NOTICE OF INTENT

Request for General Permit Authorization to Discharge Wastewater

**Potable Water Treatment Facility (PWTF) NPDES
General Permit No. MAG640000 and NHG640000**

SUBMITTED TO

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
5 POST OFFICE SQUARE, SUITE 100
BOSTON, MASSACHUSETTS 02109-3912**

A. Facility Information

1. *Indicate applicable General Permit for discharge* ☒ MAG640000
   ☐ NHG640000

2. *Facility Data*

   Facility Name Haverhill Water Treatment Plant

   Street/PO Box 131 Amesbury Road City Haverhill

   State MA Zip Code 01830-2801

   Latitude 42°47'35.94" N Longitude 71°3'33.32" W

   SIC Code(s) _____

   Type of Business Municipal Water Treatment Plant

3. *Facility Mailing Address (if different from Location Address, above)*

   Facility Name SAME

   Street/PO Box _____ City _____

   State _____ Zip Code _____

4. *Facility Owner:*

   Legal Name City of Haverhill

   Email jdaoust@haverhillwater.com

   Street/PO Box 131 Amesbury Road City Haverhill

State MA Zip Code 01830-2801

Contact Person John D'Aoust Water Treatment Plant Manager Tel # 978-374-2385

Owner is (check one): ☐ Federal ☐ State ☐ Tribal ☐ Private

Other (describe)

City - Municipality

5. *Facility Operator (if different from above):*

Legal Name SAME

Email

Street/PO Box City

State Zip Code

Contact Person Tel #

6. *Currently (Administratively) Covered Under the Expired PWTF General Permit? (Please check yes or no):*

☐ Yes ☒ No

a) Has a prior NPDES permit (either individual or general permit coverage) been granted for the discharge that is listed on the NOI? ☐ Yes ☒ No If Yes, Permit Number

b) Is the discharge a "new discharger" as defined by 40 CFR Section 122.22? ☐ Yes ☒ No

c) Is the facility covered by an individual NPDES permit for *other* discharges? ☐ Yes ☒ No

If yes, Permit Number:

d) Is there a pending NPDES application (either individual or general permit) on file with EPA for this discharge? ☐ Yes ☒ No

If yes, date of submittal: and Permit Number, if available

7. *Attach a topographic map indicating the location of the facility and the outfall(s) to the receiving water.*
Map attached? ☒, Attachment A

B. Discharge Information (Attach additional sheets as needed):

1. *Name of receiving water into which discharge will occur*: Kenoza Lake

Check Appropriate Box: ☒Freshwater ☐ Marine Water

State Water Quality Classification Class A

Type of Receiving Water Body (e.g., stream, river, lake, reservoir, estuary, etc.) Reservoir

2. *Indicate the frequency of the discharge:*

☐ Emergency Only ☒ Infrequent (Once/Twice a Year) ☐ Intermittent*** ☐ Continuous

☐ Other***

*** If Intermittent (i.e., occurs sometimes but not regularly as in batch discharge), provide # of days per year the discharge occurs _____

*** If Other, explain _____

3. Describe the discharge activities for which the owner/applicant is seeking coverage, including process discharges not specifically authorized in the PWTF GP which need to be authorized for discharge (and which attain the effluent limits and other conditions of the general permit.)

(This description should include all treatment methods used on the wastewater prior to discharge including lagoons, baffles, filter presses, etc. If lagoons are used at the facility, please include the number and size of lagoons; the size and elevation of the entry pipe; the time of travel from the entry point of the discharge into the lagoon to the entry point to the receiving waters; and the length of backwash cycle for any combination of filters.)

The discharges from the Haverhill water treatment plant into Kenoza Lake are solely for annual maintenance of treatment tanks/processes within the facility. These discharges include drainage from the following locations:

- Sedimentation Basins
- Mixed Media Filters
- Granular Activated Carbon (GAC) Filters
-Contact Chamber
-Finish Water Blow-off

4. Attach a line drawing or flow schematic showing water flow through the facility including sources of intake water, operations contributing to flow, treatment units, outfalls, and receiving water(s).

Line drawing or flow diagram attached? ☒, Attachment B

5. Identify the source of the water being discharged:

☒ Surface water ☐ Groundwater ☐ Other (describe) _____

6. Number of Outfalls 5 Latitude and Longitude to the nearest second for each Outfall. Attach additional pages if necessary.

Outfall #	1	Latitude	42°47'34"	Longitude	71°3'32"
Outfall #	2	Latitude	42°47'34"	Longitude	71°3'32"
Outfall #	3	Latitude	42°47'35"	Longitude	71°3'34"
Outfall #	4	Latitude	42°47'35"	Longitude	71°3'34"
Outfall #	5	Latitude	42°47'35"	Longitude	71°3'36"

7. For each outfall, indicate the proposed sampling location(s) for both effluent and ambient water (when applicable) and proposed consistent times of the month for collecting samples:

Outfall # 1

Samples are collected from two locations within the sedimentation basins. Samples are collected at the top surface and mid-depth within the sedimentation basin.

Outfall # 2

Samples are collected from the influent and effluent channels of the Mixed Media Filters.

Outfall # 3

Samples are collected from influent and effluent channels of the GAC Filters.

Outfall # 4

Samples are collected from within the chorine contact chamber.

Outfall # 5

Samples are collected from 100-ft sample tap off Finish Water Piping.

C. Effluent Characteristics

1. List here and attach additional information (on separate sheet) on any water additives used at the facility. This includes chemicals (including aluminum, iron, or phosphorus-containing chemicals) for pH adjustment, dechlorination, control of biological growth, and control of corrosion and scale in water pipes.

-Potassium Permanganate

-Sodium Hydroxide

-Aluminum Sulfate

-Sodium Silicofluoride

-Sodium Hypochlorite

-Zinc Orthophosphate

2. Report any known remediation activities or water quality issues in the vicinity of the discharge.

Not applicable.

