

DWSD's Manganese Removal Treatment Facility

Submitted on March 8, 2021

Project Description

Background

This narrative is being provided as supplemental information for a Special Permit Application review by the Tyngsborough Board of Selectmen.

The Dracut Water Supply District (DWSD) is seeking to increase water supply and improve the water quality from its source at 170 Frost Road, Tyngsborough, MA. The Tyngsborough Wellfield (TWF) site currently includes Well No. 1, Well No. 2, Well No. 3, Well No. 4a, Well No. 4b, and Well No. 5. The DWSD is also currently pursuing the installation of a satellite well (Well No. 5a). The site has a combined permitted withdrawal rate of 1,840 gallons per minute (gpm).

The TWF water quality significantly impacts the DWSD operations. The bold numbers in Table 1-1 correspond to concentrations above the Environmental Protection Agency's (EPA) Secondary Maximum Contaminant Levels (SMCLs) for iron and manganese of 0.3 mg/L and 0.05 mg/L, respectively. The italicized numbers in the table correspond to manganese concentrations above the Massachusetts Department of Environmental Protection's (MassDEP's) Office of Research and Standards Guidance (ORSG) lifetime exposure level of 0.3 mg/L.

The DWSD must maintain the manganese concentration in the water entering the distribution system from the TWF below the ORSG level of 0.3 mg/L. As shown in Table 1-1, the manganese concentrations in Wells No. 2, 3, 4a, and 4b consistently exceed this level. Therefore, at present, the DWSD cannot use the full production capacity of the wellfield. Wells with high manganese concentration must be kept off-line or run at reduced capacity in order to maintain the manganese concentration in the blended water below the ORSG level. This reduces the useable capacity of the wellfield to approximately 1,100 gpm. The proposed treatment facility will restore the full 1,840 gpm capacity of the TWF.

Table 1-1: Tyngsborough Wellfield Raw Water Iron and Manganese Concentrations

Tyngsborough Well	Pumping Rate (gpm)	Iron (mg/L)		Manganese (mg/L)	
		Range (mg/L)	Median (mg/L)	Range (mg/L)	Median (mg/L)
No. 1	389	0.86 – 1.76	0.98	0.20 - 0.48	0.25
No. 2	389	0 – 0.42	0.020	0.20 – 1.18	0.82
No. 3	312	0 – 0.79	0.42	0.07 – 0.85	0.35
No. 4a	354	0 – 0.05	0.010	0.85 – 1.72	1.28
No. 4b		0 – 0.06	0.020	0.05 – 1.18	0.75
No. 5	397	0 – 0.26	0.030	0 – 0.069	0.010
Blended Wells	1841		0.29		0.57

To alleviate these water quality concerns, the DWSD is seeking to construct a new water treatment plant (WTP) for the Tyngsborough Wellfield. The proposed WTP will treat the groundwater supply from all the TWF wells to reduce the manganese concentrations below the SMCL and ORSG levels. The DWSD currently serves customers in both Tyngsborough and Dracut, Massachusetts. Approximately ~2,583 Tyngsborough residents currently receive water from the proposed WTP. Prior to design of a full scale WTP, the DWSD conducted this pilot study to simulate the efficacy of a full-scale water treatment plant (WTP) and select a technology that best reduces the raw water manganese concentrations below the guidance levels.

Building Siting Analysis

One alternative considered for building location, was the existing DWSD parcel at 170 Frost Road. The majority of the parcel is located within the 100-year flood zone, with only 20% of the parcel outside of a 100-year flood zone. An area (~15 acres) within the 170 Frost Road parcel is above the flood zone, however the single access drive to the land is within the 100-year flood zone and access to the areas within the parcel above the flood zone is not possible during a flood. Relocation of the access drive through any alternate location along Frost Road would also require crossing the flood zone. In order to provide access into the WTP and remain above the flood zone, the existing access road would need to be modified so that the elevation of the road remains above flood elevation.

