lb/d	mg/L	mg/L	lb/d
Effluent Limit	2.5	3.3	1.5	5.7	Report	0.2	1	Report
12/31/2018		1.2		1.4	11		0.4	13
1/31/2019		0.7		0.8	16		0.6	21
2/28/2019		0.9		1.2	12		0.5	15
3/31/2019		1.2		1.8	15		0.6	40
4/30/2019	1.2			1.5	4	0.2		7
5/31/2019	1			1.3	3	0.12		4
6/30/2019			2.2		2	0.13		2
7/31/2019			1.3		2.9	0.2		4
8/31/2019			0.5		2.7	0.2		4.1
9/30/2019			1.4		2.4	0.2		3.2
10/31/2019		0.6		0.6	3	0.2		4
11/30/2019		0.6		0.8	9		0.4	15
12/31/2019		1.7		2.4	19		0.5	24
1/31/2020		1.4		2.3	15		0.7	18
2/29/2020		1.9		2.8	17		0.8	20
3/31/2020		2		3.6	12		0.5	14
4/30/2020	0.9			1.5	7	0.2		10
5/31/2020	3.8			7.3	4.3	0.2		7.7
6/30/2020			0.4		2.7	0.2		4.1
7/31/2020			0.2		2.9	0.2		4.2
8/31/2020			1.4		2.2	0.2		2.6
9/30/2020			0.8		1.5	0.1		2
10/31/2020		0.5		0.8	2	0.2		3
11/30/2020		0.5		1	5		0.3	10
12/31/2020		0.7		0.9	13		0.5	14
1/31/2021		2.1		2.8	18		0.8	19
2/28/2021		1.2		2.2	22		0.7	32
3/31/2021		0.8		0.9	13		0.5	24
4/30/2021	0.6			0.6	4	0.14		6
5/31/2021	0.4			0.2	1.3	0.1		2.8

Outfall 001

Parameter	TP	Copper	Copper	Aluminum, total (as Al)	Phosphorous, in total orthophosphate	Solids, settleable	Aluminum, total (as Al)	Phosphorous, in total orthophosphate
	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Monthly Ave	Weekly Ave	Daily Max	Daily Max
Units	mg/L	ug/L	ug/L	ug/L	mg/L	mL/L	ug/L	mg/L
Effluent Limit	Report	12	19	88	Report	Report	Report	Report
Minimum	**0.11**	**1**	**1**	**6**	**0.05**	**0**	**6**	**0.05**
Maximum	**1.4**	**10**	**10**	**33**	**0.7**	**0.1**	**33**	**0.82**
Median	**0.25**	**6**	**6**	**11**	**0.3**	**0**	**11**	**0.4**
No. of Violations	**N/A**	**0**	**0**	**0**	**N/A**	**N/A**	**N/A**	**N/A**
6/30/2016	0.16	4	4	8		0	8	
7/31/2016	0.18	3	3	7		0	7	
8/31/2016	0.24	7	7	7		0	7	
9/30/2016	0.24	6	6	17		0	17	
10/31/2016	0.23	5	5	11		0	11	
11/30/2016	0.26	4	4	13	0.05	0	13	0.05
12/31/2016	0.5	6	6	12	0.14	0	12	0.18
1/31/2017	1.2	5	5	9	0.53	0	9	0.82
2/28/2017	0.9	7	7	31	0.37	0	31	0.4
3/31/2017	0.7	6	6	33	0.24	0	33	0.38
4/30/2017	0.3	5	5	17		0	17	
5/31/2017	0.2	5	5	12		0	12	
6/30/2017	0.14	6	6	9		0	9	
7/31/2017	0.13	1	1	8		0	8	
8/31/2017	0.18	4	4	14		0	14	
9/30/2017	0.24	4	4	10		0	10	
10/31/2017	0.2	6	6	11		0	11	
11/30/2017	0.2	5	5	12	0.7	0	12	0.13
12/31/2017	0.4	4	4	8	0.09	0	8	0.14
1/31/2018	0.6	4	4	11	0.21	0	11	0.29
2/28/2018	0.5	5	5	15	0.26	0	15	0.37
3/31/2018	0.6	9	9	15	0.2	0	15	0.3
4/30/2018	0.3	7	7	17		0	17	
5/31/2018	0.2	5	5	12		0	12	
6/30/2018	0.22	6	6	12		0	12	
7/31/2018	0.25	6	6	10		0	10	
8/31/2018	0.24	10	10	11		0	11	
9/30/2018	0.28	9	9	13		0	13	
10/31/2018	0.2	6	6	18		0	18	
11/30/2018	0.24	6	6	8	0.05	0	8	0.07

Outfall 001

Parameter	TP	Copper	Copper	Aluminum, total (as Al)	Phosphorous, in total orthophosphate	Solids, settleable	Aluminum, total (as Al)	Phosphorous, in total orthophosphate
	Daily Max	Monthly Ave	Daily Max	Monthly Ave	Monthly Ave	Weekly Ave	Daily Max	Daily Max
Units	mg/L	ug/L	ug/L	ug/L	mg/L	mL/L	ug/L	mg/L
Effluent Limit	Report	12	19	88	Report	Report	Report	Report
12/31/2018	0.5	6	6	30	0.3	0	30	0.37
1/31/2019	0.8	7	7	14	0.4	0	14	0.6
2/28/2019	0.6	6	6	14	0.34	0.1	14	0.4
3/31/2019	1.4	8	8	33	0.16	0.1	33	0.3
4/30/2019	0.2	6	6	8		0.1	8	
5/31/2019	0.15	6	6	10		0.1	10	
6/30/2019	0.14	6	6	8		0.1	8	
7/31/2019	0.23	4	4	10		0.1	10	
8/31/2019	0.26	4	4	10		0.1	10	
9/30/2019	0.25	7	7	10		0.1	10	
10/31/2019	0.22	6	6	10		0.1	10	
11/30/2019	0.5	7	7	10	0.31	0.1	10	0.4
12/31/2019	0.6	5	5	15	0.38	0.1	15	0.47
1/31/2020	0.8	8	8	14	0.6	0.1	14	0.8
2/29/2020	0.9	6	6	14	0.7	0.1	14	0.8
3/31/2020	0.7	6	6	11	0.3	0.1	11	0.5
4/30/2020	0.3	3	3	16		0.1	16	
5/31/2020	0.25	5	5	15		0.1	15	
6/30/2020	0.22	6	6	8		0.1	8	
7/31/2020	0.3	7	7	6		0.1	6	
8/31/2020	0.21	6	6	7		0.1	7	
9/30/2020	0.15	5	5	10		0.1	10	
10/31/2020	0.2	5	5	8		0.1	8	
11/30/2020	0.5	6	6	8	0.2	0.1	8	0.39
12/31/2020	0.6	7	7	11	0.4	0.1	11	0.4
1/31/2021	0.8	5	5	11	0.6	0.1	11	0.68
2/28/2021	0.9	5	5	16	0.56	0.1	16	0.6
3/31/2021	0.8	7	7	28	0.3	0.1	28	0.67
4/30/2021	0.19	6	6	14		0.1	14	
5/31/2021	0.11	6	6	19		0.1	19	

Outfall 001

Parameter	Solids, settleable
	Daily Max
Units	mL/L
Effluent Limit	Report
Minimum	**0**
Maximum	**0.2**
Median	**0.1**
No. of Violations	**N/A**
6/30/2016	0.1
7/31/2016	0.1
8/31/2016	0.2
9/30/2016	0
10/31/2016	0.1
11/30/2016	0
12/31/2016	0
1/31/2017	0.1
2/28/2017	0
3/31/2017	0
4/30/2017	0.2
5/31/2017	0.1
6/30/2017	0
7/31/2017	0
8/31/2017	0
9/30/2017	0
10/31/2017	0
11/30/2017	0
12/31/2017	0
1/31/2018	0
2/28/2018	0
3/31/2018	0
4/30/2018	0.1
5/31/2018	0
6/30/2018	0
7/31/2018	0.1
8/31/2018	0.1
9/30/2018	0.1
10/31/2018	0.1
11/30/2018	0

Outfall 001

Parameter	Solids, settleable
	Daily Max
Units	mL/L
Effluent Limit	Report
12/31/2018	0
1/31/2019	0.1
2/28/2019	0.1
3/31/2019	0.1
4/30/2019	0.1
5/31/2019	0.1
6/30/2019	0.1
7/31/2019	0.1
8/31/2019	0.1
9/30/2019	0.1
10/31/2019	0.1
11/30/2019	0.1
12/31/2019	0.1
1/31/2020	0.1
2/29/2020	0.1
3/31/2020	0.1
4/30/2020	0.1
5/31/2020	0.1
6/30/2020	0.1
7/31/2020	0.1
8/31/2020	0.1
9/30/2020	0.1
10/31/2020	0.1
11/30/2020	0.1
12/31/2020	0.1
1/31/2021	0.1
2/28/2021	0.1
3/31/2021	0.1
4/30/2021	0.1
5/31/2021	0.1

WET Effluent

Parameter	LC50 Acute Ceriodaphnia	C-NOEC Chronic Ceriodaphnia	Ammonia	Aluminum	Cadmium	Copper	Lead
	Minimum	Minimum	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	%	%	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	100	99	Report	Report	Report	Report	Report
Minimum	100	12.5	0	0	0	0.001	0
Maximum	100	100	1.5	0.056	0	0.081	0.0001
Median	100	100	0.395	0	0	0.00425	0
No. of Violations	0	2	N/A	N/A	N/A	N/A	N/A
7/31/2016	100	100	1.4	0	0	0.001	0
10/31/2016	100	100	0.38	0	0	0.0038	0
1/31/2017	100	100	0.27	0	0	0.0032	0
4/30/2017	100	100	0	0.024	0	0.0043	0
7/31/2017	100	100	0.56	0	0	0.0029	0
10/31/2017	100	100	0.29	0	0	0.0072	0
1/31/2018	100	99	1.5	0.056	0	0.0097	0
4/30/2018	100	100					
7/31/2018	100	100	0.12	0.016	0	0.003	0
10/31/2018	100	100	0.52	0	0	0.0035	0
1/31/2019	100	12.5	0.56	0	0	0.0042	0
4/30/2019	100	100	0.62	0	0	0.0044	0
7/31/2019	100	100	0.15	0	0	0.0035	0
10/31/2019	100	100					
1/31/2020	100	100	0.2	0	0	0.0048	0
4/30/2020	100	50	0	0	0	0.004	0
7/31/2020	100	100	0.11	0	0	0.0056	0
10/31/2020	100	100	0.54	0.039	0	0.0047	0
1/31/2021	100	100	0.41	0	0	0.0047	0
4/30/2021	100	100	0.6	0.009	0	0.081	0.0001

WET Effluent

Parameter	Nickel	Zinc	Hardness
	Daily Max	Daily Max	Daily Max
Units	mg/L	mg/L	mg/L
Effluent Limit	Report	Report	Report
Minimum	**0.0018**	**0.017**	**92**
Maximum	**0.007**	**0.035**	**200**
Median	**0.0041**	**0.0225**	**145**
No. of Violations	**N/A**	**N/A**	**N/A**
7/31/2016	0.005	0.017	200
10/31/2016	0.0051	0.026	190
1/31/2017	0.0019	0.022	150
4/30/2017	0.0029	0.027	120
7/31/2017	0.0057	0.019	150
10/31/2017	0.0052	0.021	200
1/31/2018	0.0036	0.035	170
4/30/2018			
7/31/2018	0.0046	0.021	190
10/31/2018	0.0033	0.026	130
1/31/2019	0.0018	0.023	93
4/30/2019	0.0042	0.024	140
7/31/2019	0.0043	0.02	180
10/31/2019			
1/31/2020	0.0021	0.025	130
4/30/2020	0.0018	0.021	92
7/31/2020	0.0057	0.023	130
10/31/2020	0.007	0.021	200
1/31/2021	0.002	0.025	110
4/30/2021	0.004	0.022	130