3. Are aluminum compounds or polymers used as coagulants at this facility?*

☒ Yes ☐ No

*If answer is "Yes" and the facility was *not* covered under the PWTF GP that expired on 10/2/14, additional monitoring data and information is required. **Please complete Item III.C.12.**

4. Does the facility use any alum-based products for algae control?*

☐ Yes ☒ No

*If answer is "Yes" and the facility was *not* covered under the PWTF GP that expired on 10/2/14, additional monitoring data and information is required. **Please complete Item III.C.12.**

5. Are iron-containing coagulants used at this facility? ☐ Yes ☒ No

6. Does the facility's discharge contain residual chlorine? ☒ Yes ☐ No

[If Yes, EPA will calculate a Total Residual Chlorine effluent limit for your facility]

7. Does the facility provide treatment to remove arsenic from the raw water source? ☐ Yes ☒ No

8. a. Are phosphorus-containing chemicals added to the treated water at this facility? ☒ Yes ☐ No

b. If answer to 8.a. is Yes, does the facility discharge to Phosphorus-Impaired waters? ☐ Yes ☒ No

c. If answer to 8.b. is Yes, provide name of P-Impaired waterbody: _____

9. Does the facility remove radium or other radioactive substances from raw water sources to comply with drinking water standards? ☐ Yes ☒ No

10. Provide the reported or calculated seven-day ten-year low flow (7Q10) of the receiving water 7Q10: N/A cfs

***NOTE: For facilities that discharge in New Hampshire, the state permitting authority **must** be contacted at the address listed in Appendix VI of the PWTF GP to determine and/or confirm the 7Q10

and/or dilution factor. For facilities that discharge in Massachusetts, it is highly recommended to contact the relevant state authority (MassDEP) to determine and/or confirm the 7Q10 and/or dilution factor.*** Attach any calculation sheets used to support the stream flow and dilution factors. See Appendix VII for equations and additional information.

11. For *each* outfall, provide the following discharge information:

1. Outfall # 1 (16" Drain from Sedimentation Basins)

a) *Design Flow of Facility (in million gallons per day, MGD):* 12

This value will determine the facility's daily maximum flow limit, up to a maximum of 1.0 MGD.

b) *Discharge Flow (in gallons per day, GPD):*

Maximum Daily Flow 644,400 GPD Average Monthly Flow N/A GPD

*Annual draining and inspection of the flocculation and sedimentation tanks. Only one train is drained at a time. Draining takes approximately 1 day. Total Volume of 1Train = 644,400 gallons.

c) *TSS (mg/l)*: Number of samples: 4

Maximum Daily 3 mg/l Average Monthly 2 mg/l

d) *pH (s.u.)*: Number of samples: 4

Minimum 6.81 s.u. Maximum 6.95 s.u.

e) *Total Residual Aluminum (µg/l)*: Number of samples: 4

f) Maximum Daily 400 µg/l

NOTE: TRC is only required for discharges which have been previously chlorinated or contain residual chlorine

2. Outfall # 2 (Mixed Media- 16" Drain and overflow)

a) *Design Flow of Facility (in million gallons per day, MGD):* 12

This value will determine the facility's daily maximum flow limit, up to a maximum of 1.0 MGD.

b) *Discharge Flow (in gallons per day, GPD):*

Maximum Daily Flow 53,100* GPD Average Monthly Flow N/A GPD

*Annual draining and inspection of the filters, as well as repairs to the filter (2-4 times per year). Only one filter is drained at a time. Draining takes approximately 1 hour. Total Volume of 1 Filter = 53,100 gallons.

c) *TSS (mg/l)*: Number of samples: 4

Maximum Daily 3 mg/l Average Monthly 1.5 mg/l

d) *pH (s.u.)*: Number of samples: 4

e) Minimum 6.78 s.u. Maximum 6.8 s.u.

f) *Total Residual Aluminum (µg/l)*: Number of samples: 4

Maximum Daily 240 µg/l

NOTE: TRC is only required for discharges which have been previously chlorinated or contain residual chlorine

3. Outfall # 3 (GAC Filter- 16" Drain and overflow)

a) *Design Flow of Facility (in million gallons per day, MGD):* 12

This value will determine the facility's daily maximum flow limit, up to a maximum of 1.0 MGD.

b) *Discharge Flow (in gallons per day, GPD):*

Maximum Daily Flow 66,500* GPD Average Monthly Flow N/A GPD

* Annual draining and inspection of the filters, as well as repairs to the filter (2-4 times per year). Only one filter is drained at a time. Draining takes approximately 1 hour. Total Volume of 1 Filter = 66,500 gallons.

c) *TSS (mg/l)*: Number of samples: 4

Maximum Daily ND mg/l Average Monthly ND mg/l

d) *pH (s.u.)*: Number of samples: 4

e) Minimum 6.74 s.u. Maximum 6.83 s.u.

f) *Total Residual Aluminum (µg/l)*: Number of samples: 4

Maximum Daily 60 µg/l

NOTE: TRC is only required for discharges which have been previously chlorinated or contain residual chlorine

4. Outfall # 4 (Contact Chamber- 6" Drain)

a) *Design Flow of Facility (in million gallons per day, MGD):* 12

This value will determine the facility's daily maximum flow limit, up to a maximum of 1.0 MGD.

b) *Discharge Flow (in gallons per day, GPD):*

Maximum Daily Flow 174,000* GPD Average Monthly Flow N/A GPD

*Annual draining and inspection of the contact chamber. The City will pump the first 4.5 feet to distribution before opening the drain to the outfall. Draining takes approximately 8-12 hours.

c) *TSS (mg/l)*: Number of samples: 2

Maximum Daily ND mg/l Average Monthly _____

d) *pH (s.u.)*: Number of samples: 2

Minimum 6.72 s.u. Maximum 6.75 s.u.

e) *Total Residual Aluminum (µg/l)*: Number of samples: 2

Maximum Daily 70 µg/l

f) *Total Residual Chlorine (µg/l)*: Number of samples: 2

Maximum Daily 1,200 µg/l

5. Outfall # 5 (Finished Water Vault 16" Blowoff line)

a) *Design Flow of Facility (in million gallons per day, MGD):* 12

This value will determine the facility's daily maximum flow limit, up to a maximum of 1.0 MGD.