In order to raise the existing access drive above the flood elevation, approximately 9,500 cubic yards (cy) of fill would be required. Since adding fill to the flood zone will reduce flood storage capacity, a compensatory flood storage area that is connected to the same source of flooding that is not already used for flood storage must be added to offset the reduction in storage capacity of this area. This would require removal of 9,500 cy of material from the only location on the parcel above the flood zone. The usable area above the flood zone would be reduced by about 2 acres in order to provide the compensatory storage while avoiding the construction of retaining walls and minimizing costs. Raising the elevation of the access road would result in impacts and fill within the bordering land subject to flooding (BLSF), as well as the clearing of existing forest to construct the compensatory flood storage.

Additionally, the area of the parcel that is available for construction is within the Zone I's of a number of the wells within the wellfield. The Massachusetts Department of Environmental Protection (MassDEP) requires that all efforts be made to avoid construction within the Zone I, in order to protect the water quality within the wells. When the areas within the Zone I's are considered, there is ~2 acres remaining for construction of the WTP building. Given the challenges and environmental impacts associated with construction within the 100-year flood zone, construction of the proposed WTP on the existing property owned by the DWSD is not feasible.

The property located at 166 Frost Road has been surveyed and subsequently evaluated for its suitability for the proposed WTP site. The property located at 166 Frost Road abuts the DWSD property and the existing access road to the Tyngsborough Wellfield. The entire property located at 166 Frost Road is outside the 100-year flood zone and is at a higher elevation than the majority of the 170 Frost Road parcel. A small portion of the parcel is located within the locally regulated 100-foot Buffer Zone to BLSF. 166 Frost Road has an advantageous location to intercept raw water from all the wells in the existing system with the existing yard piping. The property located at 166 Frost Road occupies approximately 3 acres and would be sufficient for the proposed treatment building and ancillary systems.

The property located at 166 Frost Road is the most suitable and advantageous location for the proposed WTP as it offers several key advantages over the property currently owned by DWSD. These key advantages include an area of sufficient size located outside the 100-year flood zone and accessibility during a flooding event. Proximity to the existing wells are another critical advantage of this site. The property is the only location that would allow the DWSD to intercept water from the existing system without the installation of additional piping through the 100-year flood zone.

A purchase and sales agreement between DWSD and the owner of 166 Frost Road was signed in 2020 but the purchase of the land was not completed because the homeowner unilaterally terminated the agreement. Therefore, the DWSD has begun proceedings for obtaining a portion of the parcel at 166 Frost Road for the construction of the WTP by eminent domain. The proposed parcel is approximately 1.8 acres and the parcel remaining for the homeowner would be approximately 1.5 acres, including the existing home and other buildings on site.

Proposed Design

The water treatment plant at the TWF will be designed to treat the full capacity of the wellfield which is 2.65 MGD (1840 gpm). Most recently, the DWSD has not been able to pump the full capacity of the wellfield due to the elevated manganese levels in a number of the wells. The existing average day demand in the DWSD system is about 2.3 MGD. By designing the plant to treat up to 2.65 MGD, the DWSD will be able to supply their entire system using their own facilities. The DWSD will then be able to limit the use of the Lowell Regional Water Utility interconnection to days when demands are above average, generally during the summer.

The project will consist of a new WTP building to house the chemical feed systems, electrical gear, and treatment system. Use of the existing chemical feed building will no longer be needed. The existing yard piping and individual well metering pump stations will continue to be maintained for the metering of raw water. Raw water from each well will be pumped to the WTP for treatment.

Inside the WTP, the combined raw water will be metered and treated by the biological iron filters to remove the minimal amounts of iron entering the WTP. Following iron filtration, the water will be treated with air to increase dissolved oxygen and the pH will be adjusted with potassium hydroxide (KOH) prior to biological manganese filtration. Filtered water will be stored in a finished water/backwash supply storage tank before it is pumped into the distribution system. The 166 Frost Road Parcel, where the WTP will be located, will be accessed via the existing road to the wellfield.

The water that is used for backwashing the filters (backwash waste water) will be stored within two (2) backwash waste storage tanks below the building. After solids have settled out in the bottom of the tank, the water will be pumped off of the top of the tank and recycled through the treatment process. Periodically, the residuals from the bottom of the tank will be pumped into two (2) sand drying beds (not “lagoons”), behind the WTP. The purpose of these beds is to capture the suspended manganese from the backwash waste on the surface of the sand and allow filtered water to enter the ground. Another option for residuals management would be to hold the water in a below grade tight tank and haul away on a regular basis (approximately 1 time per week). A vacuum truck would come on site and remove the water from the tight tank. This option is expensive and more disruptive to the neighboring properties around the WTP because of the increased frequency of truck traffic. The sand drying beds minimize cost for the DWSD as well as noise and traffic impacts to the abutting properties.

