

Electronically to EPA Website and US Mail

June 1, 2017



US EPA, Region 1  
Office of Ecosystem Protection  
PWTF GP Applications Coordinator (OEP06-4)  
5 Post Office Square, Suite 100  
Boston, MA 02109-3912

Re: Notice of Intent for Coverage under the PWTF General Permit  
Town of Billerica Water Treatment Facility

To Whom It May Concern,

Enclosed is the Notice of Intent (NOI) for coverage under the Potable Water Treatment Facility (PWTF) General Permit and corresponding documentation for the Billerica Water Treatment Plant (WTP). The WTP was covered under the previous General Permit and is seeking to continue coverage under the new permit.

If you have any questions or need additional information, please contact me at 978.482.7904.

Sincerely,

WOODARD & CURRAN

A handwritten signature in blue ink, appearing to read "Bob Little".

Robert S. Little, PE  
Senior Project Manager

Enclosure: Notice of Intent

cc: John McGovern, Billerica Water Treatment Plant

PN: 228801.02

**B. Filing with MassDEP** – As previously noted, **only** facilities in Massachusetts that were previously unpermitted and discharge to an Outstanding Resource Water (ORW) and High Quality Waters must submit an NOI to MassDEP. In such cases, a completed copy of the NOI must also be sent to:

Massachusetts Department of Environmental Protection  
Division of Watershed Management  
8 New Bond Street  
Worcester, MA 01606

**C. Filing with NH DES** – All applicants in New Hampshire must also provide a completed copy of their NOI to NH DES at the following address:

New Hampshire Department of Environmental Services  
Water Division, Wastewater Engineering Bureau  
29 Hazen Drive, P.O. Box 95  
Concord, New Hampshire 03302-0095

### III. Suggested Notice of Intent (NOI) Format

#### A. Facility Information

1. *Indicate applicable General Permit for discharge*

MAG640000

NHG640000

2. *Facility Data*

Facility Name Billerica Water Department

Street/PO Box 270 Treble Cove Road City Billerica

State MA Zip Code 01821

Latitude 42.551459 Longitude -71.28888

SIC Code(s) 4941

Type of Business Water Utility / Water Supply

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

Facility Name \_\_\_\_\_

Street/PO Box \_\_\_\_\_ City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

4. *Facility Owner:* Town of Billerica  
Legal Name \_\_\_\_\_  
Email jmcgovern@town.billerica.ma.us \_\_\_\_\_  
Street/PO Box \_\_\_\_\_ City \_\_\_\_\_  
State \_\_\_\_\_ Zip Code \_\_\_\_\_  
Contact Person John McGovern Tel # 978-671-0957  
Owner is (check one): Federal \_\_\_\_\_ State \_\_\_\_\_ Tribal \_\_\_\_\_ Private \_\_\_\_\_  
Other (describe)  
Local Government - Town of Billerica

5. *Facility Operator (if different from above):*  
Legal Name \_\_\_\_\_  
Email \_\_\_\_\_  
Street/PO Box \_\_\_\_\_ City \_\_\_\_\_  
State \_\_\_\_\_ Zip Code \_\_\_\_\_  
Contact Person \_\_\_\_\_ Tel # \_\_\_\_\_

6. *Currently (Administratively) Covered Under the Expired P WTF 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 MA640050

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?** yes - see attached Figure 1: Site Locus Map

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

1. Name of receiving water into which discharge will occur: \_\_\_\_\_  
Locally referred to as Winning Brook (tributary to the Concord River) see Figure 4 and supporting photos

Check Appropriate Box:  Freshwater  Marine Water

State Water Quality Classification Class B

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

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.)

Please see Attachment 1

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?**  yes

5. Identify the source of the water being discharged:

Surface water  Groundwater  Other (describe)

6. Number of Outfalls 1 Latitude and Longitude to the nearest second for each Outfall. Attach additional pages if necessary.