b) *Discharge Flow (in gallons per day, GPD):*

Maximum Daily Flow 84,000* GPD Average Monthly Flow ___GPD

*Emergency drainage only. Assume 5,600 gpm for 15 minutes in a surge relief event.

c) *TSS (mg/l)*: Number of samples: 2

Maximum Daily 3 mg/l Average Monthly 1.5 mg/l

d) *pH (s.u.)*: Number of samples: 2

Minimum 7.63 s.u. Maximum 7.64 s.u.

e) *Total Residual Aluminum (µg/l)*: Number of samples: 2

Maximum Daily 40 µg/l

f) *Total Residual Chlorine (µg/l)*: Number of samples: 2

Maximum Daily 1330 µg/l

12. The following section must be completed for any facility that answered "Yes" to Question III.C.3 or III.C.4 (e.g. adds an aluminum-containing chemical to the water being treated and/or discharged) **AND** was not covered under the previous PWTF GP (which expired on 10/2/14).

a) Collect, analyze and submit **12 effluent samples and 10 ambient surface water samples** from a location upstream of and not affected by the discharge. For facilities in New Hampshire and Massachusetts, each sample should be analyzed for total recoverable Al in micrograms per liter.

All laboratory results shall be submitted on a separate sheet.

- **a.** The samples shall be composite samples consisting of four grab samples taken at approximately equal intervals on a flow weighted basis during the time at which the discharge is entering the receiving water after the start of the backwash cycle.
- **b.** For each sampling event, the effluent and surface water samples shall be collected on the same day and during a representative discharge event. The samples shall be no more frequent than weekly and, if time allows in completing the NOI, at monthly intervals and at different flow conditions. If taking the ambient water quality sample from lakes/reservoirs, the 10 samples should be composited vertically.
- **c.** Discharge flow at the time of effluent sampling should be recorded. Flow conditions at the time of ambient water sampling should be recorded (or estimated from nearest gaging station).
- **d.** Do not include dilution when recording the results.
- **e.** See Section 2.1.2.3 and Footnote 12 of Section 2.1.1 for MA facilities (or Section 3.1.2.3 and Footnote 10 of 3.1.1 for NH facilities) for key information on minimum level for analysis and sufficiently sensitive test procedures.
- **f.** Sampling data that was collected within one year of the effective date of this general permit AND that adheres to all of the requirements above may be submitted in lieu of new samples. This must be denoted with the submitted data.

b) Provide a description of control measures, chemical substitutions, waste handling methods, and operational changes evaluated and/or used by the facility to minimize the discharge of aluminum to surface waters. (Include additional sheet(s), if necessary)

Before draining the sedimentation basin into outfall #1, the sludge collection system within the basin is run continually in order to remove all of the settled particulate at the bottom of the tank. Once all possible sludge has been removed from the tank, the basin is then drained to ensure that only water that has already been settled is sent into outfall #1.

D. Endangered Species Act Eligibility Information

Using the instructions in Appendix III of the PWTF GP, which of the following criteria apply to your facility?

U.S. Fish and Wildlife Service (USFWS) Criteria: ☐ A ☒ B ☐ C

1. If you selected USFWS criteria B, has consultation with the U.S. Fish and Wildlife Service been completed?

   ☒ Yes ☐ No

2. If consultation with US Fish & Wildlife Service was completed, was a written concurrence finding that the discharge is "not likely to adversely affect" listed species or critical habitat received?

   ☒ Yes ☐ No

3. Attach documentation of ESA eligibility for USFWS as required at Part 1.4 and Appendix III of the General Permit. **Documentation attached?** Yes, Attachment C .

4. For facilities seeking coverage under the Potable Water Treatment Facility General Permit for the *first* time, respond to the following questions to assist in ESA eligibility for NMFS:

   a) Indicate if the facility discharges into any of the stretches of the following rivers which can support or provide habitat to either Shortnose or Atlantic Sturgeon:

Merrimack River (from Essex Dam in Lawrence, Downstream (including Haverhill) to mouth of River)	☐ Yes	☒ No
Connecticut River (from Turner's Falls, downstream through Holyoke (including Holyoke Dam region)	☐ Yes	☒ No
Taunton River	☐ Yes	☒ No
Piscataqua River (in NH)	☐ Yes	☒ No

   b) Has the facility had any previous formal or informal consultation with NMFS?

   ☐ Yes ☒ No

   If yes, attach the results of the consultation(s). **Documentation attached?** _____

E. National Historic Properties Act Eligibility

1. Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility site or in proximity to the discharge? ☐ Yes ☒ No

2. Have any State or Tribal Historic Preservation Officers been consulted in this determination?

   ☐ Yes ☒ No

   If yes, attach the results of the consultation(s). **Documentation attached?** _____

3. Which of the three National Historic Preservation Act scenarios listed in Appendix II, Section III have you met?

☒ 1 ☐ 2 ☐ 3

F. Supplemental Information

Please provide any supplemental information, including antidegradation review information applicable to new or increased discharges. Attach any analytical data used to support the application. Attach any certification(s) required by the General Permit.

G. Signature Requirements

The NOI must be signed by the operator in accordance with the signatory requirements of 40 CFR § 122.22 (see below) including the following certification:

I certify under penalty of law that (1) the discharge for which I am seeking coverage under the general permit consists solely of a surface water discharge from a potable water treatment facility; (2) any chemicals used to treat the discharge have been identified in this NOI; and (3) where applicable, the facility has complied with the requirements of this permit specific to the Endangered Species Act and National Historic Preservation Act.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature _____ Date 8/31/17

Printed Name and Title Robert E. Ward, Deputy DPW Director

Federal regulations require this application to be signed as follows:

1. For a corporation, by a responsible corporate party;
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively, or,
3. For a municipality, State, Federal or other public facility, by either a principal executive officer or ranking elected official.