WET Ambient

Parameter	Ammonia	Aluminum	Cadmium	Copper	Lead	Nickel	Zinc
	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max	Daily Max
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Effluent Limit	Report	Report	Report	Report	Report	Report	Report
Minimum	**0**	**0.023**	**0**	**0.0014**	**0**	**0**	**0.0049**
Maximum	**0.6**	**0.21**	**0.0002**	**0.014**	**0.0013**	**0.0016**	**0.083**
Median	**0**	**0.0825**	**0**	**0.002**	**0.0006**	**0.0011**	**0.0155**
7/31/2016	0	0.069	0	0.002	0.001	0	0.011
10/31/2016	0	0.04	0	0.0022	0.0004	0	0.015
1/31/2017	0.1	0.083	0	0.0016	0.0006	0.0012	0.021
4/30/2017	0	0.15	0	0.0022	0.0008	0.0011	0.028
7/31/2017	0	0.054	0	0.0017	0.0005	0	0.0077
10/31/2017	0	0.028	0	0.0014	0.0002	0	0.0053
1/31/2018	0.12	0.068	0	0.0017	0.0005	0.0014	0.019
4/30/2018							
7/31/2018	0	0.032	0	0.0019	0.0004	0.0012	0.083
10/31/2018	0	0.091	0	0.0023	0.0006	0.0013	0.014
1/31/2019	0	0.19	0	0.0028	0.0012	0.0011	0.016
4/30/2019	0	0.082	0.0002	0.0018	0.0005	0.0011	0.014
7/31/2019	0	0.055	0	0.0019	0.0007	0	0.0089
10/31/2019							
1/31/2020	0	0.15	0	0.0022	0.0008	0.0016	0.02
4/30/2020	0	0.21	0	0.0027	0.0012	0.0012	0.02
7/31/2020	0	0.088	0	0.0024	0.0013	0.0013	0.011
10/31/2020	0	0.023	0	0.0014	0	0.001	0.0049
1/31/2021	0	0.12	0	0.002	0.0008	0.0013	0.019
4/30/2021	0.6	0.094	0	0.014	0.0006	0.0009	0.017

WET Ambient

Parameter	Hardness	pH
	Daily Max	Daily Max
Units	mg/L	S.U.
Effluent Limit	Report	Report
Minimum	**28**	**6.87**
Maximum	**59**	**7.46**
Median	**41.5**	**7.07**
7/31/2016	51	7.1
10/31/2016	51	7.46
1/31/2017	55	6.88
4/30/2017	37	6.96
7/31/2017	39	7.07
10/31/2017	47	7.13
1/31/2018	59	6.89
4/30/2018		
7/31/2018	48	7.33
10/31/2018	43	7.09
1/31/2019	30	6.93
4/30/2019	38	7.07
7/31/2019	44	7.08
10/31/2019		
1/31/2020	40	7.01
4/30/2020	28	6.88
7/31/2020	33	7.1
10/31/2020	43	7.19
1/31/2021	40	7.03
4/30/2021	37	6.87

A reasonable potential analysis is completed using a single set of critical conditions for flow and pollutant concentration that will ensure the protection of water quality standards. To determine the critical condition of the effluent, EPA projects an upper bound of the effluent concentration based on the observed monitoring data and a selected probability basis. EPA generally applies the quantitative approach found in Appendix E of EPA's *Technical Support Document for Water Quality-based Toxics Control* (TSD)[1] to determine the upper bound of the effluent data. This methodology accounts for effluent variability based on the size of the dataset and the occurrence of non-detects (i.e., samples results in which a parameter is not detected above laboratory detection limits). For datasets of 10 or more samples, EPA uses the upper bound effluent concentration at the 95th percentile of the dataset. For datasets of less than 10 samples, EPA uses the maximum value of the dataset.

EPA uses the calculated upper bound of the effluent data, along with a concentration representative of the parameter in the receiving water, the critical effluent flow, and the critical upstream flow to project the downstream concentration after complete mixing using the following simple mass-balance equation:

$$C_s Q_s + C_e Q_e = C_d Q_d$$

Where:

C_s = upstream concentration (median value of available ambient data)
Q_s = upstream flow (7Q10 flow upstream of the outfall)
C_e = effluent concentration (95th percentile or maximum of effluent concentration)
Q_e = effluent flow of the facility (design flow)
C_d = downstream concentration
Q_d = downstream flow ($Q_s + Q_e$)

Solving for the downstream concentration results in:

$$C_d = \frac{C_s Q_s + C_e Q_e}{Q_d}$$

When both the downstream concentration (C_d) and the effluent concentration (C_e) exceed the applicable criterion, there is reasonable potential for the discharge to cause, or contribute to an excursion above the water quality standard. *See* 40 C.F.R. § 122.44(d). When EPA determines that a discharge causes, has the reasonable potential to cause, or contribute to such an excursion, the permit must contain WQBELs for the parameter. *See* 40 C.F.R. § 122.44(d)(1)(iii). Limits are calculated by using the criterion as the downstream concentration (C_d) and rearranging the mass balance equation to solve for the effluent concentration (C_e).

For any pollutant(s) with an existing WQBEL, EPA notes that the analysis described in 40 CFR § 122.44(d)(1)(i) has already been conducted in a previous permitting action demonstrating that there is reasonable potential to cause or contribute to an excursion of WQS. Given that the permit already contains a WQBEL based on the prior analysis and the pollutant(s) continue to be discharged from the facility, EPA has determined that there is still reasonable potential for the discharge of this pollutant(s) to cause or contribute to an excursion of WQS. Therefore, the WQBEL will be carried forward unless it is determined that a more stringent WQBEL is necessary to continue to protect WQS or that a less stringent WQBEL is allowable based on anti-backsliding regulations at CWA §§ 402(o) and 303(d)(4) and 40 CFR § 122.44(l). For these pollutant(s), if any, the mass balance calculation is not used to determine whether there is reasonable potential to cause or contribute to an excursion of WQS, but rather is used to determine whether the existing limit needs to be more stringent in order to continue to protect WQS.

From a technical standpoint, when a pollutant is already being controlled as a result of a previously established WQBEL, EPA has determined that it is not appropriate to use new effluent data to reevaluate the need for the existing limit because the reasonable potential to cause or contribute to an excursion of WQS for the uncontrolled discharge was already established in a previous permit. If EPA were to conduct such an evaluation and find no reasonable potential for the controlled discharge to cause or contribute to an excursion of WQS, that finding could be interpreted to suggest that the effluent limit should be removed. However, the new permit without the effluent limit would imply that existing controls are unnecessary, that controls could be removed and then the pollutant concentration could rise to a level where there is, once again, reasonable potential for the discharge to cause or contribute to an excursion of WQS. This could result in an illogical cycle of applying and removing pollutant controls with each permit reissuance. EPA's technical approach on this issue is in keeping with the Act generally and the NPDES regulations specifically, which reflect a precautionary approach to controlling pollutant discharges.

The table below presents the reasonable potential calculations and, if applicable, the calculation of the limits required in the permit. Refer to the pollutant-specific section of the Fact Sheet for a detailed discussion of these calculations, any assumptions that were made and the resulting permit requirements.

Pollutant	**Q_s**	**C_s [1]**	**Q_e**	**C_e [2]**		**Q_d**	**C_d**		**Criteria**		**Reasonable Potential**		**Limits**	
	cfs	**mg/L**	**cfs**	**Acute (mg/L)**	**Chronic (mg/L)**	**cfs**	**Acute (mg/L)**	**Chronic (mg/L)**	**Acute (mg/L)**	**Chronic (mg/L)**	**C_e & C_d > Acute Criteria**	**C_e & C_d > Chronic Criteria**	**Acute (mg/L)**	**Chronic (mg/L)**
Ammonia (April 1-May 31)	0.18	0.0	3.87	5.7	2.5	4.05	5.4	2.4	33.8	2.9	**Y**	**Y**	**5.7**	**2.5**
Ammonia (June 1-September 30)		0.0		1.5	1.0		1.4	1.0	33.8	2.9	**Y**	**Y**	**1.5**	**1.0**
Ammonia (October 1-March 31)		0.0		5.7	3.3		5.4	3.2	33.8	9.3	**Y**	**Y**	**5.7**	**3.3**
Phosphorus		0.03		N/A	0.20		N/A	0.19	N/A	0.100	N/A	**Y**	N/A	**0.1**
		µg/L		**µg/L**	**µg/L**		**µg/L**	**µg/L**	**µg/L**	**µg/L**			**µg/L**	**µg/L**
Aluminum		82.5		23.1	88.0		25.7	87.8	750	87	N	**Y**	N/A	**87.2**
Cadmium		0.0		0.0	0.0		0.0	0.0	3.0	0.3	N	N	N/A	N/A
Copper		2.0		19.0	12.0		18.2	11.6	25.7	18.1	**Y**	**Y**	**19.0**	**12.0**
Lead		0.6		0.0	0.0		0.0	0.0	125.8	4.9	N	N	N/A	N/A
Nickel		1.1		7.5	7.5		7.2	7.2	625.2	69.5	N	N	N/A	N/A
Zinc		15.5		29.8	29.8		29.2	29.2	159.7	159.7	N	N	N/A	N/A

[1]Median concentration for the receiving water just upstream of the facility's discharge taken from the WET testing data during the review period (see Appendix A).
[2]Values represent the 95th percentile (for n ≥ 10) or maximum (for n < 10) concentrations from the DMR data and/or WET testing data during the review period (see Appendix A). If the pollutant already has a WQBEL (for either acute or chronic conditions), the value represents the existing limit.

MassDEP
Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

TO: File
FROM: Xiaodan Ruan, MassDEP
SUBJECT: Rockland WWTP NPDES Permit (MA0101923) 7Q10 Flow Analysis
DATE: July 6, 2021

7Q10 Streamflow Analyses:

The 7Q10 flow of the French Stream at the Rockland Wastewater Treatment Plant was calculated by using the U.S. Geological Survey (USGS) StreamStats v4.5.3 application. The calculated 7Q10 is 0.18 cfs.

Dilution Factor

The dilution factor was calculated as follows:

7Q10 Dilution Factor= (Qs + Qd)/Qd

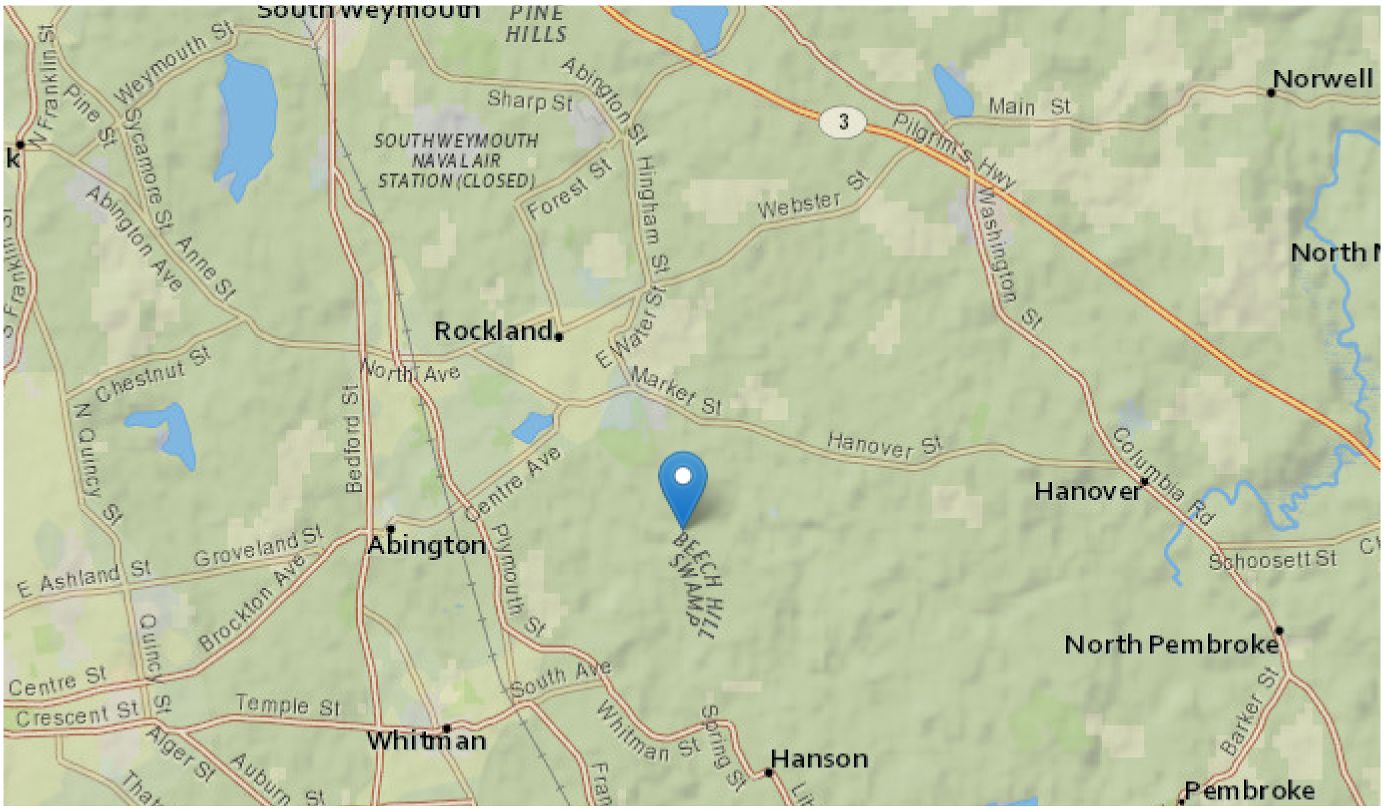
Where:
Qs= 7Q10 flow of French Stream at the Rockland WWTP = 0.18 cfs
Qd= Design flow of the Rockland WWTP = 2.5 MGD = 3.9 cfs

7Q10 Dilution Factor= (0.18 cfs + 3.9 cfs) / 3.9 cfs = **1.05**

Note that a majority of the Rockland WWTP discharge (Qd) is derived from water sources (groundwater/surface water withdrawals) from within the Rockland WWTP watershed.