Permitting

The proposed design has received technical approval by Massachusetts Department of Environmental Protection (MassDEP). The following permits have been submitted to MassDEP:

- BRP WS 21D: Approval to Conduct Pilot Study – Approved
- BRP WS 22: Approval of Pilot Study Report – Approved
- BRP WS 24: Approval to Construct a Water Treatment Facility – Approved
- BRP WS 26: Sale or Acquisition of Land for Water Supply Purposes – Pending

The project has also been included in a Certificate issued by the Secretary of State through the Massachusetts Environmental Protection Agency (MEPA) review (EEA No. 16326). An Intensive Archaeological Reconnaissance Survey was completed by Commonwealth Heritage Group in 2020 and submitted to the Massachusetts Historical Commission (MHC). MHC reviewed the study’s findings and determined that the project is unlikely to affect significant historic and archaeological resources. The WTP is currently being evaluated by the Tyngsborough Conservation Commission for a Request for Determination of Applicability (RDA)..

Responses to Public Comments

Responses to Brodeur Comment issued via e-mail (after a site visit to a Water Treatment Plant in Auburn, MA) to the Tyngsborough Board of Selectmen on March 25, 2021:

1. *[In reference to site visit to Auburn, MA WTP] This is not what I envisioned when I heard the word “lagoon” (as described above). What I saw were two holes in the ground that were lined with dirt and*

large boulders (scattered here and there) and from all appearances they looked to be unmaintained. They were filled with stagnant, filthy, manganese filled water, water that had made its way to these beds after being “backwashed” out of the facility as part of the treatment process. Because the beds were not covered in any way, they looked to be potential mosquito breeding grounds as well.

We are proposing “sand drying beds” at the Tyngsborough Wellfield Iron and Manganese Plant, not “lagoons”. The intent of the drying beds is not to have stagnant water but to filter water fairly quickly, within a matter of hours. Therefore, there is not a major risk for insect breeding or other growth.

2. *I wanted to also note that, although this facility was within 200 feet (approximately) of a residential neighborhood, there are only two houses (owned by the same family) that are within 1000+ feet of the facility. The facility itself is surrounded on one side by the East and Westbound lanes of I-290 and on two other sides by a large swampy/reed filled area. It was not in an established, quiet, well maintained residential neighborhood like ours.*

The DWSD is open to negotiating tree plantings and vinyl fencing to improve visual impact to abutting properties. The exterior of the building is also designed to minimize visual impact to neighbors. There will be minimal noise, odor, and sound produced by the water treatment plant which will also minimize impacts.

3. *They mentioned during our conversation that the water had a “funny smell and taste” and they attributed this to the fact that they were at the “beginning of the line” of the water leaving the plant. From what I’ve read and been able to interpret, these lagoons are not lined to prevent water from leaking out. It appears that they are constructed with riprap sides and a sandy bottom and are almost designed to drain into the soil. These lagoons would be installed within 100 feet of two wells that we rely on for our drinking water.*

The exact locations of the wells at 5-7 Larson Ave are not on file with the Tyngsborough Board of Health. However, based on estimated locations it appears that the drying beds are very close to being 100 feet away from the wells at 5-7 Larson Ave. We are willing to adjust the sizing of the drying beds to ensure a minimum distance of 100 feet, which is the minimum distance for wellhead protection. The purpose of the sand beds is to collect the majority of manganese from the discharged water and to filter the water that will make its way into the groundwater. The sand beds with collected manganese are periodically excavated and hauled away for proper disposal and replaced with new sand. Additionally, the DWSD is willing to monitor the water quality in the wells at 5-7 Larson Ave before the Water Treatment Plant is built and afterwards.