Outfall # <sup>1</sup> Latitude 42.549444 Longitude -71.287222  
Outfall # Latitude \_\_\_\_\_ Longitude \_\_\_\_\_  
Outfall # Latitude \_\_\_\_\_ Longitude \_\_\_\_\_

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

The WTP only discharges to Winning Brook in an emergency. The data provided is from the 2009  
PWTF General Permit application.

Outfall #

\_\_\_\_\_

Outfall #

\_\_\_\_\_

**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.

Please see Attachment 2

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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

There is one known 21E site within 1/2 mile of the discharge. There are no known water quality issues.

Please see attached Figure 2: Chapter 21E Site Locations

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.**  
The facility was covered under the PWTF GP that expired on 10/2/2014.

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: 0.10 for Winnig Brook and 33 cfs for Concord River

\*\*\*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:

Outfall # \_\_\_\_\_

a) *Design Flow of Facility (in million gallons per day, MGD):* 14 MGD

**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 0 GPD      Average Monthly Flow 0 GPD

c) *TSS (mg/l):* Number of samples: \_\_\_\_\_ (Minimum of 10 samples)

Maximum Daily 6.0 mg/l                      Average Monthly 3.840 mg/l

d) *pH (s.u.)* : Number of samples: \_\_\_\_\_ (Minimum of 10 samples)  
Minimum 6.20 s.u.                      Maximum 6.59 s.u.

e) *Total Residual Chlorine (ug/l)*: Number of samples: \_\_\_\_\_ (Minimum of 10 samples)  
Maximum Daily 0.050 ug/l    average monthly is 2.14

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

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)

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The Billerica WTP was covered under the previous PWTF GP.

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**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?** \_\_\_\_\_ Please see attached Figure 3.

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 05/31/2017

Printed Name and Title John McGovern Water Supt.

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.”
2. Provide a detailed explanation of the technical or administrative factors that support your request to “opt-out” from the requirement to submit DMRs and reports electronically. (Add additional lines, if necessary.)

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## ATTACHMENT 1

TO: Environmental Protection Agency | New England Region 1  
FROM: Robert S. Little, PE | Woodard & Curran  
DATE: May 31, 2017  
RE: Response to Item III.B.3  
Discharge Activities for Which the Billerica Water Treatment Plant Seeks Coverage Under the PWTF General Permit

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The purpose of this memo is to describe the discharge activities for which the Billerica Water Treatment Plant is seeking coverage under the NPDES Potable Water Treatment Facility General Permit.

There are two (2) sources of potential discharge from the Billerica Water Treatment Plant including (1) sedimentation process waste and (2) filter backwash waste. **Both discharges only occur under emergency conditions.**

1. Residual solids are removed from the sedimentation basins and directed to two gravity thickeners. A pumping system is designed to deliver thickened solids from the thickeners to the sanitary sewer. Each thickener includes an overflow launder which, under emergency conditions could discharge. During non-emergency conditions, all waste delivered to the thickeners has been pumped to the sewer. This has been the case since the plant became operational.
2. Filter backwash waste is directed to two, rectangular backwash waste storage tanks. Backwash waste contained in these basins is recycled to the beginning of the treatment process. Each backwash tank includes an emergency overflow which represents a potential discharge.

Yard piping at the Treatment Plant combines the overflows from the gravity thickeners and the backwash waste storage tanks into a single, common discharge pipe. The Water Treatment Process Schematic included with the NOI for General Permit coverage, presents the piping and unit process layout.

Since operation began in 2006, one emergency discharge has occurred at this facility. The emergency discharge incident occurred on January 12, 2014. The valve that drains the filter box to the backwash holding tanks got stuck open. Operators could not close it so that filled up the back wash holding tanks resulting in a discharge into Winning Brooks. Staff did collect samples of this discharge event and the data was uploaded onto net DMR at EPA. The volume was approximately 0.3 MGD which is under their permit of 1 MGD in a 7 day period. Again, this was an emergency and it was reported.