StreamStats Report for French Stream at Rockland WWTP

Region ID: MA
Workspace ID: MA20210706155647153000
Clicked Point (Latitude, Longitude): 42.10578, -70.89518
Time: 2021-07-06 11:57:05 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	7.55	square miles
BSLDEM250	Mean basin slope computed from 1:250K DEM	0.667	percent
DRFTPERSTR	Area of stratified drift per unit of stream length	0.22	square mile per mile
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Low-Flow Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	7.55	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	0.667	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	0.22	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Flow Report [Statewide Low Flow WRIR00 4135]

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

Statistic	Value	Unit	PII	PIu	SE	SEp
7 Day 2 Year Low Flow	0.572	ft^3/s	0.152	2.07	49.5	49.5
7 Day 10 Year Low Flow	0.18	ft^3/s	0.0377	0.801	70.8	70.8

Low-Flow Statistics Citations

Ries, K.G., III,2000, Methods for estimating low-flow statistics for Massachusetts streams: U.S. Geological Survey Water Resources Investigations Report 00-4135, 81 p. (http://pubs.usgs.gov/wri/wri004135/)

Application Version: 4.5.3

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY – REGION 1 (EPA)
WATER DIVISION
5 POST OFFICE SQUARE
BOSTON, MASSACHUSETTS 02109

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (MASSDEP)
COMMONWEALTH OF MASSACHUSETTS
1 WINTER STREET
BOSTON, MASSACHUSETTS 02108

EPA PUBLIC NOTICE OF A DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT TO DISCHARGE INTO WATERS OF THE UNITED STATES UNDER SECTION 402 OF THE CLEAN WATER ACT (CWA), AS AMENDED, AND MASSDEP PUBLIC NOTICE OF EPA REQUEST FOR STATE CERTIFICATION UNDER SECTION 401 OF THE CWA.

PUBLIC NOTICE PERIOD: **August 25, 2021 – September 23, 2021**

PERMIT NUMBER: **MA0101923**

PUBLIC NOTICE NUMBER: MA-23-21

NAME AND MAILING ADDRESS OF APPLICANT:

Town of Rockland
242 Union St.
Town Hall
Rockland, MA 02370

NAME AND ADDRESS OF THE FACILITY WHERE DISCHARGE OCCURS:

Rockland Wastewater Treatment Plant
South End of Concord St.
Rockland, MA 02370

RECEIVING WATER AND CLASSIFICATION:

French Stream (Class B)

PREPARATION OF THE DRAFT PERMIT AND EPA REQUEST FOR CWA § 401 CERTIFICATION:

EPA is issuing for public notice and comment the Draft NPDES Permit for the Rockland WWTP, which discharges treated municipal wastewater. Waste thickened sludge is trucked to a privately-owned company in Woonsocket, RI for incineration. The effluent limits and permit conditions have been drafted pursuant to, and assure compliance with, the CWA, including EPA-approved State Surface Water Quality Standards at 314 CMR 4.00. MassDEP cooperated with EPA in the development of the Draft NPDES Permit. MassDEP retains independent authority under State law to publish for public notice and issue a separate Surface Water Discharge Permit for the discharge, not the subject of this notice, under the Massachusetts Clean Waters Act, M.G.L. c. 21, §§ 26-53.

In addition, EPA has requested that MassDEP grant or deny certification of this Draft Permit pursuant to Section 401 of the CWA and implementing regulations. Under federal regulations governing the NPDES program at 40 Code of Federal Regulations (CFR) § 124.53(e), state certification shall contain conditions that are necessary to assure compliance with the applicable provisions of CWA sections 208(e), 301, 302, 303, 306, and 307 and with appropriate requirements of State law, including any conditions more stringent than those in the Draft Permit that MassDEP finds necessary to meet these requirements. Furthermore, MassDEP may provide a statement of the extent to which each condition of the Draft Permit can be made less stringent without violating the requirements of State law.

INFORMATION ABOUT THE DRAFT PERMIT:

The Draft Permit and explanatory Fact Sheet may be obtained at no cost at https://www.epa.gov/npdes-permits/massachusetts-draft-individual-npdes-permits or by contacting:

Doug MacLean
U.S. Environmental Protection Agency – Region 1
5 Post Office Square, Suite 100 (06-4)
Boston, MA 02109-3912
Telephone: (617) 918-1608
Email: maclean.douglas@epa.gov

Following U.S. Centers for Disease Control and Prevention (CDC) and U.S. Office of Personnel Management (OPM) guidance and specific state guidelines impacting our regional offices, EPA's workforce has been directed to telework to help prevent transmission of the coronavirus. While in this workforce telework status, there are practical limitations on the ability of Agency personnel to allow the public to review the administrative record in person at the EPA Boston office. However, any electronically available documents that are part of the administrative record can be requested from the EPA contact above.

PUBLIC COMMENT AND REQUESTS FOR PUBLIC HEARINGS:

All persons, including applicants, who believe any condition of this Draft Permit is inappropriate must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by September 23, 2021**,** which is the close of the public comment period. Comments, including those pertaining to EPA's request for CWA § 401 certification, should be submitted to the EPA contact at the address or email listed above. Upon the close of the public comment period, EPA will make all comments available to MassDEP. All commenters who want MassDEP to consider their comments in the state decision-making processes (i.e., the separate state permit and the CWA § 401 certification) must submit such comments to MassDEP during the state comment period for the state Draft Permit and CWA § 401 certification. For information on submitting such comments to MassDEP, please follow the instructions found in the state public notice at: https://www.mass.gov/service-details/massdep-public-hearings-comment-opportunities.

Any person, prior to the close of the EPA public comment period, may submit a request in writing to EPA for a public hearing on the Draft Permit under 40 CFR § 124.10. Such requests shall state the nature of the issues proposed to be raised in the hearing. A public hearing may be held after at least thirty days public notice if the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on this Draft Permit, the Regional Administrator will respond to all significant comments and make the responses available to the public.

Due to the COVID-19 National Emergency, if comments are submitted in hard copy form, please also email a copy to the EPA contact above.

FINAL PERMIT DECISION:

Following the close of the comment period, and after a public hearing, if such hearing is held, the Regional Administrator will issue a final permit decision and notify the applicant and each person who has submitted written comments or requested notice.

KEN MORAFF, DIRECTOR
WATER DIVISION
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY – REGION 1

LEALDON LANGLEY, DIRECTOR
DIVISION OF WATERSHED MGMT
MASSACHUSETTS DEPARTMENT OF
ENVIRONMENTAL PROTECTION

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MEDIUM WASTEWATER TREATMENT FACILITY GENERAL PERMIT

In compliance with the provisions of the Federal Clean Water Act, as amended, (33 U.S.C. §§ 1251 et seq.; the "CWA"),

Town of Rockland, Massachusetts

is authorized to discharge from the facility located at

Rockland Wastewater Treatment Plant
587R Summer Street
Rockland, MA 02370

to receiving water named

French Stream
South Coastal Watershed

in accordance with effluent limitations, monitoring requirements and other conditions set forth in this authorization and the Medium WWTF GP (General Permit No. MAG590000).

This authorization shall become effective on __________.

For applicable attachments see the complete version of the Medium WWTF General Permit:

Part VII – Standard Conditions
Attachment A – Freshwater Acute Toxicity Test Procedure and Protocol, February 2011
Attachment B – Freshwater Chronic Toxicity Test Procedure and Protocol, March 2013
Attachment C – Marine Acute Toxicity Test Procedure and Protocol, July 2012
Attachment D – Marine Chronic Toxicity Test Procedure and Protocol, November 2013
Attachment E – List of Eligible Facilities
Attachment F – Reassessment of Technically Based Industrial Discharge Limits
Attachment G – NPDES Permit Requirement for Industrial Pretreatment Annual Report
Attachment H – PFAS Analyte List
Attachment I – Facility-Specific Permit Terms
Attachment J – Pretreatment Program Development Requirements

I. Applicability and Coverage of the WWTF GP

Supplementary information provided in the complete version of the Medium WWTF GP.

II. General Permit Requirements

A. Effluent Limitations and Monitoring Requirements

During the period beginning on the effective date and lasting through the expiration date, the Permittee is authorized to discharge treated effluent through Outfall Serial Number 001 to the French Stream. The discharge shall be limited and monitored as specified below at the end of all treatment processes, including disinfection or dechlorination, or at an alternative representative location approved by EPA and the Massachusetts Department of Environmental Protection (MassDEP), that provides a representative sample of the effluent. The receiving water and the influent shall be monitored as specified below.

Table 1. Effluent Limitations and Monitoring Requirements

Effluent Characteristic	**Discharge Limitation**			**Monitoring Requirement[1,2]**	
Parameter	**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[3]**
Effluent Flow [4,10]	2.5 MGD	---	Report MGD	Continuous	Recorder
BOD_5 (May 1 – September 30)	6 mg/L 125 lb/day	6 mg/L 125 lb/day	10 mg/L 209 lb/day	1/Week	Composite
BOD_5 (October 1 – April 30)	20 mg/L 417 lb/day	20 mg/L 417 lb/day	30 mg/L 626 lb/day	1/Week	Composite
BOD_5 Removal	≥ 85 %	---	---	1/Month	Calculation
TSS (May 1 – September 30)	10 mg/L 209 lb/day	10 mg/L 209 lb/day	15 mg/L 313 lb/day	1/Week	Composite
TSS (October 1 – April 30)	20 mg/L 417 lb/day	20 mg/L 417 lb/day	30 mg/L 626 lb/day	1/Week	Composite
TSS Removal	≥ 85 %	---	---	1/Month	Calculation
pH Range[7]	6.5 – 8.3 S.U.			5/Week	Grab
Escherichia coli[8]	126 colonies/ 100 mL	---	409 colonies/100 mL	1/Week	Grab
Total Residual Chlorine[9]	11 μg/L	---	19 μg/L	5/Week	Grab
Total Recoverable Aluminum	87.2 μg/L	---	Report μg/L	1/Month	Composite
Total Recoverable Copper	12 μg/L	---	19 μg/L	1/Month	Composite
Total Phosphorus[10] (April 1 – October 31)	0.1 mg/L	---	---	1/Week	Composite

Effluent Characteristic	**Discharge Limitation**			**Monitoring Requirement**[1,2]	
Parameter	**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type**[3]
Total Phosphorus (November 1 – March 31)	1.0 mg/L	---	---	2/Month	Composite
Ammonia Nitrogen (April 1 – May 31)	2.5 mg/L	2.5 mg/L	5.7 mg/L	2/Month	Composite
Ammonia Nitrogen (June 1 – September 30)	1.0 mg/L	1.0 mg/L	1.5 mg/L	2/Month	Composite
Ammonia Nitrogen (October 1 – March 31)	3.3 mg/L	3.3 mg/L	5.7 mg/L	2/Month	Composite
Dissolved Oxygen	$\geq$ 7.4 mg/L			1/Day	Grab
Total Kjeldahl Nitrogen[11] (April 1 – October 31) (November 1 – March 31)	 Report mg/L Report mg/L	---	 Report mg/L Report mg/L	 1/Week 1/Month	 Composite Composite
Nitrate + Nitrite[11] (April 1 – October 31) (November 1 – March 31)	 Report mg/L Report mg/L	---	 Report mg/L Report mg/L	 1/Week 1/Month	 Composite Composite
Total Nitrogen[11]	Report mg/L Report lb/day	---	Report mg/L	1/Month	Calculation
PFAS Analytes[12]	---	---	Report ng/L	1/Quarter	Composite
Whole Effluent Toxicity (WET) Testing[14,15]					
Acute (LC_{50}) (Test Species: *Ceriodaphnia dubia*)	---	---	$\geq$ 100%	4/Year	Composite
Chronic (C-NOEC) (Test Species: *Ceriodaphnia dubia*)	---	---	$\geq$ 99%	4/Year	Composite
Hardness (as $CaCo_3$)	---	---	Report mg/L	Same as WET Measurement Frequency and Sample Type	
Ammonia Nitrogen	---	---	Report mg/L		
Total Aluminum	---	---	Report mg/L		
Total Cadmium	---	---	Report mg/L		
Total Copper	---	---	Report mg/L		
Total Lead	---	---	Report mg/L		
Total Nickel	---	---	Report mg/L		

Effluent Characteristic	Discharge Limitation			Monitoring Requirement[1,2]	
Parameter	**Average Monthly**	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[3]**
Total Zinc	---	---	Report mg/L		
Total Organic Carbon	---	---	Report mg/L		

Ambient Characteristic[16]	Reporting Requirements		Monitoring Requirements[1,2,3]		
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
Hardness	---	---	Report mg/L	Same as WET Monitoring Frequency	Grab
Ammonia Nitrogen	---	---	Report mg/L		Grab
Total Aluminum	---	---	Report mg/L		Grab
Total Cadmium	---	---	Report mg/L		Grab
Total Copper	---	---	Report mg/L		Grab
Total Nickel	---	---	Report mg/L		Grab
Total Lead	---	---	Report mg/L		Grab
Total Zinc	---	---	Report mg/L		Grab
Total Organic Carbon	---	---	Report mg/L		Grab
Dissolved Organic Carbon[17]	---	---	Report mg/L		Grab
pH[18]	---	---	Report S.U.		Grab
Temperature[18]	---	---	Report °C		Grab

Influent Characteristic	Reporting Requirements			Monitoring Requirements[1,2,3]	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
BOD_5	Report mg/L	---	---	2/Month	Composite
TSS	Report mg/L	---	---	2/Month	Composite
PFAS Analytes[12]	---	---	Report ng/L	1/Quarter	Composite

Sludge Characteristic	**Reporting Requirements**			**Monitoring Requirements[1,2,3]**	
	Average Monthly	**Average Weekly**	**Maximum Daily**	**Measurement Frequency**	**Sample Type[4]**
PFAS Analytes[20]	---	---	Report ng/g	1/Quarter	Composite[21]

Footnotes to Part II.A. Table 1:

1. All samples shall be collected in a manner to yield representative data. A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented as an electronic attachment to the applicable discharge monitoring report. The Permittee shall report the results to the Environmental Protection Agency Region 1 (EPA) and MassDEP of any additional testing above that required herein, if testing is in accordance with 40 CFR Part 136.