Note: Permits No. MAG640000 and NHG640000 may be found at http://www3.epa.gov/region1/npdes/pwtfgp.html

H. "Opt-Out Request" from NetDMR Requirement

1. Check the box if you **are** applying for an "opt-out request." ☐

ATTACHMENT A

TOPOGRAPHIC MAP

GENERAL NOTES

1. FOR EXPLANATION OF SYMBOLS, REFER TO GENERAL LEGEND, EXISTING CONDITIONS PLAN, DWG. ST-1.
2. ALL CASTINGS FOR MANHOLES, CATCH BASINS, VAULTS, ETC. TO BE SET AT FINISH GRADE UNLESS OTHERWISE NOTED ON THE DRAWINGS OR SPECIFICATIONS.
3. FOR MORE COMPLETE BUILDING SUBDRAIN INFORMATION, SEE DWG. ST-3.
4. PROPOSED 12" DIA CORRUGATED STEEL PIPE. INVERT EL. TO BE 114.6', OUTFALL EL. TO BE 109.6'. PROVIDE END FLANGE FIXES ON BOTH ENDS AND RIPRAP BOTH INTAKE AND OUTFALL. SEE DETAIL 'L'. SEE DETAIL 'M' FOR CULVERT CONNECTION TO DMH TRAP CATCH BASIN.
5. SEE DWG. M-11 FOR HEADWALL DETAILS.
6. ALL PROPOSED OUTSIDE PIPING FOR WATER AND SEWER IS INDICATED ON THIS DRAWING ONLY FOR REFERENCE PURPOSES. FOR EXACT LOCATIONS, DIMENSIONS, INVERTS, ETC., SEE DWG. A-1.

NORTH

BAR SCALE IN FEET
30 0 30 60

MATCH LINE (SEE DWG. ST-2 FOR CONTINUATION)

EXISTING EDGE OF WOODS

NEW EDGE OF WOODS

EDGE OF AREA FOR FUTURE EXPANSION - SEE SPECIFICATIONS

AREA FOR FUTURE EXPANSION

TRANSFORMER PAD & ENCLOSURE (SEE DWGS. ST-5, E-1 & E-10 FOR FURTHER INFORMATION)

SEDIMENTATION BASINS (BELOW GRADE)

PROPOSED WATER TREATMENT PLANT

FOR DETAILED LAYOUT AND GRADING IN THIS AREA SEE DWG. ST-5

EXISTING PUMPING STATION

EXISTING STORAGE BLDG.

EXIST. BOAT RAMP

EXISTING ENTRANCE DRIVE

RAW WATER INTAKE PUMP STATION

EXIST SHED

BRICK WALL

BRICK RET. WALL

WATER MANHOLE

GAS GATE

SEPTIC TANK & DISTRIBUTION BOX

CONC. VALVE HOUSE

GREASE INTERCEPTOR STATION

T.B.M. #1 RIVET IN SET EL. 116.70

T.B.M. #2 RIVET IN SET EL. 116.70

8" PIPE INV. EL. 143.81

HEADWALL No 1 OUTFALL EL. 110.5 EXTEND RIPRAP AROUND OUTFALL AS INDICATED (SEE DWG. M-11 FOR DETAILS)

HEADWALL No 2 OUTFALL EL. 110.5 (SEE DWG. M-11 FOR DETAILS)

HEADWALL No 3 OUTFALL EL. 110.5 PROVIDE 12" MIN. DEPTH RIPRAP TO EDGE OF WATER (SEE DWG. M-11 FOR DETAILS)

RIPRAP EMBANKMENT AT 2 (H) : 1 (V) SLOPE (SEE DETAIL). RIPRAP TO BE 2'-0" FROM AND PARALLEL TO CURB, AS INDICATED. TOP OF SLOPE SHALL BE AT EXISTING GRADE.

EDGE OF WATER EL. 108.0 (7-23-76)

MATCH LINE 'A' - THIS SHEET

INTAKE SCREENS (SEE DWG. M-13)

B-97

B-98

NOTE: FOR FURTHER BORING INFORMATION, SEE DWG. ST-1.

MATCH LINE 'A' - THIS SHEET

K E N O Z A L A K E

Outfall #1
Sedimentation Basins
16" Drain

Outfall #2
Mixed Media Filter
16" Drain and Overflow

Outfall #3
GAC Filter
16" Drain and Overflow

Outfall #4
Clearwell Tank
6" Drain

Outfall # 5
Finish Water Blowoff
16" Drain

3/32
4/82

SCALE: 1"=30'
DESIGN: D.C.C.
DRAWN: D.C.C.
CHECK: D.P.C.
JULY, 77
6-132

OWNER
CITY OF HAVERHILL, MASS.