One additional discharge event occurred in March/April 2010. Operators conducted a planned discharge event to drain the clear wells empty so they could be emptied and cleaned out. The plant has two clear wells, each one is 500,000 gallons. Each clear well was emptied and cleaned one at a time and this was also under Billerica's permit of 1 MGD in a 7-day period. Everything with this discharge went as planned. This was not an emergency.

## ATTACHMENT 2



TO: Environmental Protection Agency | New England Region 1  
FROM: Robert S. Little, PE | Woodard & Curran  
DATE: May 31, 2017  
RE: Response to Item III.C.1  
Billerica Water Treatment Plant – Effluent Characteristics and Water Additives

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The purpose of this memo is to describe the effluent characteristics and water additives used at the Billerica Water Treatment Facility.

### Raw Water Chemical Addition

Raw water chemical addition occurs at the Raw Water Chemical Injection Manhole adjacent to the Raw Water Metering Vault. Provisions for the addition of the following chemicals to the Raw Water main are in place:

- Sodium Hydroxide (Caustic)
- Sodium Hypochlorite
- Carbon Dioxide

Sodium hydroxide is used to increase the raw water pH prior to ozonation and addition of coagulant chemical (alum). Chemical addition for coagulation and sedimentation process control is discussed further later in the report.

Sodium hypochlorite is added to the raw water during the summer to control the occurrence of rotifers and copepods in the Pretreatment Structure tanks, as their presence disrupts the effectiveness of sedimentation, resulting in shortened filter run times. Sodium hypochlorite addition is limited to a small target dose of 0.1 mg/L with no detectable chlorine residual downstream. This has been effective for suppressing organisms within the sedimentation basin without affecting disinfection byproducts formation.

Carbon dioxide (CO<sub>2</sub>) injection provisions are available to provide further pH and alkalinity control prior to the ozonation and coagulation processes. Injection was via vacuum eduction to entrain the gas in a sidestream flow, which was piped to the Raw Water Chemical Injection Manhole.

CO<sub>2</sub> addition was ceased due to issues with calcium carbonate precipitation on the filter media and fogging above the filters. The system has been decommissioned, but remains in place.

### Aluminum Sulfate

Aluminum sulfate (alum) in liquid form is used as the sole coagulant in the facility. Liquid alum is approximately 50% dry aluminum sulfate (hydrated) (Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> 14 H<sub>2</sub>O) by weight.

Records indicate that 48% alum is used, with daily usage in 2015 ranging from 120 gallons to 280 gallons, and averaging approximately 180 gallons per day. A bulk storage volume of approximately 5,400 gallons provides 30 days storage at current conditions. At projected average use, approximately 8,200 gallons provides 30 days storage.



Alum is fed neat, or undiluted, to the application point. Dilution of liquid alum is generally not advisable due to the effect on coagulation chemistry.

### **Post-Filtration Chemical Addition**

Following filtration, sodium hypochlorite and hydrofluosilicic acid (fluoride) are added via injection points in the 30-inch diameter Filtered Water main. These injection points are located between the filter effluent connections to the manifold for Filters #4 and #5. Sodium hypochlorite is used to provide disinfection credit in the Finished Water Storage Tanks. Fluoride is added to achieve the current recommended 0.7 mg/L Finished Water fluoride concentration.

### **Sodium Hydroxide**

Sodium hydroxide (caustic) is used in several locations within the WTP for pH adjustment. The caustic storage area is separated from the adjacent aluminum sulfate storage area by concrete curb walls.

Records indicate that 50% sodium hydroxide is used, with daily usage in 2015 ranging from 110 gallons to 270 gallons between multiple application points. Assuming current average use of approximately 130 gallons per day, a bulk storage volume of approximately 4,000 gallons provides 30 days storage. At projected average use, approximately 6,000 gallons provides 30 days storage.