2. In accordance with 40 CFR § 122.44(i)(1)(iv), the Permittee shall monitor according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O, for the analysis of pollutants or pollutant parameters (except WET). A method is "sufficiently sensitive" when: 1) The method minimum level (ML) is at or below the level of the effluent limitation established in the permit for the measured pollutant or pollutant parameter; or 2) The method has the lowest ML of the analytical methods approved under 40 CFR Part 136 or required under 40 CFR chapter I, subchapter N or O for the measured pollutant or pollutant parameter. The term "minimum level" refers to either the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. Minimum levels may be obtained in several ways: they may be published in a method; they may be based on the lowest acceptable calibration point used by a laboratory; or they may be calculated by multiplying the MDL in a method, or the MDL determined by a laboratory, by a factor.

   When a parameter is not detected above the ML, the Permittee must report the data qualifier signifying less than the ML for that parameter (e.g., < 50 μg/L, if the ML for a parameter is 50 μg/L). For reporting an average based on a mix of values detected and not detected, assign a value of "0" to all non-detects for that reporting period and report the average of all the results.

3. A "grab" sample is an individual sample collected in a period of less than 15 minutes.

   A "composite" sample is a composite of at least twenty-four (24) grab samples taken during one consecutive 24-hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportional to flow.

4. The limit is a monthly average, reported in million gallons per day (MGD).

5. N/A

6. N/A

7. The pH shall be within the specified range at all times. The minimum and maximum pH sample measurement values for the month shall be reported in standard units (S.U.). Continuous monitoring also fulfills the 5/week monitoring frequency.

8. The monthly average limits for bacteria are expressed as a geometric mean.

   Bacteria monitoring shall be conducted concurrently with TRC monitoring, if TRC monitoring is required.

   For samples tested using the Most Probable Number (MPN) method, the units may be expressed as MPN. The units may be expressed as colony forming units (cfu) when using the Membrane Filtration method.

9. For total residual chlorine (TRC) limitations and other related requirements, see Part II.B.9 of this permit.

10. See Part III.F below for applicable compliance schedules.

11. Total Kjeldahl nitrogen and nitrate + nitrite samples shall be collected concurrently. The results of these analyses shall be used to calculate both the concentration and mass loadings of total nitrogen, as follows.

    Total Nitrogen (mg/L) = Total Kjeldahl Nitrogen (mg/L) + Nitrate + Nitrite (mg/L)

    Total Nitrogen (lbs/day) = [(average monthly Total Nitrogen (mg/L) * total monthly effluent flow (Millions of Gallons (MG)) / # of days in the month] * 8.34

12. Report in nanograms per liter (ng/L). This reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter after the effective date of the authorization to discharge under the General Permit. Until there is an analytical method approved in 40 CFR Part 136 for PFAS in wastewater, monitoring shall be conducted using Draft Method 1633.

    Additionally, report in NetDMR the results of all other PFAS analytes required to be tested as part of the method as shown in Attachment H. Any parameters that are removed from the method based on multi-lab validation of the method will not be required for reporting and the Permittee may report "NODI: 9" for any such parameters.

13. N/A

14. The Permittee shall conduct acute toxicity tests (LC50) and chronic toxicity tests (C-NOEC) in accordance with test procedures and protocols specified in **Attachments A and B** of this permit. LC50 and C-NOEC are defined in Part VII.E. of this permit. The Permittee shall test the daphnid (*Ceriodaphnia dubia*). Toxicity test samples shall be collected during the same weeks each time of calendar quarters ending March 31st, June 30th, September 30th, and December 31st. The complete report for each toxicity test shall be submitted as an attachment to the DMR submittal which includes the results for that toxicity test.

15. For Part I.A.1., Whole Effluent Toxicity Testing, the Permittee shall conduct the analyses specified in **Attachments A and B**, Part VI. CHEMICAL ANALYSIS for the effluent sample. If toxicity test(s) using the receiving water as diluent show the receiving water to be toxic or unreliable, the Permittee shall follow procedures outlined in **Attachments A and B**,

Section IV., DILUTION WATER. Minimum levels and test methods are specified in **Attachments A and B**, Part VI. CHEMICAL ANALYSIS.

16. For Part I.A.1., Ambient Characteristic, the Permittee shall conduct the analyses specified in **Attachments A and B**, Part VI. CHEMICAL ANALYSIS for the receiving water sample collected as part of the WET testing requirements. Such samples shall be taken from the receiving water at a point immediately upstream of the permitted discharge's zone of influence at a reasonably accessible location, as specified in **Attachments A and B**. Minimum levels and test methods are specified in **Attachments A and B**, Part VI. CHEMICAL ANALYSIS.

17. Monitoring and reporting for dissolved organic carbon (DOC) are not requirements of the Whole Effluent Toxicity (WET) tests but are additional requirements. The Permittee may analyze the WET samples for DOC or may collect separate samples for DOC concurrently with WET sampling.

18. A pH and temperature measurement shall be taken of each receiving water sample at the time of collection and the results reported on the appropriate DMR. These pH and temperature measurements are independent from any pH and temperature measurements required by the WET testing protocols.

19. N/A

20. Report in nanograms per gram (ng/g). This reporting requirement for the listed PFAS parameters takes effect the first full calendar quarter after the effective date of the authorization to discharge under the General Permit. Until there is an analytical method approved in 40 CFR Part 136 for PFAS in sludge, monitoring shall be conducted using Draft Method 1633.

    Additionally, report in NetDMR the results of all other PFAS analytes required to be tested as part of the method, as shown in Attachment H. Any parameters that are removed from the method based on multi-lab validation of the method will not be required for reporting and the Permittee may report "NODI: 9" for any such parameters.

21. Sludge sampling shall be as representative as possible based on guidance found at https://www.epa.gov/sites/production/files/2018-11/documents/potw-sludge-sampling-guidance-document.pdf.

B. Other Requirements

1. The discharge shall not cause a violation of the water quality standards of the receiving water.

2. The discharge shall be free from pollutants in concentrations or combinations that, in the receiving water, settle to form objectionable deposits; float as debris, scum or other matter to form nuisances; produce objectionable odor, color, taste or turbidity; or produce undesirable or nuisance species of aquatic life.

3. The discharge shall be free from pollutants in concentrations or combinations that adversely affect the physical or chemical nature of the bottom, interfere with the propagation of fish or shellfish, or adversely affect populations of non-mobile or sessile benthic organisms..

4. The discharge shall not result in pollutants in concentrations or combinations in the receiving water that are toxic to humans, aquatic life or wildlife.

5. The discharge shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to the receiving water.

6. The discharge shall be free from oil, grease and petrochemicals that produce a visible film on the surface of the water, impart an oily taste to the water or an oily or other undesirable taste to the edible portions of aquatic life, coat the banks or bottom of the water course, or are deleterious or become toxic to aquatic life.

7. The Permittee must provide adequate notice to EPA-Region 1 and MassDEP of the following:

   a. Any new introduction of pollutants into the facility from an indirect discharger which would be subject to Part 301 or Part 306 of the Clean Water Act if it were directly discharging those pollutants or in a primary industry category (see 40 CFR Part 122 Appendix A as amended) discharging process water; and

   b. Any substantial change in the volume or character of pollutants being introduced into that facility by a source introducing pollutants into the facility at the time of issuance of the permit.

   c. For purposes of this paragraph, adequate notice shall include information on:

      (1) The quantity and quality of effluent introduced into the facility; and

      (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the facility.

8. Pollutants introduced into the facility by a non-domestic source (user) shall not pass through the POTW or facility or interfere with the operation or performance of the works.

9. Total Residual Chlorine (TRC) limitations and related requirements are specified below:

a. N/A

b. The Permittee shall minimize the use of chlorine while maintaining adequate bacterial control. TRC monitoring and limitations only apply to discharges which have been previously chlorinated or which contain residual chlorine. If bacteria limits do not apply during a particular monitoring period and, therefore, chlorine is not utilized, TRC monitoring is not necessary and the Permittee may enter "NODI" code 9 (*i.e.*, conditional monitoring) in the relevant discharge monitoring report.

c. Additionally, Permittees authorized to conduct disinfection using an alternative to chlorine as the disinfectant are only subject to the TRC limitations and monitoring requirements whenever chlorine is added to the treatment process for disinfection or for other purpose. For the months in which chlorine is not added to the treatment process and the Permittee may enter "NODI" code 9 (*i.e.*, conditional monitoring) in the relevant discharge monitoring report.

d. Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection, or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

e. The Permittee may request authorization to conduct disinfection of the discharge on a seasonal basis. If approved, upon receipt of written authorization from EPA and MassDEP to conduct seasonal disinfection, TRC limitations, monitoring, and reporting requirements apply only during the specified disinfection period and whenever chlorine is added to the treatment process outside of the specified disinfection period.

C. Unauthorized Discharges

1. This permit authorizes discharges only from the outfall(s) listed in the authorization to discharge from EPA in accordance with the terms and conditions of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs), are not authorized by this permit. The Permittee must provide verbal notification to EPA within 24 hours of becoming aware of any unauthorized discharge and a report within 5 days, in accordance with Part VII.D.1.e (24-hour reporting). Providing that it contains the information required in Part VII.D.1.e, submission of the MassDEP SSO Reporting Form (described in Part II.C.3 below) may satisfy the requirement for a written report. See Part V below for reporting requirements.

2. The Permittee must provide notification to the public within 24 hours of becoming aware of any unauthorized discharge, except SSOs that do not impact a surface water or the public, on a publicly available website, and it shall remain on the website for a minimum of 12 months. Such notification shall include the location and description of the discharge; estimated

volume; the period of noncompliance, including exact dates and times, and, if the noncompliance has not been corrected, the anticipated time it is expected to continue.

3. Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at https://www.mass.gov/how-to/sanitary-sewer-overflowbypassbackup-notification.

D. Notification Requirements

The Permittee shall notify all downstream community water systems (if any) of any emergency condition, plant upset, bypass, or other system failure which has the potential to impact the quality of the water to be withdrawn by that community for drinking water purposes. This notification should be made as soon as possible but within four (4) hours, and in the anticipation of such an event, if feasible, without taking away from any response time necessary to alleviate the situation. The Permittee shall follow up with written notification within five (5) days. This notification shall include the reason for the emergency, any sampling information, any visual data recorded, a description of how the situation was handled, and when it would be considered to no longer be an emergency.

III. Additional Limitations, Conditions, and Requirements

A. Operation and Maintenance of the Sewer System

Operation and maintenance (O&M) of the sewer system shall be in compliance with the Standard Conditions of Part VII and the following terms and conditions. The Permittee shall complete the following activities for the collection system which it owns:

1. Maintenance Staff

   The Permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit. Provisions to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section III.A.5. below.

2. Preventive Maintenance Program

   The Permittee shall maintain an ongoing preventive maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges. Plans and programs to meet this requirement shall be described in the Collection System O&M Plan required pursuant to Section III.A.5. below.