4. *As you can see from the attached aerial view, Dracut Water has over 19+ acres of property that is outside of the 100 and 500 year flood zone (highlighted in green). Dracut Water’s argument for not wanting to build the facility on their land is that the access road to this area is within the 100 year flood zone and that it would be “difficult and expensive” to build the facility here (truth be told, I’m*

sure the issue has more to do with the expense than the degree of difficulty). Dracut Water's other argument is that they don't want to lose 2 acres of usable land (that is what they have determined would need to be displaced in order to raise the road out of the flood zone). This argument makes no sense to me. If the 19+ acres are inaccessible at this point, creating access to it would actually allow them to gain use of the remaining 17+ acres. This road would also allow Dracut Water to access their existing wells and pump house in the event of another flood.

While there would technically be adequate space within the "useable area above the flood zone," there are three existing Zone I's for Wells 4A, 4B, and 5 that overlap the useable area. Additionally, Well 5A will be brought online in the near future and would also reduce the useable area as it will have a corresponding Zone I. Per MassDEP guidance, reasonable efforts should be made to avoid construction within the Zone I in order to protect the quality of the water within the wells. Water supply activities are allowed within the Zone I per MassDEP guidelines, however, if construction can be completed outside of the Zone I, it should be the preferred alternative per the *Best Effort Requirement* as outlined in 310 CMR 22.21(1). The "useable area above the flood zone" of approximately 15 acres would be reduced to only 4 acres when only the areas outside of the Zone I's are considered. In the alternatives analysis presented in the ENF (Section 3.1), it was determined that approximately 2 acres would be required to provide compensatory flood storage for ancillary impacts to the 100-year floodplain (see below). This leaves approximately 2 acres for construction of the water treatment plant, based on these assumptions. It would be similar to the 166 Frost Road Parcel in terms of total area for construction.

If the water treatment plant were to be constructed within the 170 Frost Road Parcel, ancillary activities including the construction of approximately 2,000 linear feet of new water main would be required within the wellfield and 100-year floodplain. In addition, approximately 1,500 linear feet of roadway would need to be elevated above the 100-year flood elevation, resulting in approximately 32,000 cubic yards of fill in floodplain (see Figure 1 for a layout of the access road and fill calculations). The elevated roadway would bisect the existing floodplain and would need cross-culverts to convey flows across the floodplain to prevent the roadway embankment from functioning as a dam during flood events. This roadway would need to be constructed for H-20 loading to support chemical delivery trucks. In order to make the roadway safe for vehicular traffic, it would also need to be graded out away from the existing roadway surface at a maximum slope of 2:1 on either side. Due to this, several of the buildings, wells, and structures in the wellfield would be affected. Those wells would either need to be relocated or significant site work would be required (e.g., retaining walls, access stairs from the roadway to the wells). While there are existing roadways within the site, it is a complex undertaking to be able to meet DEP requirements outlined under 310 CMR 22.04(2) to remain above the 100-year flood elevation and meet the Massachusetts Wetlands Protection Act performance standards for Bordering Land Subject to Flooding without compromising the Town's participation in the National Flood Insurance Program.

The access road would also be in proximity to several Potential Vernal Pools as mapped by MassGIS. Direct alterations of wetland resource areas, such as floodplain (i.e., Bordering Land Subject to Flooding) and Riverfront Area, as well as other potential wetland resource areas (e.g., Bordering Vegetated Wetlands) would also be subject to review under the Massachusetts Wetlands Protection Act and the Town of Tyngsborough Wetlands Protection Bylaw (Article XXXII of the General Bylaws).

	166 Frost Road Site	170 Frost Road Site
Fill in Floodplain	0	32,000 cy
Tree Clearing	1.73 ac	2.23 ac
New Road Construction	0 lf	1,500 lf
New Water Main Construction	100 lf	2,000 lf
Construction in Zone I	0 sf	8,500 sf

For the reasons outlined here, construction of the water treatment plant within the parcel of land at 170 Frost Road was determined to have greater environmental impacts than at the 166 Frost Road Parcel. Construction at the 166 Frost Road parcel meets the WTP site criteria, limits the length of new water main to be constructed, does not require the elevation or construction of new roads, and avoids direct impacts to multiple wetland resource areas and potential wildlife habitat.