Six metering pumps discharge to caustic feed lines to the respective application points. Three pumps feed the Finished Water Wetwell injection point, with the remaining pumps able to feed injection locations at the Raw Water Main and Rapid Mix Basins. Each caustic feed line uses motive water supplied from the Protected Water System.

### **Sodium Hypochlorite**

Sodium hypochlorite (hypo) is used in several locations for disinfectant purposes.

Hypo is stored in two polyethylene bulk storage tanks and transferred to a polyethylene day tank for application. The bulk tank capacities are approximately 5,000 gallons each.

Four metering pumps discharge to the Raw Water Main, Filter Influent Channel, and Filtered Water pipe manifold. A peristaltic metering pump discharges to the Finished Water Pump Wetwell. Motive water is supplied for each feed line from the Protected Water System after passing through an ion exchange softening system to prevent mineral scaling.

The WTP uses 15% strength sodium hypochlorite (10 lbs/gallon density).

### **Aqua Ammonia**

Aqua ammonia, or aqueous ammonia, is used as a source of ammonium ion to combine with chlorine to form chloramine for residual disinfection purposes.

Aqua ammonia is purchased at 29.6% strength and use ranges from approximately 6 to 16 gallons per day, averaging approximately 9 gallons per day.

Two metering pumps discharge to the Finished Water Pump Wetwell. Motive water is supplied from the Protected Water System after passing through an ion exchange softening system to prevent mineral scaling.



### **Hydrofluosilicic Acid**

Hydrofluosilicic acid (silly acid) is used for Finished Water fluoride addition. Silly acid is applied in neat form without dilution water.

Two metering pumps discharge to the Filtered Water pipe manifold.



Figure Exported: 5/31/2017 By: rosboom Using: C:\Projects\Billerica\GIS\Projects\SiteLocus.mxd



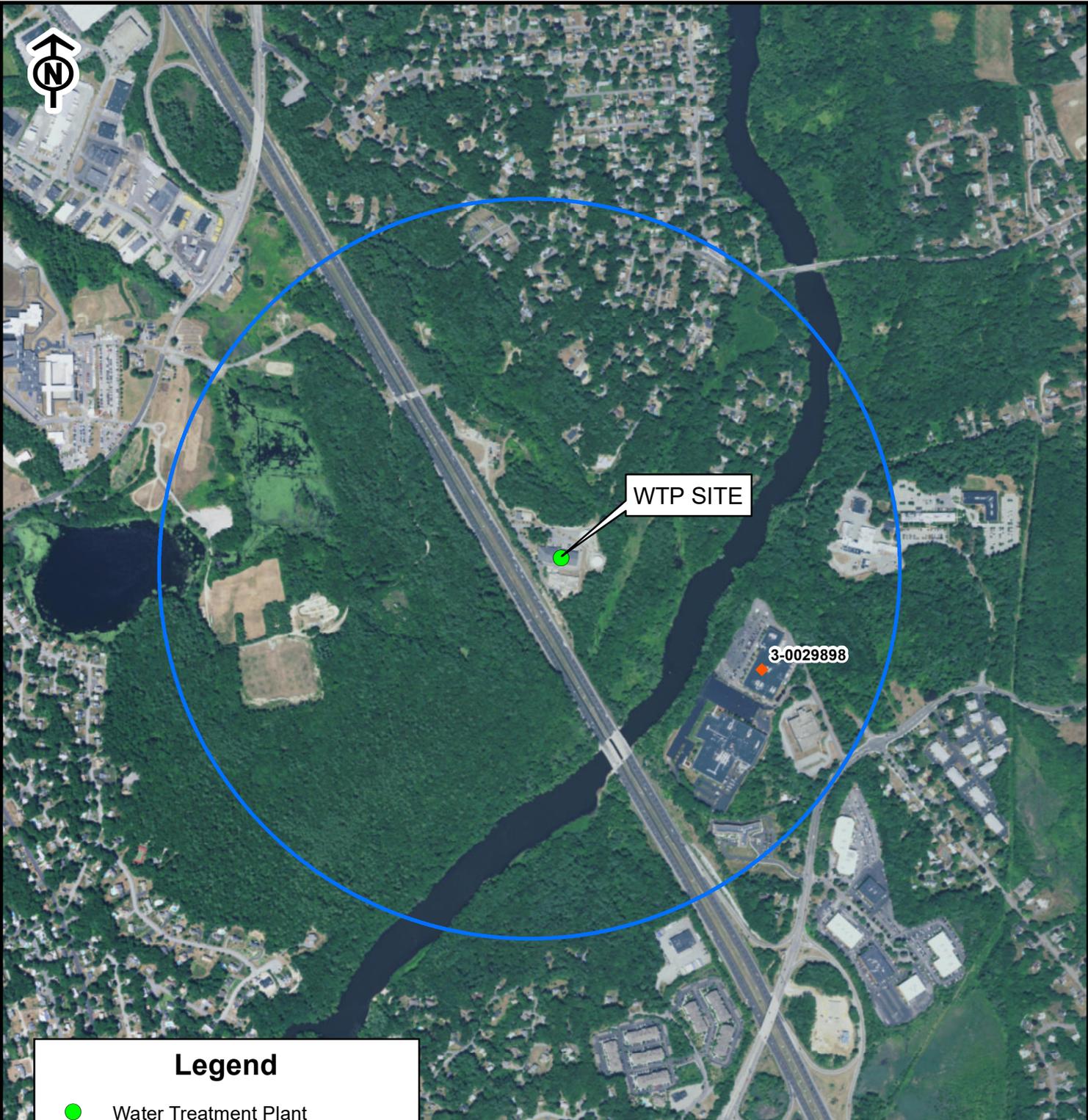
Billerica Water Treatment Plant  
 270 Treble Cove Road  
 Billerica, Massachusetts