3. Infiltration/Inflow

   The Permittee shall control infiltration and inflow (I/I) into the sewer system as necessary to prevent high flow related unauthorized discharges from their collection systems and high flow related violations of the wastewater treatment plant's effluent limitations. Plans and programs to control I/I shall be described in the Collection System O&M Plan required pursuant to Section III.A.5. below.

4. Collection System Mapping

By August 2024, the Permittee shall prepare a map of the sewer collection system it owns. The Permittee shall continue to maintain a map of the sewer collection system it owns. The map shall be on a street map of the community, with sufficient detail and at a scale to allow easy interpretation. The collection system information shown on the map shall be based on current conditions and shall be kept up-to-date and available for review by federal, state, or local agencies. Such map(s) shall include, but not be limited to the following:

a. All sanitary sewer lines and related manholes;

b. All combined sewer lines, related manholes, and catch basins;

c. All combined sewer regulators and any known or suspected connections between the sanitary sewer and storm drain systems (e.g. combination manholes);

d. All outfalls, including the treatment plant outfall(s), CSOs, and any known or suspected SSOs, including stormwater outfalls that are connected to combination manholes;

e. All pump stations and force mains;

f. The wastewater treatment facility(ies);

g. All surface waters (labeled);

h. Other major appurtenances such as inverted siphons and air release valves;

i. A numbering system which uniquely identifies manholes, catch basins, overflow points, regulators and outfalls;

j. The scale and a north arrow; and

k. The pipe diameter, date of installation, type of material, distance between manholes, and the direction of flow.

5. Collection System O&M Plan

a. N/A

b. N/A

The Permittee shall update and implement the Collection System O&M Plan they have previously submitted to EPA and the State in accordance with Part (c) below. The plan shall be available for review by federal, state, and local agencies upon request.

c. The Plan shall include:

(1) A description of the collection system management goals, staffing, information management, and legal authorities;
(2) A description of the collection system and the overall condition of the collection system including a list of all pump stations and a description of recent studies and construction activities;
(3) A preventive maintenance and monitoring program for the collection system;
(4) Description of sufficient staffing necessary to properly operate and maintain the sanitary sewer collection system and how the operation and maintenance program is staffed;
(5) Description of funding, the source(s) of funding and provisions for funding sufficient for implementing the plan;
(6) Identification of known and suspected overflows and back-ups, including manholes. A description of the cause of the identified overflows and back-ups, corrective actions taken, and a plan for addressing the overflows and back-ups consistent with the requirements of this permit;
(7) A description of the Permittee's programs for preventing I/I related effluent violations and all unauthorized discharges of wastewater, including overflows and by-passes and the ongoing program to identify and remove sources of I/I. The program shall include an inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts;
(8) An educational public outreach program for all aspects of I/I control, particularly private inflow; and
(9) An <u>Overflow Emergency Response Plan</u> to protect public health from overflows and unanticipated bypasses or upsets that exceed any effluent limitation in the permit.

6. Annual Reporting Requirement

The Permittee shall submit a summary report of activities related to the implementation of its Collection System O&M Plan during the previous calendar year. The report shall be submitted to EPA and the State annually by March 31st. The summary report shall, at a minimum, include:

a. A description of the staffing levels maintained during the year;

b. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year;

c. Expenditures for any collection system maintenance activities and corrective actions taken during the previous year;

d. A map with areas identified for investigation/action in the coming year;

e. A summary of unauthorized discharges during the past year and their causes and a report of any corrective actions taken as a result of the unauthorized discharges reported pursuant to the Unauthorized Discharges section of this permit; and

f. If the average annual flow in the previous calendar year exceeded 80 percent of the facility's design flow, or there have been capacity-related overflows, the report shall include items in (1) and (2) below.

(1) Plans for further potential flow increases describing how the Permittee will maintain compliance with the flow limit and all other effluent limitations and conditions; and
(2) A calculation of the maximum daily, weekly, and monthly infiltration and the maximum daily, weekly, and monthly inflow for the reporting year.

B. Alternate Power Source

In order to maintain compliance with the terms and conditions of this permit, the Permittee shall provide an alternative power source(s) sufficient to operate the portion of the publicly owned treatment works it owns and operates, as defined in Part VII.E.1 of this permit.

C. Industrial Users

N/A

D. Industrial Pretreatment Programs

1. The Permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within 90 days of the effective date of the authorization to discharge under the General Permit, the Permittee shall prepare and submit a written technical evaluation to EPA analyzing the need to revise local limits. As part of this evaluation, the Permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety and collection system concerns. In preparing this evaluation, the Permittee shall complete and submit the attached form (see **Attachment F** – *Reassessment of Technically Based Industrial Discharge Limits*) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the Permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).

2. The Permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the Permittee's approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR Part 403.

At a minimum, the Permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):

a. Carry out inspection, surveillance, and monitoring procedures which will determine independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP but in no case less than once per year and maintain adequate records.

b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.

c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.

d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.

3. The Permittee shall provide EPA and MassDEP with an annual report describing the Permittee's pretreatment program activities for the twelve (12) month period ending 60 days prior to the due date in accordance with 40 CFR § 403.12(i). The annual report shall be consistent with the format described in **Attachment G** (*NPDES Permit Requirement for Industrial Pretreatment Annual Report*) of this permit and shall be submitted by **March 1** of each year.

4. The Permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR § 403.18(c).

5. The Permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR § 405 et seq.

6. The Permittee must modify its pretreatment program, if necessary, to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program. Within 180 days of the effective date of the authorization to discharge under the General Permit the Permittee must provide EPA in writing, proposed changes, if applicable, to the Permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the Permittee must address in its written submission the following areas: (1) Enforcement response plan; (2) revised sewer use ordinances; and (3) slug control evaluations. The Permittee will implement these proposed changes pending EPA Region 1's approval under 40 CFR § 403.18. This submission is separate and distinct from any local limits analysis submission described in Part III.D.1.

7. Beginning the first full calendar year after the effective date of the authorization to discharge under the General Permit, the Permittee shall commence annual sampling of the following types of industrial discharges into the POTW:

- Commercial Car Washes
- Platers/Metal Finishers
- Paper and Packaging Manufacturers
- Tanneries and Leather/Fabric/Carpet Treaters
- Manufacturers of Parts with Polytetrafluoroethylene (PTFE) or teflon type coatings (i.e. bearings)
- Landfill Leachate
- Centralized Waste Treaters
- Known or Suspected PFAS Contaminated Sites
- Fire Fighting Training Facilities
- Airports
- Any Other Known or Expected Sources of PFAS

Until there is an analytical method approved in 40 CFR Part 136 for PFAS, monitoring shall be conducted using Draft Method 1633. Sampling shall be for the PFAS analytes required to be tested in Method 1633, as shown in Attachment H.

The industrial discharges sampled and the sampling results (including the full lab report) shall be summarized and included in the annual report (see Part III.D.3).

E. Sludge Conditions

1. The Permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices, including EPA regulations promulgated at 40 CFR Part 503, which prescribe “Standards for the Use or Disposal of Sewage Sludge” pursuant to § 405(d) of the CWA, 33 U.S.C. § 1345(d).

2. If both state and federal requirements apply to the Permittee’s sludge use and/or disposal practices, the Permittee shall comply with the more stringent of the applicable requirements.

3. The requirements and technical standards of 40 CFR Part 503 apply to the following sludge use or disposal practices:

   a. Land application - the use of sewage sludge to condition or fertilize the soil
   b. Surface disposal - the placement of sewage sludge in a sludge only landfill
   c. Sewage sludge incineration in a sludge only incinerator

4. The requirements of 40 CFR Part 503 do not apply to facilities which dispose of sludge in a municipal solid waste landfill. 40 CFR § 503.4. These requirements also do not apply to facilities which do not use or dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g., lagoons, reed beds), or are otherwise excluded under 40 CFR § 503.6.

5. The 40 CFR Part 503 requirements include the following elements:

   - General requirements
   - Pollutant limitations

- Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
- Management practices
- Record keeping
- Monitoring
- Reporting

Which of the 40 CFR Part 503 requirements apply to the Permittee will depend upon the use or disposal practice followed and upon the quality of material produced by a facility. The EPA Region 1 Guidance document, "EPA Region 1 - NPDES Permit Sludge Compliance Guidance" (November 4, 1999), may be used by the Permittee to assist it in determining the applicable requirements.[1]

6. The sludge shall be monitored for pollutant concentrations (all Part 503 methods) and pathogen reduction and vector attraction reduction (land application and surface disposal) at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year, as follows:

less than 290	1/ year
290 to less than 1,500	1 /quarter
1,500 to less than 15,000	6 /year
15,000 +	1 /month

Sampling of the sewage sludge shall use the procedures detailed in 40 CFR § 503.8.

7. Under 40 CFR § 503.9(r), the Permittee is a "person who prepares sewage sludge" because it "is … the person who generates sewage sludge during the treatment of domestic sewage in a treatment works …." If the Permittee contracts with *another* "person who prepares sewage sludge" under 40 CFR § 503.9(r) – i.e., with "a person who derives a material from sewage sludge" – for use or disposal of the sludge, then compliance with Part 503 requirements is the responsibility of the contractor engaged for that purpose. If the Permittee does not engage a "person who prepares sewage sludge," as defined in 40 CFR § 503.9(r), for use or disposal, then the Permittee remains responsible to ensure that the applicable requirements in Part 503 are met. 40 CFR § 503.7. If the ultimate use or disposal method is land application, the Permittee is responsible for providing the person receiving the sludge with notice and necessary information to comply with the requirements of 40 CFR § 503 Subpart B.

8. The Permittee shall submit an annual report containing the information specified in the 40 CFR Part 503 requirements (§ 503.18 (land application), § 503.28 (surface disposal), or § 503.48

[1] This guidance document is available upon request from EPA Region 1 and may also be found at: http://www.epa.gov/region1/npdes/permits/generic/sludgeguidance.pdf

(incineration)) by February 19 (see also "EPA Region 1 - NPDES Permit Sludge Compliance Guidance"). Reports shall be submitted electronically using EPA's Electronic Reporting tool ("NeT") (see "Reporting Requirements" section below).

F. Schedules of Compliance

1. The warm-weather monthly average phosphorus limit of 0.1 mg/L (April 1 – October 31) shall become effective on February 1, 2025 (*i.e.*, compliance beginning April 2025). During the compliance schedule, the Permittee shall comply with an interim limit of 0.2 mg/L.

2. By February 1, 2023, the Permittee shall submit to EPA and MassDEP a status report relative to the process improvements necessary to achieve the permit limit. By February 1, 2024, the Permittee shall complete any process changes necessary to achieve the total phosphorus limit and submit a progress report to EPA and MassDEP detailing these changes. By February 1, 2025, the Permittee shall complete optimization of the plant to comply with the phosphorus limit and submit a final report that summarizes the process changes and plant optimization efforts.

3. The Permittee shall install an effluent flow meter which shall be operational by Feb 1, 2023. During this compliance period, the Permittee may continue to report values from the influent flow meter.

G. Additional Requirements for Facilities Discharging to the Long Island Sound Watershed, the Blackstone River Watershed, the Taunton River Watershed, as well as the Plymouth WWTP and Fairhaven WPCF

N/A

H. Submittal of Facility-Specific Information

Each permittee shall perform three full pollutant scans consistent with the requirements of NPDES Form 2A, Tables B and C, using a representative composite sample once per quarter in the final 3 full calendar quarters of the 5-year permit term. The results for all three scans shall be summarized and submitted as a single electronic attachment to the DMR for the final full calendar quarter before the expiration date of the General Permit (in accordance with Part V.2 below). This submittal shall also include the following information that EPA has deemed necessary for development of the next reissuance of this General Permit:

- Provide the current average daily volume of inflow and infiltration (I/I)
- Provide an updated Flow Diagram or Schematic for the WWTF
- Provide a summary and schedule for any ongoing or planned facility upgrades
- Provide a list of Significant Industrial Users and Categorical Industrial Users contributing flow to the system (including average volume contributed from each)
- Provide a summary of sewage sludge treatment and disposal practices (including disposal method, disposal amount in dry metric tons, name and address of any third-party contractor, etc.).

I. State 401 Certification Conditions

This Permit has received state water quality certification issued by the State under § 401(a) of the CWA and 40 CFR § 124.53. EPA incorporates the following state water quality certification requirements into the Final Permit:

1. Notwithstanding any other provision of the 2022 Federal NPDES Permit to the contrary, monitoring results of the influent, effluent, and sludge for PFAS compounds shall be reported to MassDEP electronically, at **massdep.npdes@mass.gov**, or as otherwise specified, within 30 days after they are received.