5. *I agree that the water should be treated and made safe but I believe the expense of doing so should be borne by the Dracut residents who are benefiting from the treatment facility and not by residents of Tyngsboro who will not benefit at all.*

The Tyngsborough Wellfield Water Treatment Plant will benefit both residents of Dracut and Tyngsborough. Most of the other abutters to the property within 300 feet, including the home at 166 Frost Road, are connected to the DWSD system. Approximately 2,583 customers in Tyngsborough currently receive water from the DWSD. Therefore, the cost of the improvement is being borne by all customers and will benefit those customers, in both Dracut and Tyngsborough.

Responses to Brodeur-Zipps Comment issued to Massachusetts Environmental Protection Agency on March 2, 2021:

1. *DWSD's justification is based primarily on its desire to preserve the "usable area above the flood zone" on its current 71.7-acre property, that is, to avoid having to convert a small portion of that usable area to provide compensatory flood storage. What is the point or value of preserving this "useable area" if DWSD does not plan to actually use it? There is plenty of "useable area above the flood zone" on its property to accommodate the proposed treatment facility and to also provide the compensatory flood storage that would be required. See the following figure from the ENF filing and the large area above the flood zone that is already accessed by existing gravel drives (estimated to be over 7 acres of land).*

There is adequate area on the DWSD's parcel to construct, however, significant site work would be required in order to build on the existing DWSD parcel. Figure 2 attached shows the area of the parcel that would be available for construction (~4 acres at most), including the 2 acres that would be required to provide compensatory flood storage.

2. *DWSD complains that locating the facility on its property will require clearing of existing forest. That argument ignores the reality that constructing the facility on the 166 Frost Road property*

also involves clearing of existing trees, including within the wetlands buffer zone. DWSD has not provided any quantitative comparison of the tree clearing associated with each alternative.

Per response 4 in the previous section, building on the existing DWSD parcel would require more tree clearing than the alternative for building on 166 Frost Road. Building on the existing DWSD would require approximately 0.5 acres of additional tree clearing.

3. *DWSD's explanation acknowledges that the existing access roads could be used to access a treatment facility on the "useable area above the flood zone" on its property, although raising those roads (or portions of them) would be required to mitigate potential flooding impacts. The work associated with raising the road should be more fully detailed and evaluated. It may be, for example, that improving the existing wetlands crossing results in improvements over existing conditions as related to wetlands values and wildlife habitat – as is often the case when older crossings are upgraded to meet the current stream crossing guidelines.*

Figure 1 attached shows the impact of the elevated roadway on the site. As detailed in response 4 above, there were previously mapped priority habitats in this area but not currently. Therefore, there is not a concern with needing to improve wildlife crossings. However, there are several Potential Vernal Pools within the access roadway which would be covered up by the new access road. The roadway surface elevation would need to be raised by approximately 10 feet, which would significantly impact existing wetland resource areas and wildlife habitats, and permanently alter the landscape of the site.

4. *DWSD does not assert that constructing the treatment facility on its own land is infeasible or that it could not be done in a manner that complies with applicable regulatory standards and in a manner that appropriately avoids, minimizes and mitigates environmental impacts. DWSD should evaluate those issues more comprehensively and cannot rule out that alternative by way of the thin explanation provided in its ENF filing*

Response 4 in the previous section outlines numerous constraints regarding the existing DWSD parcel. There is adequate area to build, however, there are significant impacts to the flood zone and potential vernal pools. By constructing on 166 Frost Road, the DWSD is minimizing impacts to the extent possible whereas building on the DWSD parcel would create impacts to the natural environment that could otherwise be avoided.

5. *That constructing the facility on its own property may be more expensive than constructing it on the 166 Frost Road property does not justify locating it at the 166 Frost Road property. The construction costs can be spread over time and over the DWSD's many users through the water rates – that is, by those directly benefiting from the facility. The costs associated with the proposed location of the facility at 166 Frost Road (e.g. lost vegetation, lost wildlife habitat, noise and other potential nuisance conditions resulting in impaired property values) will be borne by the few residents that directly abut the facility rather than by those who stand to benefit from the facility.*

Constructing on the existing DWSD parcel is not only more expensive, but creates many more impacts to the environment than building on the 166 Frost Road Parcel does. The impacts to vegetation are similar in both scenarios, although more tree clearing would be necessary in order to build on the existing DWSD parcel. There are no mapped species on the 166 Frost Road Parcel or the existing DWSD parcel. There are,

however, Potential Vernal Pools on the existing DWSD parcel, but not within the 166 Frost Road Parcel or near the proposed limits of work. There are no major noise or odors associated with the long-term operation of the water treatment plant. The noise impacts during construction will be similar for both potential sites since the construction sites will be accessed via the same access road and both sites abut residential parcels.