WHITMAN & HOWARD INC.
ENGINEERS AND ARCHITECTS

PROJECT
WATER TREATMENT FACILITY

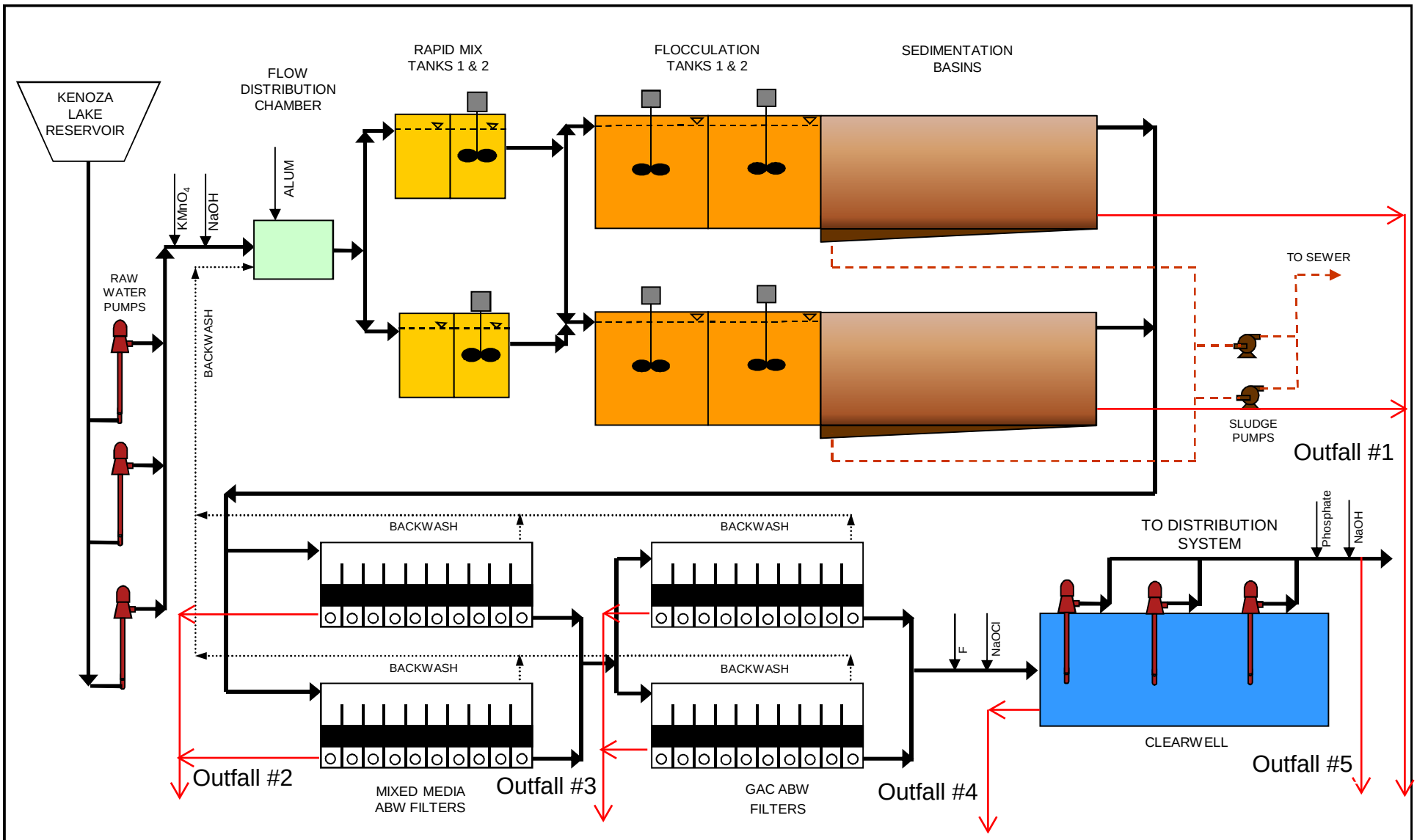
DRAWING TITLE
SITE GRADING PLAN

ST-4

DRAWING NO.
5 OF 67
SHEET NO. SHEETS

ATTACHMENT B

Process Flow Diagram



Chemicals Added

ALUM: Aluminum Sulfate
$KMnO_4$: Potassium Permanganate
NaOH: Sodium Hydroxide
NaOCl: Sodium Hypochlorite
F: Sodium Silicofluoride
Phosphate: Zinc Orthophosphate

PROCESS FLOW SCHEMATIC

KENOZA WATER TREATMENT PLANT

HAVERHILL, MASSACHUSETTS

PROJ NO: 13019	DATE: July 2017	FIGURE: 1-1

WRIGHT-PIERCE
Engineering a Better Environment

ATTACHMENT C

ENDANGERED SPECIES ACT ELIGIBILITY DOCUMENTATION

Attachment C
Endangered Species Act Eligibility Documentation

The projected discharge area is located in a Criteria B USFWS area. The threatened, Northern Long-Eared Bat can be found in this project area, however there are no critical habitats located within the designated discharge area surrounding Kenoza Lake. Based on these finding it is determined that no discharges from the Haverhill Water Treatment Plant treatment equipment into Kenoza Lake will adversely affect the Northern Long-Eared Bat. This determination is based on the low-hazard classification of discharge into the receiving water body, and the limited interaction between the species and the discharge. In addition, there are no required tree cuttings or construction activities associated with this project that could adversely affect the Long-Eared Bat population.

Refer to the below report, generated by the USFWS IPaC Mapping network for documentation of the project area and ESA determination.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: August 02, 2017
Consultation Code: 05E1NE00-2017-SLI-2347
Event Code: 05E1NE00-2017-E-05113
Project Name: Haverhill WTP General Permit to Discharge

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2017-SLI-2347

Event Code: 05E1NE00-2017-E-05113

Project Name: Haverhill WTP General Permit to Discharge

Project Type: WATER SUPPLY / DELIVERY

Project Description: Annual drainage of water treatment plant equipment for preventative maintenance and cleaning

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/42.78855852055234N71.05464097251004W

Counties: Essex, MA

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

There are no critical habitats within your project area under this office's jurisdiction.

ATTACHMENT D

Water Quality Lab Results

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 7H10054
Client Project: NPDES General Permit

Report Date: 18-August-2017

Prepared for:

Mary Daoust
Haverhill DW
131 Amesbury Road
Haverhill, MA 01830

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com

Samples Submitted:

The samples listed below were submitted to New England Testing Laboratory on 08/10/17. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 7H10054. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled
7H10054-01	S1-FW Kenoza Finished Water	Drinking water	08/10/2017
7H10054-02	S1-KL Kenoza Lake Raw Water	Drinking water	08/10/2017
7H10054-03	S1-CC Contact Chamber	Drinking water	08/10/2017
7H10054-04	S1-GACE GAC Effluent	Drinking water	08/10/2017
7H10054-05	S1-GACE GAC Influent	Drinking water	08/10/2017
7H10054-06	S1-MME Mixed Media Filter Effluent	Drinking water	08/10/2017
7H10054-07	S1-MME Mixed Media Filter Influent	Drinking water	08/10/2017
7H10054-08	S1-SBB Sid Basin - 5ft Depth	Drinking water	08/10/2017
7H10054-09	S1-SBA Sid Basin - 1ft Depth	Drinking water	08/10/2017

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

S1-CC Contact Chamber

pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D
Aluminum	SM3120-B

S1-FW Kenoza Finished Water

Aluminum	SM3120-B
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D

S1-GACE GAC Effluent

Aluminum	SM3120-B
Total Suspended Solids	SM2540-D
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G

S1-GACE GAC Influent

Aluminum	SM3120-B
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D

S1-KL Kenoza Lake Raw Water

pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D
Aluminum	SM3120-B

S1-MME Mixed Media Filter Effluent

Aluminum	SM3120-B
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D

S1-MME Mixed Media Filter Influent

Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D
pH	SM4500-H-B
Aluminum	SM3120-B

S1-SBA Sid Basin - 1ft Depth

pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D
Aluminum	SM3120-B

S1-SBB Sid Basin - 5ft Depth

Total Suspended Solids	SM2540-D
Aluminum	SM3120-B
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G

The analytical methods provided are documented in the following references:

Manual of Methods for Chemical Analysis of Water and Water Wastes, EPA-600/4-79-020 (Revised 1983), USEPA/EMSL.
Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998, APHA, AWWA-WPCF.
40 CFR 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act*, Office of Federal Register National Archives and Records Administration.