2. Pursuant to M.G.L. c. 21, §§ 26-53, and 314 CMR 3.00 and 4.00, including 314 CMR 3.11(2)(a)6., and in order to ensure the maintenance of surface waters free from pollutants in concentrations or combinations that are toxic to humans, aquatic life, or wildlife, in accordance with 314 CMR 4.05(5)(e), MassDEP has determined that it is necessary that the permittee commence annual monitoring of all Significant Industrial Users[2,3] discharging into the POTW consistent with the 2022 NPDES General Permit in accordance with the table below. Notwithstanding any other provision of the 2022 NPDES General Permit to the contrary, monitoring results shall be reported to MassDEP electronically at massdep.npdes@mass.gov within 30 days after they are received.

Parameter	Units	Measurement Frequency	Sample Type
Perfluorohexanesulfonic acid (PFHxS)	ng/L	Annual	24-hour Composite
Perfluoroheptanoic acid (PFHpA)	ng/L	Annual	24-hour Composite
Perfluorononanoic acid (PFNA)	ng/L	Annual	24-hour Composite
Perfluorooctanesulfonic acid (PFOS)	ng/L	Annual	24-hour Composite
Perfluorooctanoic acid (PFOA)	ng/L	Annual	24-hour Composite
Perfluorodecanoic acid (PFDA)	ng/L	Annual	24-hour Composite

[2] Significant Industrial User (SIU) is defined at 40 CFR part 403: All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR chapter I, subpart N; **and** any other industrial user that: discharges an average of 25,000 GPD or more of process wastewater to the POTW, contributes a process wastestream that makes up 5% or more of the average dry weather hydraulic or organic capacity of the POTW, or designated as such by the POTW on the basis that the industrial users has a reasonable potential for adversely affecting the POTW's operation or for violating any Pretreatment Standards or requirement.

[3] This requirement applies to all Significant Industrial Users and not just those within the sectors identified by EPA in the NPDES permit.

IV. Obtaining Authorization to Discharge

N/A

V. Monitoring, Record-Keeping, and Reporting Requirements

Unless otherwise specified in this permit, the Permittee shall submit reports, requests, and information and provide notices in the manner described in this section.

1. Submittal of DMRs Using NetDMR

   The Permittee shall continue to submit its monthly monitoring data in discharge monitoring reports (DMRs) to EPA and MassDEP no later than the 15th day of the month electronically using NetDMR. When the Permittee submits DMRs using NetDMR, it is not required to submit hard copies of DMRs to EPA or MassDEP. NetDMR is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

2. Submittal of Reports as NetDMR Attachments

   Unless otherwise specified in this permit, the Permittee shall electronically submit all reports to EPA and MassDEP as NetDMR attachments rather than as hard copies. See Part V.5 for more information on State reporting. Because the due dates for reports described in this permit may not coincide with the due date for submitting DMRs (which is no later than the 15th day of the month), a report submitted electronically as a NetDMR attachment shall be considered timely if it is electronically submitted to EPA using NetDMR with the next DMR due following the report due date specified in this permit.

3. Submittal of Industrial User and Pretreatment Related Reports

   a. Prior to 21 December 2025, all reports and information required of the Permittee in the Industrial Users and Pretreatment Program section of this permit shall be submitted to the Pretreatment Coordinator in EPA Region 1 Water Division (WD). Starting on 21 December 2025, these submittals must be done electronically as NetDMR attachments and/or using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/. These requests, reports and notices include:

      (1) Annual Pretreatment Reports,

      (2) Pretreatment Reports Reassessment of Technically Based Industrial Discharge Limits Form,

      (3) Revisions to Industrial Discharge Limits,

      (4) Report describing Pretreatment Program activities, and

      (5) Proposed changes to a Pretreatment Program

b. This information shall be submitted to EPA WD as a hard copy at the following address:

U.S. Environmental Protection Agency
Water Division
Regional Pretreatment Coordinator
5 Post Office Square - Suite 100 (06-03)
Boston, MA 02109-3912

4. Submittal of Biosolids/Sewage Sludge Reports

By February 19 of each year, the Permittee must electronically report their annual Biosolids/Sewage Sludge Report for the previous calendar year using EPA's NPDES Electronic Reporting Tool ("NeT"), or another approved EPA system, which is accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

5. Submittal of Requests and Reports to EPA Water Division (WD)

a. The following requests, reports, and information described in this permit shall be submitted to the NPDES Applications Coordinator in EPA Water Division (WD):

(1) Transfer of permit notice;
(2) Request for changes in sampling location;
(3) Request for reduction in testing frequency;
(4) Request for change in WET testing requirement; and
(5) Report on unacceptable dilution water / request for alternative dilution water for WET testing.
(6) Report of new industrial user commencing discharge
(7) Report received from existing industrial user
(8) Request for extension of compliance schedule

b. These reports, information, and requests shall be submitted to EPA WD electronically at R1NPDESReporting@epa.gov.

6. Submittal of Sewer Overflow and Bypass Reports and Notices

The Permittee shall submit required reports and notices under Part VII.B.4.c, for bypasses, and Part VII.D.1.e, for sanitary sewer overflows (SSOs) electronically using EPA's NPDES Electronic Reporting Tool ("NeT"), which will be accessible through EPA's Central Data Exchange at https://cdx.epa.gov/.

7. State Reporting

Duplicate signed copies of all WET test reports shall be submitted to the Massachusetts Department of Environmental Protection, Division of Watershed Management, at the following address:

Massachusetts Department of Environmental Protection
Bureau of Water Resources
Division of Watershed Management

8 New Bond Street
Worcester, Massachusetts 01606

8. Verbal Reports and Verbal Notifications

   a. Any verbal reports or verbal notifications, if required in Parts I through VII of this General Permit, shall be made to both EPA and to MassDEP. This includes verbal reports and notifications which require reporting within 24 hours (e.g., Part VII.B.4.c.(2), Part VII.B.5.c.(3), and Part VII.D.1.e).

   b. Verbal reports and verbal notifications shall be made to:

EPA ECAD at 617-918-1510
and
MassDEP's Emergency Response at 888-304-1133

VI. Administrative Requirements

A. Notice of Termination (NOT) of Discharge or Change of Owner/Operator

Permittees shall notify EPA and the appropriate State agency in writing upon the termination of any discharge(s) authorized by this General Permit. The NOT shall include the name, mailing address, phone number, and the location of the facility for which the notification is being submitted, the NPDES permit number of the discharge identified by the notice, and an indication of whether the discharge has been eliminated or if the owner/operator of the discharge has changed. The NOT shall be signed in accordance with the signatory requirements of 40 CFR § 122.22. Completed and signed NOTs shall be submitted to EPA at R1NPDESReporting@epa.gov and to MassDEP at MassDEP.NPDES@mass.gov.

B. Continuation of this General Permit After Expiration

If this General Permit is not reissued prior to its expiration date, it will be administratively continued in accordance with the Administrative Procedures Act (5 U.S.C. 558(c)) and 40 CFR § 122.6 and remain in full force and in effect for discharges covered prior to its expiration.

Coverage under this permit will not be available to any facility that is not authorized to discharge under the General Permit before the expiration date.

Any Permittee whose authorization to discharge under this General Permit was administratively continued will automatically remain covered by the continued General Permit until the earlier of:

1. Authorization to discharge under a reissued permit or a replacement of this permit; or

2. The Permittee's submittal of a Notice of Termination; or

3. Issuance of an individual permit for the Permittee's discharge; or

4. A formal permit decision by EPA not to reissue this General Permit, at which time EPA will identify a reasonable time period for covered dischargers to seek coverage under an

alternative general permit or an individual permit. Coverage under this permit will cease at the end of this time period.

Appendix D
Sewer Rate Study

427 Main Street, Suite 400, Worcester, MA 01608
Tel: 508.762.1676

MEMORANDUM

TO: Chuck Heshion, Chairman, Rockland Board of Sewer Commissioners

FROM: Frank E. Occhipinti, PE, Weston & Sampson

DATE: May 5, 2023

SUBJECT: Sewer Rate Study Summary Memo

In September 2021, The Town of Rockland retained Weston & Sampson to perform and complete a Sewer Rate Study. Weston & Sampson is pleased to present this memorandum, which summarizes the result of the analysis. This study was performed to provide the Town with estimated sewer rate increase options that will generate sufficient revenue to fund the operational costs, indirect costs, debt service costs, and capital improvements.

Background

The Town of Rockland consists of primary residential and urban commercial with a population of approximately 17,800, according to the 2020 U.S Census. The Sewer Department, managed by the elected Board of Sewer Commissioners, provides services to approximately 5,830 commercial, residential, industrial, and institutional accounts. The water system is managed separately under the Abington-Rockland Joint Water Works.

Sewer Utility

The Town's sewer system consists of approximately 340,000 linear feet (lf) of sanitary sewers. The Town owns a Wastewater Treatment Plant (WWTP) which services the Town of Rockland and some sewer users from the Town of Abington. The WWTP receives and treats an average daily flow of approximately 2.5 million gallons per day (MGD).

Existing Rate Structure and Charges

Sewer Enterprise Revenue relies solely on user fees and charges. The Town's sewer rates are billed quarterly (every three months) based on usage (per 100 cubic feet, or 1 ccf) and a basic charge with a $55 combined minimum. Table 1 on the next page show examples of current sewer charges.

Table 1 - Example of Sewer User Bills (Effective January 1, 2023)

User Type	Usage	Current Bill
Low-End User	500	$55.00
Small User	1,000	$84.10
Average Residential User	2,075	$163.76
Large User #1	5,000	$380.50
Large User #2	10,000	$751.00
Very Large User	100,000	$7,420.00

Existing Rate Structure and Charges

The Town's current sewer rates are lower than most neighboring communities' and communities with similar populations. Weston & Sampson compared the Town's sewer rates to rates in neighboring communities (Abington, Braintree, Weymouth, Holbrook, and Hingham), and communities with similar populations (Amesbury, Bellingham, Concord, Foxborough, Millbury, and Westborough). It should be noted that some of the communities are MWRA-served communities. Table 4 below contains a comparison of typically average residential user sewer bills, assuming usages of 2,075 cubic feet or 20.75 ccf per quarter. Figure 1 on the next page shows the comparison in graphical format.

Table 2 - Average Sewer Bill (Based on average usage of 2,075 cubic feet)

Community	Sewer Rate (per ccf)	Service/Basic Charge (per bill)	Sewer Bill (per quarter)
Rockland	$7.41	$10.00	$163.76
Abington	$5.00	$35.00	$138.75
Braintree	$8.00	$21.25	$187.25
Holbrook	$6.60 for 1-2,000 cubic feet $10.04 for over 2,000 cubic feet	$50.00	$189.53
Hingham	$14.06	-	$291.75
Weymouth	$8.97	$7.50	$186.13
Amesbury	$7.25	-	$150.44
Bellingham (1)	$6.92	$42.60	$186.17
Concord	$12.36	-	$256.47
Foxborough	$10.44 (for usage over 750 gallons)	$97.94 (minimum charge)	$236.27
Millbury	$9.95	-	$206.43
Westborough	$8.96	-	$148.00