Responses to Brodeur-Zipps Comment issued to the Tyngsborough Conservation Commission on February 23, 2021:

- 1. The information submitted by the DWSD is not sufficient to meet the DWSD's burden of demonstrating that (1) its depicted wetlands boundaries are accurate, and (2) the proposed work in the buffer zone will not alter the wetland resource areas.*

During the wetland delineation completed by Tighe & Bond on April 15, 2020, no wetland resource areas were identified at the project site. Through a review of the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) and Flood Insurance Rate Map, the 100-year base flood elevation (BFE) ranges from 107 ft to 108 ft in the vicinity of the project site. The limits of Bordering Land Subject to Flooding (BLSF; i.e., the limits of 100-year flooding/floodplain) were added to the GIS mapping and Project Drawings based on topographic contours. The lowest elevation at the project site is approximately 117 ft as shown on Sheet C-101 of the Project Drawings provided in Attachment A of the RDA. As such, the project site is 9 to 10 feet higher in elevation and the proposed work will not alter BLSF as all work is proposed above the 100-year flood elevation (i.e., not within the limits of 100-year flooding) and therefore no change in flood storage capacity is proposed.

Approximately 3,500 square feet (sf) of the limit of work is proposed within the outer 40 feet of the 100-foot Buffer Zone to BLSF established in Section 7.3 of the Town of Tyngsborough Wetlands Bylaw. Activities within this area consist of the installation of erosion control barriers at the limit of work (LOW) to limit the potential for material from the site to mobilize off-site.

Additionally, wetland resource areas in the southeast portion of the adjacent 170 Frost Road property were delineated on November 29, 2017 and reviewed by the Commission as part of a Negative Determination of Applicability issued by the Commission on April 10, 2018. Bordering Vegetated Wetlands, inland Bank, and the 200-foot Riverfront Areas of Limit Brook and the Merrimack River do not extend into the subject parcel. The Commission also had the opportunity to review wetland resource areas as the project site during a site visit on February 22, 2021.

- 2. The Commission should confirm the accuracy of the wetland resource area boundaries depicted by the DWSD, flesh out the details of DWSD's proposed work and activities, and evaluate the potential impacts on the resource areas with the assistance of outside peer review consultants – evaluations that are best undertaken in the context of a Notice of Intent review process.*

The Conservation Commission reviewed the project site and the Buffer Zone to BLSF during a site visit on February 22, 2021. Details regarding the proposed project are included in the cover letter and project

drawings included in the February 2021 RDA. We note that it is also within the Commission's purview to discuss wetland resource areas during public meetings. The limit of BLSF is based on the Base Flood Elevation (BFE) determined by the Federal Emergency Management Agency (FEMA) and is not a field delineated boundary; therefore, it is not appropriate for the limits of BLSF at this location to be field verified by a peer review consultant.

As described in the February 2021 RDA and previously noted, the nearest BVW and inland Bank are over 200 feet away from the project site. Alterations are limited to the outer 40 feet of the local 100-foot Buffer Zone to BLSF, meaning that the nearest activities are 60 feet from the limits of BLSF and will not alter the nearby resource areas. As such, Tighe & Bond has respectfully requested a Negative Determination of Applicability from the Conservation Commission.

3. *The DWSD's project requires various state and local approvals that have not yet been issued, including MEPA approval, MassDEP approval (for the proposed eminent domain taking of land) and various permits, and a special permit from the Tyngsboro Board of Selectmen. Even if the DWSD is ultimately able to secure those approvals (over my clients' objections), the facility configuration is likely to change significantly during those review proceedings.*

Authorization under the Tyngsborough Wetlands Protection Bylaw (Article XXIII) is not dependent on other state and local approvals. A Massachusetts Environmental Policy Act (MEPA) virtual site visit was held on February 22, 2021 and public comments were due to MEPA staff on March 2, 2021. A MassDEP public hearing was also completed on February 21, 2021. The Certificate of the Secretary of Energy and Environmental Affairs (EEA) on the Environmental Notification Form (ENF; EEA Number 16326) was issued on March 12, 2021. In this Certificate, Secretary Kathleen A. Theoharides issued the determination that the project does not require an Environmental Impact Report (EIR) and that the ENF adequately described and analyzed the project and its alternatives, and assessed its potential environmental impacts and mitigation measures. A copy of the Secretary's Certificate is attached.