Results:

Sample: S1-FW Kenoza Finished Water
7H10054-01 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**7.5**	0.1	SU	08/10/17 16:45
Total Residual Chlorine	**1.05**	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	**3**	2	mg/L	08/11/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	ND	0.05	mg/L	08/18/17

Sample: S1-KL Kenoza Lake Raw Water
7H10054-02 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.7**	0.1	SU	08/10/17 16:45
Total Residual Chlorine	**0.02**	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	ND	2	mg/L	08/11/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	ND	0.05	mg/L	08/18/17

Sample: S1-CC Contact Chamber
7H10054-03 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.5**	0.1	SU	08/10/17 16:45
Total Residual Chlorine	**1.27**	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	ND	2	mg/L	08/11/17

Sample: S1-CC Contact Chamber (Continued)
7H10054-03 (Drinking water)

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.05**	0.05	mg/L	08/18/17

Sample: S1-GACE GAC Effluent
7H10054-04 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.5**	0.1	SU	08/10/17 16:45
Total Residual Chlorine	ND	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	ND	2	mg/L	08/11/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	ND	0.05	mg/L	08/18/17

Sample: S1-GACE GAC Influent
7H10054-05 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.6**	0.1	SU	08/10/17 16:45
Total Residual Chlorine	ND	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	ND	2	mg/L	08/11/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.06**	0.05	mg/L	08/18/17

Sample: S1-MME Mixed Media Filter Effluent
7H10054-06 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.5**	0.1	SU	08/10/17 16:45
Total Residual Chlorine	ND	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	ND	2	mg/L	08/11/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.06**	0.05	mg/L	08/18/17

Sample: S1-MME Mixed Media Filter Influent
7H10054-07 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.4**	0.1	SU	08/10/17 17:00
Total Residual Chlorine	ND	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	**6**	2	mg/L	08/11/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.38**	0.05	mg/L	08/18/17

Sample: S1-SBB Sid Basin - 5ft Depth
7H10054-08 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.5**	0.1	SU	08/10/17 17:00
Total Residual Chlorine	ND	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	**3**	2	mg/L	08/11/17

Sample: S1-SBB Sid Basin - 5ft Depth (Continued)
7H10054-08 (Drinking water)

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.39**	0.05	mg/L	08/18/17

Sample: S1-SBA Sid Basin - 1ft Depth
7H10054-09 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.5**	0.1	SU	08/10/17 17:00
Total Residual Chlorine	ND	0.01	mg/L	08/10/17 17:56
Total Suspended Solids	**3**	2	mg/L	08/11/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.41**	0.05	mg/L	08/18/17

Case Narrative

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

NEW ENGLAND TESTING LABORATORY,
59 Greenhill Street
West Warwick, RI 02893
1-888-863-8522

7 H 1 0054 S

PROJ. NO. | PROJECT NAME/LOCATION: Haverhill NPDES General Permit

CLIENT: Haverhill Water Dept (HWD)

REPORT TO:

INVOICE TO:

DATE	TIME	COMP	GRAB	SAMPLE I.D.	AQUEOUS	SOIL	OTHER	NO. OF CONTAINERS	PRESERVATIVE	TESTS** pH, TSS, Total Chlorine Residual	Total Recoverable Aluminum	REMARKS
8-10-17	1015			S1-FW Kenoza Lake Finished Water	X			2	None / HNO_3	X	X	Mary D'Aoust
8-10-17	1020			S1-KL Kenoza Lake Raw Water	X			2		X	X	Mary D' Aoust
8-10-17	1140			S1-CC Contact Chamber	X			2		X	X	Jacob Ducharme
8-10-17	1144			S1-GACE GAC Effluent	X			2		X	X	
8-10-17	1154			S1-GACI GAC Influent	X			2		X	X	
8-10-17	1153			S1-MME Mixed media filter Effluent	X			2		X	X	
8-10-17	1158			S1-MMI mixed media filter Influent	X			2		X	X	
8-10-17	1212			S1-SBB Sed basin - 5ft depth	X			2		X	X	
8-10-17	1219			S1-SBA Sed Basin - 1 ft depth	X			2		X	X	

Sampled by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Jacob Ducharme Mary L. D'Aoust	8-10-17 | 1230	Jacob Ducharme Mary L. D'Aoust	8-10-17 | 1230
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Mary L D'Aoust	8-10-17 | 1300	Robert Lee	8/10/17 | 1300
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time
Robert Lee	8/10/17 | 1520	[illegible]	8/10/17 | 1520

Laboratory Remarks:
Temp. received: 4°
Cooled ☐

Special Instructions:
List Specific Detection Limit Requirements:

Turnaround (Business Days)_____

**Netlab subcontracts the following tests: Radiologicals, Radon, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 7H17033
Client Project: NPDES General Permit

Report Date: 21-August-2017

Prepared for:

Mary Daoust
Haverhill DW
131 Amesbury Road
Haverhill, MA 01830

Richard Warila, Laboratory Director
New England Testing Laboratory, Inc.
59 Greenhill Street
West Warwick, RI 02893
rich.warila@newenglandtesting.com

Samples Submitted:

The samples listed below were submitted to New England Testing Laboratory on 08/17/17. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 7H17033. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled
7H17033-01	S2-FW Kenoza Lake Finished Water	Drinking water	08/17/2017
7H17033-02	S2-KL Kenoza Lake Raw Water	Drinking water	08/17/2017
7H17033-03	S2-CC Contact Chamber	Drinking water	08/17/2017
7H17033-04	S2-GACE GAC Effluent	Drinking water	08/17/2017
7H17033-05	S2-GACI GAC Influent	Drinking water	08/17/2017
7H17033-06	S2-MME Mixed Media Filter Effluent	Drinking water	08/17/2017
7H17033-07	S2-MMI Mixed Media Filter Influent	Drinking water	08/17/2017
7H17033-08	S2-SBB Sid Basin - 5ft Depth	Drinking water	08/17/2017
7H17033-09	S2-SBA Sid Basin - 1ft Depth	Drinking water	08/17/2017

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

S2-CC Contact Chamber

pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D
Aluminum	SM3120-B

S2-FW Kenoza Lake Finished Water

Aluminum	SM3120-B
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D

S2-GACE GAC Effluent

Aluminum	SM3120-B
Total Suspended Solids	SM2540-D
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G

S2-GACI GAC Influent

Aluminum	SM3120-B
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G

S2-GACI GAC Influent

	(continued)
Total Suspended Solids	SM2540-D

S2-KL Kenoza Lake Raw Water

pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D
Aluminum	SM3120-B

S2-MME Mixed Media Filter Effluent

Aluminum	SM3120-B
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D

S2-MMI Mixed Media Filter Influent

Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D
pH	SM4500-H-B
Aluminum	SM3120-B

S2-SBA Sid Basin - 1ft Depth

pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G
Total Suspended Solids	SM2540-D
Aluminum	SM3120-B

S2-SBB Sid Basin - 5ft Depth

Total Suspended Solids	SM2540-D
Aluminum	SM3120-B
pH	SM4500-H-B
Total Residual Chlorine	SM4500-CI-G

The analytical methods provided are documented in the following references:

Manual of Methods for Chemical Analysis of Water and Water Wastes, EPA-600/4-79-020 (Revised 1983), USEPA/EMSL.
Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998, APHA, AWWA-WPCF.
40 CFR 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act*, Office of Federal Register National Archives and Records Administration.

Results:

Sample: S2-FW Kenoza Lake Finished Water
7H17033-01 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**7.1**	0.1	SU	08/17/17 17:40
Total Residual Chlorine	**0.92**	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	ND	2	mg/L	08/18/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.07**	0.05	mg/L	08/18/17

Sample: S2-KL Kenoza Lake Raw Water
7H17033-02 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.1**	0.1	SU	08/17/17 17:40
Total Residual Chlorine	**0.04**	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	ND	2	mg/L	08/18/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.07**	0.05	mg/L	08/18/17

Sample: S2-CC Contact Chamber
7H17033-03 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.1**	0.1	SU	08/17/17 17:40
Total Residual Chlorine	**1.00**	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	ND	2	mg/L	08/18/17

Sample: S2-CC Contact Chamber (Continued)
7H17033-03 (Drinking water)

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.08**	0.05	mg/L	08/18/17

Sample: S2-GACE GAC Effluent
7H17033-04 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.0**	0.1	SU	08/17/17 17:40
Total Residual Chlorine	ND	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	ND	2	mg/L	08/18/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.08**	0.05	mg/L	08/18/17

Sample: S2-GACI GAC Influent
7H17033-05 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.1**	0.1	SU	08/17/17 17:40
Total Residual Chlorine	ND	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	ND	2	mg/L	08/18/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.09**	0.05	mg/L	08/18/17

Sample: S2-MME Mixed Media Filter Effluent
7H17033-06 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.1**	0.1	SU	08/17/17 17:40
Total Residual Chlorine	ND	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	ND	2	mg/L	08/18/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.09**	0.05	mg/L	08/18/17

Sample: S2-MMI Mixed Media Filter Influent
7H17033-07 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.1**	0.1	SU	08/17/17 17:40
Total Residual Chlorine	**0.04**	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	ND	2	mg/L	08/18/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.42**	0.05	mg/L	08/18/17

Sample: S2-SBB Sid Basin - 5ft Depth
7H17033-08 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.2**	0.1	SU	08/17/17 18:00
Total Residual Chlorine	**0.04**	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	**2**	2	mg/L	08/18/17

Sample: S2-SBB Sid Basin - 5ft Depth (Continued)
7H17033-08 (Drinking water)

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.42**	0.05	mg/L	08/18/17

Sample: S2-SBA Sid Basin - 1ft Depth
7H17033-09 (Drinking water)

General Chemistry

	Result	Reporting Limit	Units	Date Analyzed
pH	**6.3**	0.1	SU	08/17/17 18:00
Total Residual Chlorine	**0.03**	0.01	mg/L	08/17/17 17:44
Total Suspended Solids	ND	2	mg/L	08/18/17

Total Metals

	Result	Reporting Limit	Units	Date Analyzed
Aluminum	**0.39**	0.05	mg/L	08/18/17

Case Narrative

The samples were all appropriately cooled and preserved upon receipt. The samples were received in the appropriate containers. The chain of custody was adequately completed and corresponded to the samples submitted.

All samples were analyzed in accordance with 40 CFR 136 approved methodologies.

NEW ENGLAND TESTING LABORATORY, IN
59 Greenhill Street
West Warwick, RI 02893
1-888-863-8522

7 H 1 7033 e

PROJ. NO. | PROJECT NAME/LOCATION: Haverhill NPDES General Permit

CLIENT: Haverhill Water Dept

REPORT TO:

INVOICE TO:

DATE	TIME	COMP	GRAB	SAMPLE I.D.		AQUEOUS	SOIL	OTHER	NO. OF CONTAINERS	PRESERVATIVE	TESTS** pH, TSS, Total Chlorine residual, Total recoverable Aluminum	REMARKS: Sampled by
8-17-17	1055		X	S2-FW	Kenoza Lake Finished Water	X			2	Ice Only	X X	Jacob D Richard
	1105		X	S2-KL	Kenoza Lake Raw Water	X			2		X X	Jacob D Richard
	10:56		X	S2-CC	Contact Chamber	X			2		X X	JED Jacob D Richard
	11:04		X	S2-GACE	GAC Effluent	X			2		X X	JED Jacob D Richard
	11:12		X	S2-GACI	GAC Influent	X			2		X X	
	11:14		X	S2-MME	Mixed Media Filter Effluent	X			2		X X	
	11:18		X	S2-MMI	Mixed Media Filter Influent	X			2		X X	
	11:35		X	S2-SBB	Sed basin - 5ft depth	X			2		X X	
	11:41		X	S2-SBA	Sed basin - 1ft depth	X			2		X X	