Note:
(1) Assume 3/4" meter size

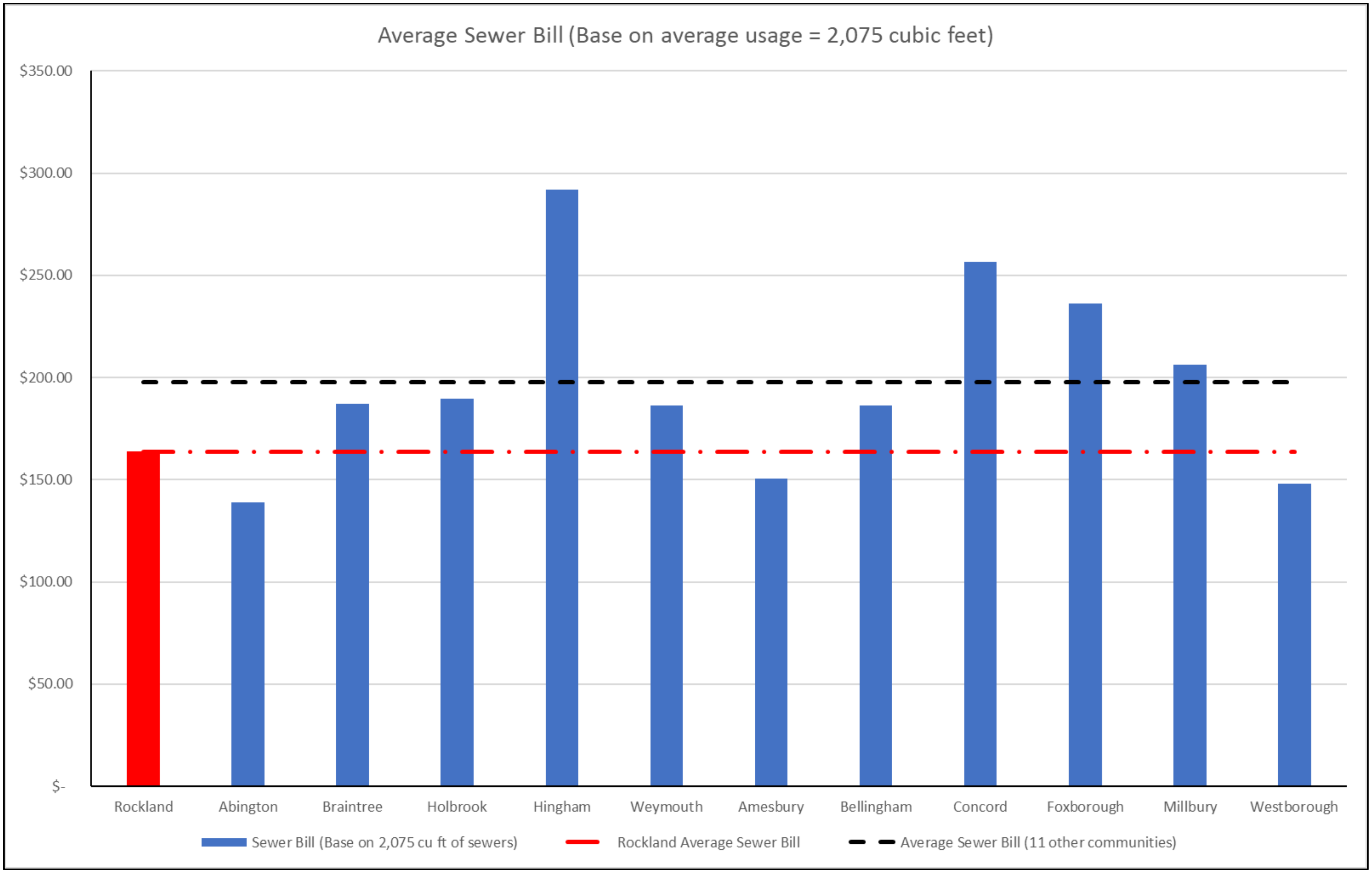


Figure 1 - Average Sewer Bill for Rockland and 11 Communities

Existing Expenses and Revenues

The Town's FY 2023 sewer budget was provided by the Town for this study. The voted budget for the Town's Sewer Department is $3,006,470 with an additional $552,553 for capital outlay totaling $3,505,333 for FY 2023. The single largest expense for the Sewer Enterprise Fund is the contract between the Town and Veolia (formerly Suez Water Environment Services) to operate and maintain the Town's Wastewater Treatment Facility (WWTF) with $2,100,000 budgeted for FY2023, approximately 60% of the total fiscal year budget.

Without any changes in revenue, as presented in the baseline financial analysis, total projected sewer revenues for FY 2023 are $3,325,604 and projected expenditures are $3,505,333, leaving a deficit of $233,420 for FY 2023. However, since the Town has maintained strong retained earnings, the deficit does not negatively impact the Town's overall finances for this fiscal year.

The Sewer Department plans to begin a multi-year WWTF improvement/upgrade project, which is mandated as part of the Town's consent decree with the Environmental Protection Agency (EPA). The project is estimated at approximately $80 million dollars, with design phase starting in FY 2024 and construction ending in FY 2033. The Sewer Enterprise is expecting to experience budgetary shortfalls because current projected revenue recovered from rates will not be sufficient to cover future expenditures. The Town should strongly consider rate action for FY 2023 and beyond to ensure sufficient revenue is realized from rates.

Capital Improvement Plan and Funding Sources

A Capital Improvement Plan (CIP) is a long-term planning document that outlines the Town's sewer infrastructure spending needs and priorities. The purpose of a CIP is to identify and prioritize capital projects, such as constructing new facilities, upgrading existing infrastructure, or purchasing new equipment, over a multi-year period.

The CIP typically covers a period of 3 to 5 years and serves as a roadmap for capital spending decisions. It helps the Town to allocate resources in an efficient and effective way, and to align their capital investments with their strategic goals and objectives. The CIP typically includes information about the estimated cost of each project, the timeline for completion, and the source of funding for each project.

For Rockland, the single most important and costly capital improvement project on the CIP is the WWTF upgrade as mentioned earlier. The cost for the upgrade, including design and construction, is estimated at approximately $80 million dollars over 10 years. The last upgrade to the WWTF was done in 1977 and the planned upgrade is necessary for the Town to meet federal and state requirements. Another crucial capital improvement project on the CIP is Infiltration and Inflow (I/I) Remediation Projects, which include investigating, locating, and removing I/I from the Town's collection system.

The majority of the projects on the CIP will be funded by the Sewer Enterprise Fund. The State Revolving Fund (SRF) loan program is planned to be utilized to provide the Town with a low interest rate loan option, currently providing at 2% or lower for 20 years. Funding from the American Rescue Plan Act (ARPA) will also support some of projects on the CIP.

A draft CIP is provided below summarizing the Town's infrastructure spending needs, estimated costs, and funding sources. A more detailed CIP with cost breakdown is provided in Appendix A.

Table 3 - Town of Rockland Capital Improvement Plan

Project	Estimated Total Cost	Funding Source	Project Start Year	Project End Year
Inflow & Infiltration Remediation System	$2,200,000	Sewer Enterprise Fund	Ongoing	
Inflow & Infiltration Annual Control Plan (I&I Investigation)	$2,241,000	Sewer Enterprise Fund	FY2023	FY 2037
Inflow & Infiltration Reoperation	$330,000	ARPA	FY 2023	FY 2023
Digester Building Gas Lines	$350,000	Sewer Enterprise Fund ARPA	FY2023	FY 2024
Digester Recirculation Pumps	$50,000	Sewer Enterprise Fund	FY 2025	FY 2025
New Heating System (WWTF Office Building)	$150,000	Sewer Enterprise Fund Grant (up to $50,000)	FY 2025	FY 2025
Generator	$500,000	ARPA	FY 2024	FY 2024
Spruce Street Ejector Station	$100,000	Sewer Enterprise Fund	FY 2024	FY 2024
Inflow & Infiltration Rehabilitation (I&I Removal, Every 4 Years)	$6,000,000	SRF Loan	FY 2028	FY 2038
Pump Station Upgrade	$200,000	SRF Loan	FY 2025	FY 2028
WWTF Upgrade Design & Bidding	$2,500,000	Conventional Loan ($1.5M) ARPA ($1M)	FY 2023	FY 2024
Phosphorus/Tertiary Treatment Upgrade	$12,500,000	SRF Loan	FY 2025	FY 2025
WWTP Upgrades	$65,000,000	SRF Loan	FY 2026	FY 2033

Recommended Option for Rate Change

Upon reviewing the Town's CIP, the projections of this rate study expanded from a 5-year to a 15-year outlook to take into consideration future debt accumulated from the WWTF upgrade project. The recommended option for updated rates included in this report was designed to address the urgency to build up reserve in the Sewer Enterprise Fund to fund the WWTF upgrade project and repay future debt. In addition, the recommended rate change would ensure that retained earnings are not depleted by FY2038, the end of the study period. While Industry standards for retained earnings balance is between 10% and 25%, the recommended option targeted a retained earnings balance of 15% of total expenditures by the end of the 15-year period.

Since the analysis was a 15-year look-ahead, rates are presented for the next fifteen fiscal years, starting FY 2024. The recommended option aims to help the Town to achieve its goals of covering actual costs of services, maintaining healthy retained earnings, and ensuing long-term fiscal stability.

Baseline ("Do Nothing") Option

A baseline "do nothing" option is provided as a hypothetical scenario where no action or rate change is taken, and the Sewer Department continues to operate as it currently does and performs the capital improvement work as planned. It is used as a comparison point for evaluating the effectiveness of the recommended rate change.

Figure 2 on the next page shows the projected retained earnings in the baseline "do nothing" scenario. As shown in Figure 2, under the baseline "do nothing" scenario, retained earnings remains healthy, reaching nearly 50% of total expenditures in FY 2024. However, as some of the CIP projects begin to take place, such as the WWTF upgrade project, retained earnings are exhausted by the end of FY 2025. Table 4 below presents the projected Sewer Enterprise Fund and Retained Earnings from FY 2023 to FY 2027 under this baseline scenario.

Table 4 - Projected Sewer Enterprise Fund and Retained Earnings (FY 2023 to FY 2027)

Baseline Scenario	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027
Surplus/Deficit	$(233,420)	$345,518	$76,483	$(630,704)	$(1,503,091)
Projected Retained Earnings	$1,276,547	$1,622,065	$1,067,844	$(435,247)	$(2,573,739)
Retained Earnings as % of Budget	35.9%	48.4%	29.5%	-10.1%	-49.5%
Target Retained Earnings as % of Budget	15.0%	15.0%	15.0%	15.0%	15.0%

As shown above, by FY 2026, both the Sewer Enterprise Fund and Retained Earnings are in deficit and would be unable to cover costs of services. The baseline "do nothing" option appears to be unacceptable.

Rate Change Option

Through careful evaluation and analysis, the recommended 15-year rate increase plan is as follows: the first 8-year period, a 10% increase per year is recommended, followed by a slower 7-year period increase. Increases to rates are presented in Table 5 below. This recommended plan is tailored to meet the Town's needs. The higher increases during the first 8-yearr period is designed to build up reserve in order to fund the upcoming CIP projects. The slower rate increases during the latter 7-year period is expected to keep projected retained earnings from depleting and to show retained earnings trenching towards the targeted balance of 15% of total expenditures by the end of FY 2038. Figure 3 on page 8 presents the projected retained earnings in the recommended rate increases scenario.

Table 5 - Recommended Rate Increases

Fiscal Year	FY 2024 – FY 2031	FY 2032 – FY 2033	FY 2034	FY 2035 – FY 2038
Recommended Rate Increase	10%	7%	5%	2%

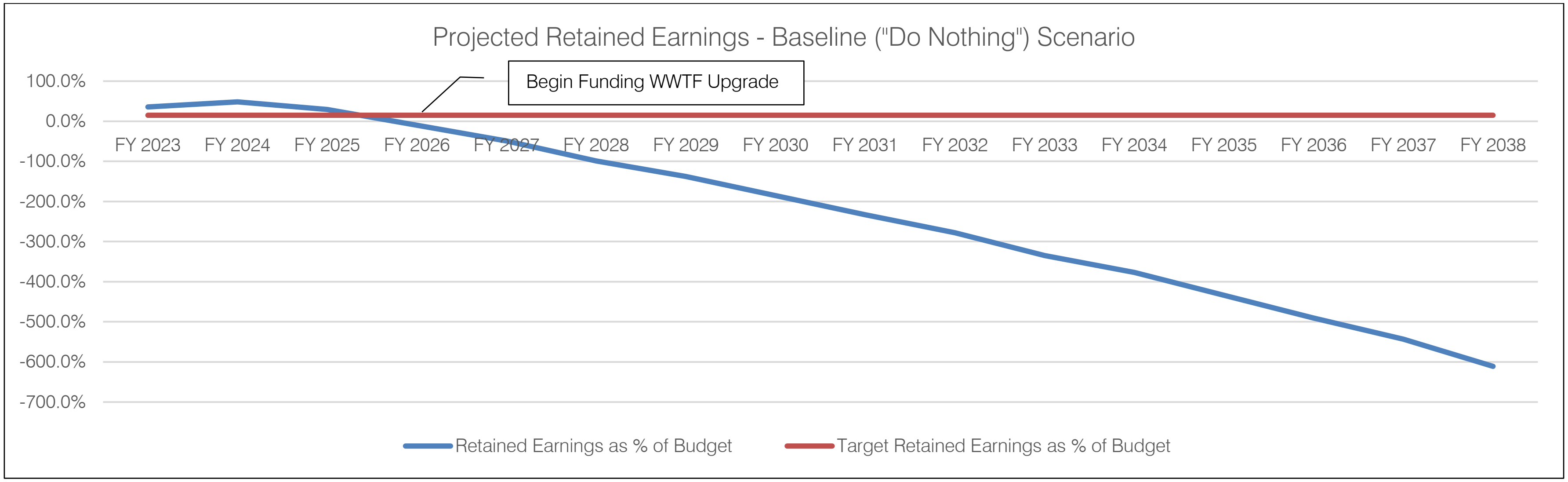


Figure 2 - Projected Retained Earnings (Baseline "Do Nothing" Scenario)