After ongoing feedback and coordination with multiple state and local agencies, significant changes in the site configuration and design are not anticipated. Work will not begin until all necessary permits and authorizations are received. In the unlikely event that a major modification to the design were to occur, DWSD will seek authorization from the Commission for such changes.

4. *The DWSD does not own the property at 166 Frost Road and its proposed taking of a portion of that property by eminent domain has not yet even been approved by MassDEP.*

The issuance of a Special Permit does not require the Applicant to own the property at the time of issuance. DWSD has requested a waiver on this point in its application. The property will be acquired before the commencement of the project.

5. *The DWSD has not sufficiently described its proposed facility or the nature and potential impacts that the facility will have within the buffer zone or to the adjacent resource areas. Those details should be fleshed out during a Notice of Intent public hearing review process with the Commission*

being assisted by outside peer review consultants – including a wetlands scientist, a civil engineer, and a consultant qualified to evaluate the potential impacts of the drying beds and other facility operations on the buffer zone and resource areas.

As previously stated, details regarding the proposed project are included in the cover letter and project drawings included in the February 2021 RDA. The Commission and public also has the opportunity to ask questions during the public meeting. No impacts to wetland resource areas, including BLSF are proposed. All work is within the outer 40 feet of the local 100-foot Buffer Zone to BLSF, no change in flood storage capacity is proposed within the 100-year flood zone, and erosion control barriers will be installed along the limit of work to limit the potential for material from the site to mobilize and migrate off-site. A Notice of Intent is not necessary, as the project is limited to the outer 40 feet of the Buffer Zone only and no impacts to nearby wetland resource areas are proposed or anticipated. The Commission had the opportunity to review wetland resource areas during an initial site visit February 22, 2021 and a follow-up visit on March 27, 2021.

Plotted On: Mar 04, 2021 - 2:59pm By: GNM
Tighe & Bond: J:\D0368 Dracut\009 - Manganese Treatment Facility\Drawings_Figures\AutoCAD\Sheet\Figures_Not Used\D0368-009-ACCESS DRIVE CONCEPT.dwg