*Site Location*

**FIGURE 1**



SCALE: 1" = 1,000'	DOC: SiteLocus.mxd
DATE: MAY 2017	PROJECT #: 228801.02
DRAWN BY: RKO	SOURCE: USGS, ESRI, MassGIS



**Legend**

- Water Treatment Plant
- Half Mile Buffer

**Chapter 21E Tier Classified Sites**

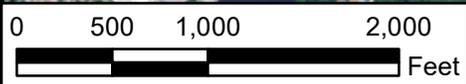
Regulated Status

- ◆ TIER I
- ◆ TIER II
- ◆ TIER1D

Billerica Water Treatment Plant  
 270 Treble Cove Road  
 Billerica, Massachusetts

**Chapter 21E Site Locations**

**FIGURE 2**

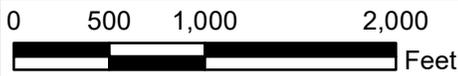
SCALE: 1" = 1,000'	DOC: Chapter21E.mxd
DATE: MAY 2017	PROJECT #: 228801.02
DRAWN BY: RKO	SOURCE: ESRI, MassGIS

Figure Exported: 5/31/2017 7:53:00 AM Using: C:\Projects\Billerica\GIS\Projects\Chapter21E.mxd



**Legend**

- Water Treatment Plant
- Half Mile Buffer
- Areas of Critical Environmental Concern (None)
- Wetlands (DEP)
- National Heritage & Endangered Species Program**
- ✱ Certified Vernal Pool (None)
- ★ Potential Vernal Pool
- Priority Habitat of Rare Species (None)
- Estimated Habitat of Rare Wildlife (None)



Billerica Water Treatment Plant  
 270 Treble Cove Road  
 Billerica, Massachusetts

**Environmental Resources**

**FIGURE 3**



SCALE: 1" = 1,000'	DOC: EnvironmentalResources.mxd
DATE: MAY 2017	PROJECT #: 228801.02
DRAWN BY: RKO	SOURCE: ESRI, MassGIS