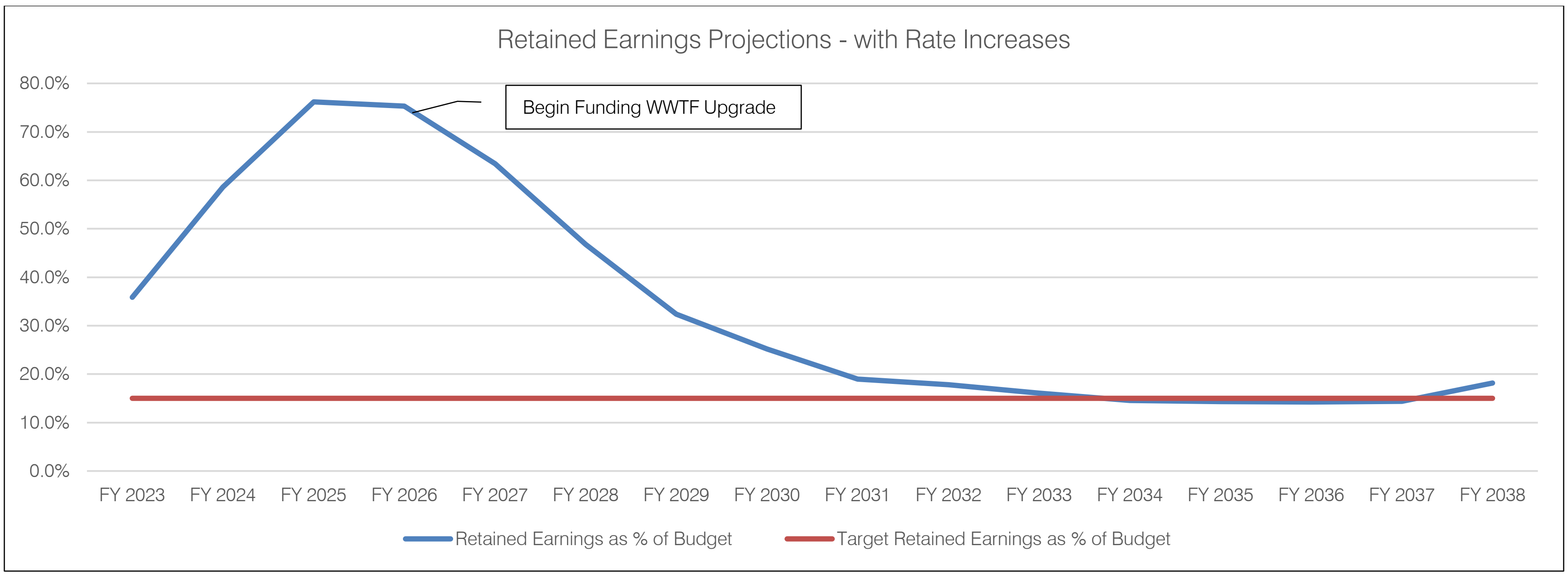


Figure 3 - Projected Retained Earnings (with Recommended Rate Increases)

Table 6 below presents the quarterly and annual sewer bill impact for average users after recommended rate increases from FY 2024 to FY 2028.

Table 6 - Bill Impacts for Average Customers (quarterly and annually)

User Impact (per bill) – Sewer Bills Only			Bill Increase Compared to Previous Year				
Bill Type	Usage (cubic feet)	Current Bill	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Average Residential User Quarterly Bill	2,075	$163.76	+ $15.38	+ $16.91	+ $18.60	+ $20.47	+ $22.51
Average Residential User Annual Bill	8,300	$655.03	+ 61.52	+ $67.64	+ $74.40	+ $81.88	$ 90.04

Summary

The results of this rate study can be summarized in a chart and is provided in Appendix B. The chart, which presents the actual and projected sewer cash flow with recommended rate changes from FY 2020 to FY 2038, includes several financial parameters, such as targeted retained earnings, operating expenses, sewer enterprise funded capital, debt, and revenue.

It should be noted that revenues and expenses are likely to change over time. Currently, the Town is unable to accept additional sewer flows due to capacity limitations in the collection system. However, as the Town implements and performs I/I reduction projects to address capacity issues, new connections and developments may be accepted by the Town in the future, which would lead to increase in revenue.

It is important for the Town to continue to fund the projects on its Capital Improvement Plan (CIP). The Town will undoubtedly benefit from continued capital investment, including the wastewater treatment facility upgrade and I/I reduction projects. The projects provided in this study are based on many assumptions. We recommend that the sewer analyses conducted for the Town are reviewed and updated each year. Assumptions, for example, planned expenditures and consumption trends, change year-to-year and it is important to capture the changes to ensure the rate plans presented are based on the most accurate information available at the time.

APPENDIX A

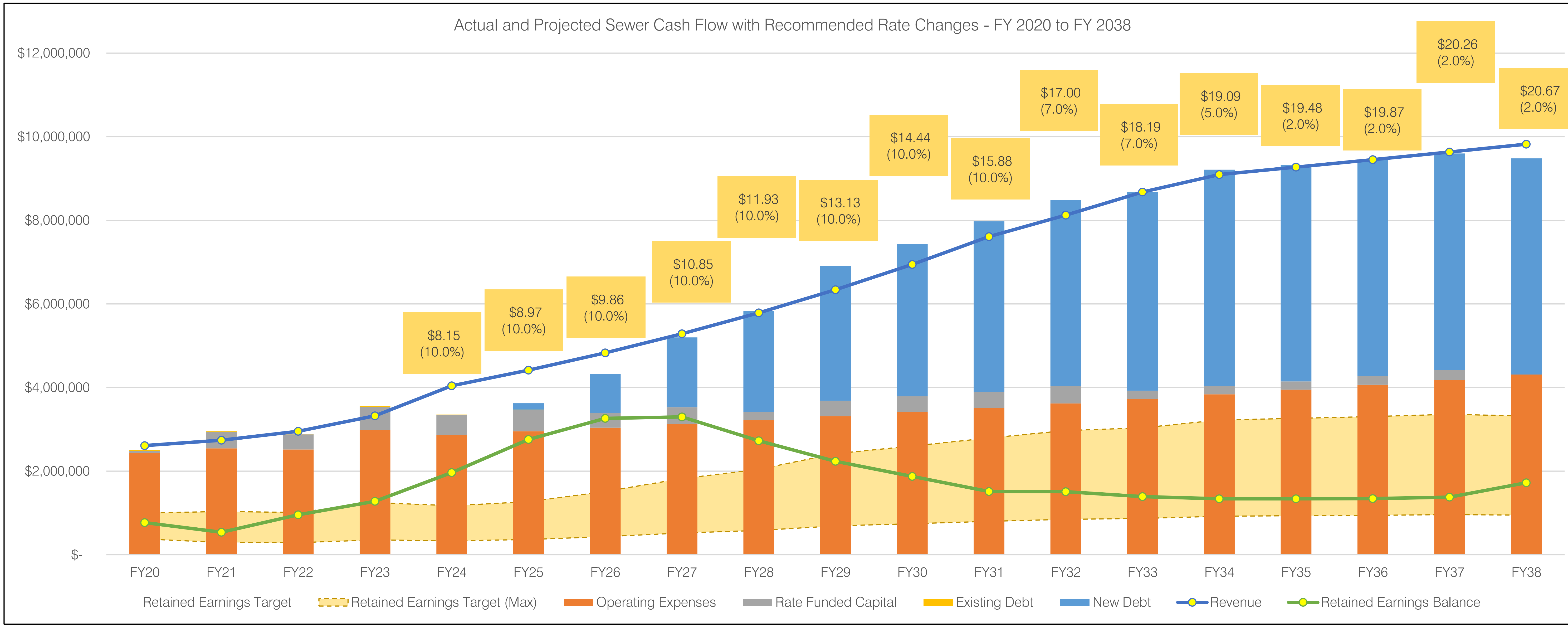
TOWN OF ROCKLAND
SANITARY SEWER SYSTEM
CAPITAL IMPROVEMENT PLAN (CIP)

Capital Improvement Plan - Sanitary Sewer System (Rate Study, FY 2023 - FY 2038)
Town of Rockland, Massachusetts

Item	Description	Funding Source	Estimated Cost	Project Start Year	Project End Year	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2032	FY 2033	FY 2034	FY 2035	FY 2036	FY 2037	FY 2038
Collection System Items																					
1	Inflow & Infiltration Remediation System	Sewer Enterprise Fund	$ 2,200,000.00	Ongoing		$ 200,000.00	$ 200,000.00	$ 200,000.00	$ 200,000.00	$ 200,000.00	$ 200,000.00	$ 200,000.00	$ 200,000.00	$ 200,000.00	$ 200,000.00	$ 200,000.00					
2	Inflow & Infiltration Annual Control Plan (I&I Investigation)	Sewer Enterprise Fund	$ 2,241,000.00	FY 2023	FY 2037	$ 150,000.00		$ 155,000.00	$ 160,000.00	$ 200,000.00		$ 170,000.00	$ 175,000.00	$ 180,000.00	$ 220,000.00		$ 191,000.00	$ 197,000.00	$ 203,000.00	$ 240,000.00	
3	Inflow & Infiltration Reoperation	ARPA	$ 330,000.00	FY 2023	FY 2023	$ 330,000.00															
4	Inflow & Infiltration Rehabilitation (I&I Removal, Every 4 Years)	SRF Loan	$ 6,000,000.00	FY 2028	FY 2038						$ 2,000,000.00					$ 2,000,000.00					$ 2,000,000.00
Sewer Pump Station Items																					
1	Spruce Street Ejector Station	Sewer Enterprise Fund	$ 100,000.00	FY 2024	FY 2024		$ 100,000.00														
2	Pump Station Upgrade - Phase 2	SRF Loan	$ 50,000.00	FY 2025	FY 2025			$ 50,000.00													
3	Pump Station Upgrade - Phase 3	SRF Loan	$ 50,000.00	FY 2026	FY 2026				$ 50,000.00												
4	Pump Station Upgrade - Phase 4	SRF Loan	$ 50,000.00	FY 2027	FY 2027					$ 50,000.00											
5	Pump Station Upgrade - Phase 5	SRF Loan	$ 50,000.00	FY 2028	FY 2028						$ 50,000.00										
Wastewater Treatment Plant Item																					
1	Digester Building Gas Lines	Sewer Enterprise Fund + ARPA	$ 350,000.00	FY2023	FY 2024	$ 330,000.00	$ 20,000.00														
2	Digester Recirculation Pumps	Sewer Enterprise Fund	$ 50,000.00	FY 2025	FY 2025			$ 50,000.00													
3	New Heating System (WWTF Office Building)	Sewer Enterprise Fund + Grant (up to $50,000)	$ 150,000.00	FY 2025	FY 2025			$ 150,000.00													
4	Generator	ARPA	$ 500,000.00	FY 2024	FY 2024			$ 500,000.00													
5	WWTF Upgrade Design & Bidding	SRF Loan	$ 1,500,000.00	FY 2023	FY 2024		$ 1,500,000.00														
6	Phosphorus/Tertiary Treatment Upgrade	SRF Loan	$ 12,500,000.00	FY 2025	FY 2025			$ 12,500,000.00													
7	WWTP Upgrades	SRF Loan	$ 65,000,000.00	FY 2026	FY 2033				$ 12,000,000.00	$ 12,000,000.00	$ 11,000,000.00	$ 7,000,000.00	$ 7,000,000.00	$ 6,000,000.00	$ 5,000,000.00	$ 5,000,000.00					
		Total =	$ 91,121,000.00			$ 1,010,000.00	$ 1,820,000.00	$ 13,605,000.00	$ 12,410,000.00	$ 12,450,000.00	$ 13,250,000.00	$ 7,370,000.00	$ 7,375,000.00	$ 6,380,000.00	$ 5,420,000.00	$ 7,200,000.00	$ 191,000.00	$ 197,000.00	$ 203,000.00	$ 240,000.00	$ 2,000,000.00
			Updated	5/4/2023																	

APPENDIX B

ACTUAL AND PROJECTED SEWER CASH FLOW WITH RECOMMENDED RATE CHANGES
FY 2020 TO FY 2038



Actual and Projected Sewer Cash Flow with Recommended Rate Changes - FY 2020 to FY 2038
$12,000,000
$10,000,000
$8,000,000
$6,000,000
$4,000,000
$2,000,000
$-
$8.15 (10.0%)
$8.97 (10.0%)
$9.86 (10.0%)
$10.85 (10.0%)
$11.93 (10.0%)
$13.13 (10.0%)
$14.44 (10.0%)
$15.88 (10.0%)
$17.00 (7.0%)
$18.19 (7.0%)
$19.09 (5.0%)
$19.48 (2.0%)
$19.87 (2.0%)
$20.26 (2.0%)
$20.67 (2.0%)
FY20
FY21
FY22
FY23
FY24
FY25
FY26
FY27
FY28
FY29
FY30
FY31
FY32
FY33
FY34
FY35
FY36
FY37
FY38
Retained Earnings Target
Retained Earnings Target (Max)
Operating Expenses
Rate Funded Capital
Existing Debt
New Debt
Revenue
Retained Earnings Balance

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