Sampled by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Jacob D Richard	8/17/17 11:54	Mary L. D'Aoust	8/17/17 11:54
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Mary L D'Aoust	8/17/17 1304		8/17/17 1304
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time
	8/17/13 1304	Robert Lee	8/17/17 1310

Laboratory Remarks:
Temp. received: 3
Cooled ☐

Special Instructions:
List Specific Detection Limit Requirements:

Turnaround (Business Days) 2

**Netlab subcontracts the following tests: Radiologicals, Radon, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates

Robert Lee 8-17-17 1700

Alexis Ferreira 8/17/17 500

Page 9 of 9

ATTACHMENT E

Water Quality Results Memo

WRIGHT-PIERCE
Engineering a Better Environment

MEMORANDUM

TO:	MassDEP	**DATE:**	8/31/2017
FROM:	Wright-Pierce	**PROJECT NO.:**	13109
SUBJECT:	GP NOI Water Quality Results for Haverhill Water Department		

Water quality samples were collected from Haverhill Water Department (HWD) on August 10, 2017 and August 17, 2017 in preparation for submission of their Notice of Intent (NOI) for coverage under the General Permit (GP) for Discharges from Potable Water Treatment Facilities (PWTF). Samples were collected from 9 locations within the facility to determine the water quality of discharging water from the facility. The sampling locations and IDs are explained in Table 1. Table 1 also includes the corresponding outfall for each sample location.

TABLE 1:

SAMPLE LOCATION CODE LEGEND

Location Code	Sample Location	Discharge Location
KL	Kenoza Lake. Sample collected from raw water sample tap within HWD lab.	Receiving water
SBA	Sedimentation Basin Depth A (depth of sample = 1 ft)	Outfall #1
SBB	Sedimentation Basin Depth B (Depth of sample = 5 ft)	Outfall #1
MMI	Mixed Media Filter Influent. Sample taken from filter influent channel.	Outfall #2
MME	Mixed Media Filter Effluent. Sample taken from filter effluent channel.	Outfall #2
GACI	GAC Filter Influent. Sample taken from filter influent channel.	Outfall#3
GACE	GAC Filter Effluent. Sample taken from filter effluent channel.	Outfall#3
CC	Contact Chamber. Sample taken from within contact chamber.	Outfall #4
FW	Finished Water. Sample taken from finished water sample tap within HWD lab.	Outfall #5

Sample Results:

TABLE 2:

WATER QUALITY RESULTS

	HWD Lab Results		MassDEP Certified Lab Results			
Location Code	HWD pH	HWD TRC (mg/L)	pH	TRC (mg/L)	TSS (mg/L)	TRA (mg/L)
KL	6.70	ND	6.40	0.03	ND	0.03
SBA	6.86	0.02	6.40	0.02	1.50	0.40
SBB	6.90	0.01	6.35	0.02	2.50	0.41
MMI	6.75	0.02	6.25	0.02	3.00	0.40
MME	6.83	ND	6.30	ND	ND	0.08
GACI	6.82	ND	6.35	ND	ND	0.08
GACE	6.75	ND	6.25	ND	ND	0.04
CC	6.74	1.2	6.30	1.14	ND	0.07
FW	7.64	1.33	7.30	0.99	1.50	0.04

Table 2 illustrates the average of the water quality results from a MassDEP Certified Laboratory, New England Testing Laboratory (NETLab), from each sample location. Water quality data was also collected at HWD for verification of pH and Total Residual Chlorine (TRC) as these parameters are known to decay over time due to interactions with their surrounding atmosphere and choice of testing method. The results shown in Table 2 indicate that both pH and TRC results did decay as the values reported from NETLab are consistently less than those reported by HWD for these two parameters. For this reason, pH and TRC data that is reported in the NOI is obtained from the HWD results as they are more reflective of the discharging water from the PWTF.

NOI Reported Results:

As described in Table 1, the discharge locations for Outfalls # 1, 2, and 3 had multiple sample locations to best determine the discharging water quality from these outfalls, as they discharge water with varying water quality. The NOI application is formatted by outfall, the water quality data in Table 3 was tabulated to be reflective of each outfall instead of sample ID location, as shown in Table 2. This was completed through the following brief analysis:

Outfall #1 = Average(SBA,SBB)

Outfall #2 = Average(MMI,MME)

Outfall #3 = Average (GACI,GACE)

Outfall #4 = CC

Outfall #5 = FW

Table 3 clarifies the water quality data that is reported within the filed NOI. Results show that pH and TSS values are in compliance with the suggested values of the GP.

TABLE 3:

TABULATED WATER QUALITY RESULTS PER OUTFALL

	Outfall #1	Outfall #2	Outfall #3	Outfall #4	Outfall #5
pH	6.88	6.79	6.78	6.74	7.64
TSS (mg/L)	2	1.50	ND	ND	1.50
TRA(µg/L)	400	240	60	70	40
TRC(µg/L)	ND	ND	ND	1200	1330

It is noted that Total Recoverable Aluminum (TRA) is highest at Outfall #1 as this is the drain for the sedimentation basin which immediately follows the coagulation process where alum is injected into the water. Due to the high presence of solids in this location, the drain for Outfall #1 is located 3 feet above the sedimentation basin floor in order to prevent high concentrations of solids and associated aluminum within the settled solids from discharging through the outfall.

It is also noted that Total Residual Chlorine (TRC) also spikes at Outfalls #4 and #5 as these are drains located past the chlorine injection point. In the event of a discharge from Outfall #4 and #5, the water would be dechlorinated to reduce these values and be in compliance.