Figure Exported: 5/31/2017 By: rosborn Using: C:\Projects\Billerica\GIS\Projects\EnvironmentalResources.mxd



WTP

Discharge Location

Billerica Water Treatment Plant  
270 Treble Cove Road  
Billerica, Massachusetts

*Discharge Location*

**FIGURE 4**



SCALE: 1" = 100'

DOC: Outfall.mxd

DATE: MAY 2017

PROJECT #: 228801.02

DRAWN BY: RKO

SOURCE: ESRI, MassGIS

0 50 100 200  
Feet



Photo: Clearwell Facing the Outfall



Photo: Outfall Facing the Clearwell

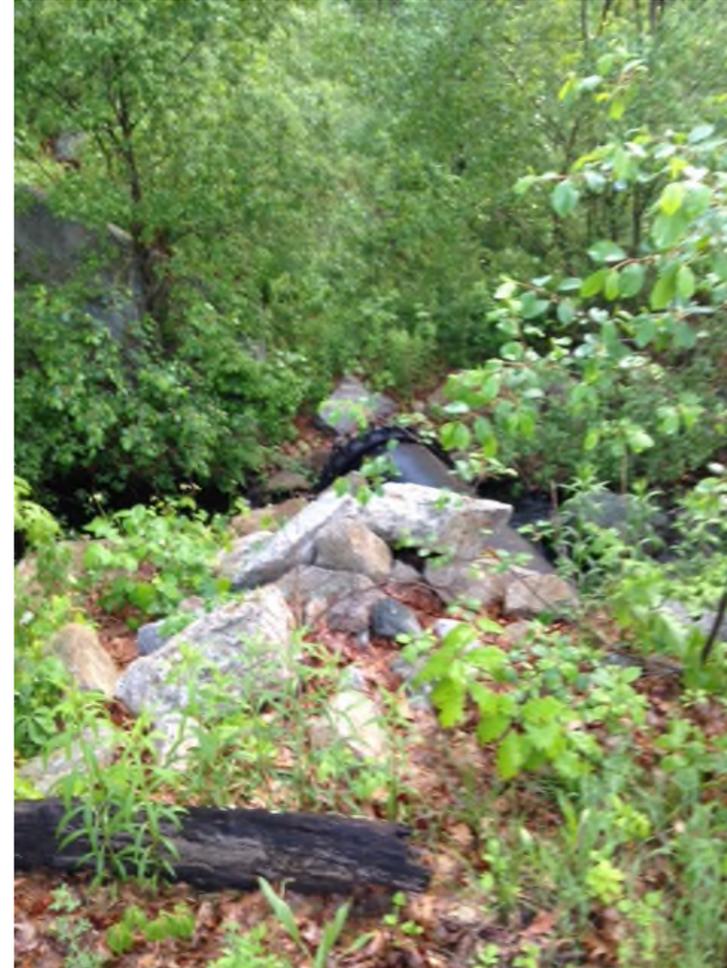
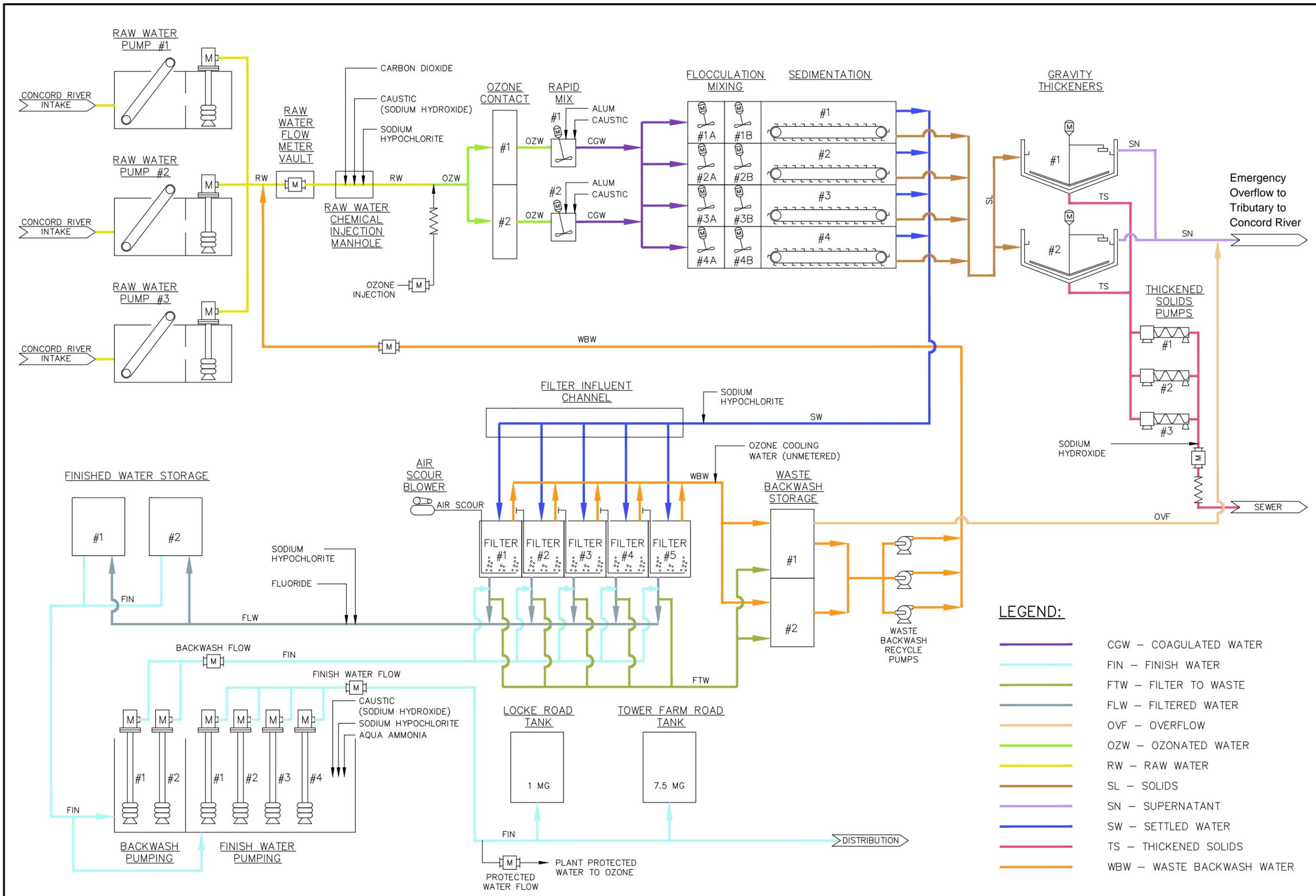


Photo: Outfall



Photo: Water Treatment Plant Facing Clearwell and Outfall



**LEGEND:**

- CGW – COAGULATED WATER
- FIN – FINISH WATER
- FTW – FILTER TO WASTE
- FLW – FILTERED WATER
- OVF – OVERFLOW
- OZW – OZONATED WATER
- RW – RAW WATER
- SL – SOLIDS
- SN – SUPERNATANT
- SW – SETTLED WATER
- TS – THICKENED SOLIDS
- WBW – WASTE BACKWASH WATER

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 866.702.6371 | www.woodardcurran.com

**WOODARD & CURRAN**

COMMITMENT & INTEGRITY DRIVE RESULTS

**WATER TREATMENT PROCESS SCHEMATIC**

DESIGNED BY: KMC  
 CHECKED BY: RHH  
 22880100-FIG 4-1.DWG

DRAWN BY: NTD

BILLERICA, MASSACHUSETTS  
 DEPARTMENT OF PUBLIC WORKS

CAPITAL IMPROVEMENT PLAN

JOB NO: 228801  
 DATE: JUNE 2016  
 SCALE: N.T.S.