TYNGSBOROUGH WELLFIELD
MANGANESE TREATMENT FACILITY
TYNGSBOROUGH, MA

FIGURE 1 RAISED ACCESS ROAD

DATE: 03/04/2021
SCALE: 1" = 100'
FIGURE: 1

Tighe&Bond

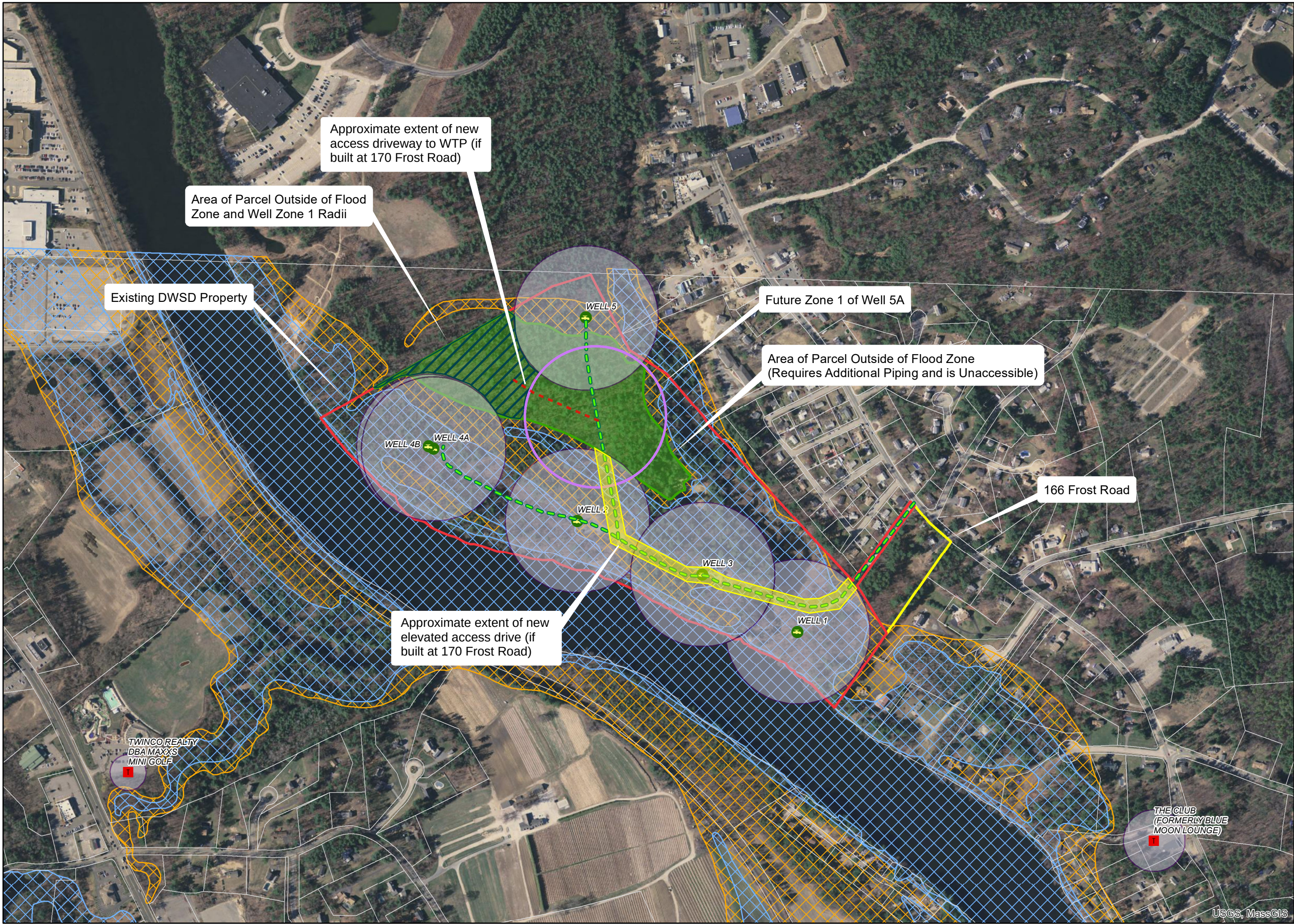
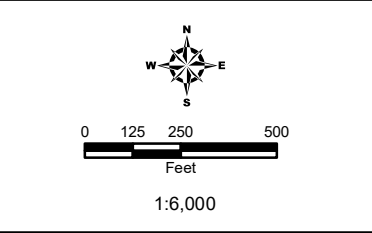
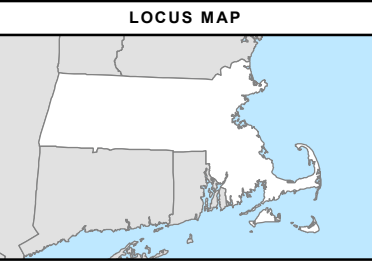


Fig 2 Area of 170 Frost Rd Available for Construction

LEGEND

- Existing Access Road for Wellfield
- Community Public Water Supply - Surface Water
- Community Public Water Supply - Groundwater
- Non-Community Non-Transient Public Water Supply
- Non-Community Transient Public Water Supply
- Stream/Intermittent Stream
- Portion of Parcel outside of Flood Zone and Zone 1's
- Wellhead_ProtectionZone1
- Existing DWSD Parcel
- Site Parcel
- Approximate Parcel Boundary
- FEMA 100 Year Flood Zone
- FEMA 500 Year Flood Zone
- Portion of Parcel outside of Flood Zone



NOTES

Imagery (C) Google (2018)

166 Frost Road
Tyngsborough, Massachusetts

March 2021

Tighe&Bond
Engineers | Environmental Specialists



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
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Charles D. Baker
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<http://www.mass.gov/eea>

March 12, 2021

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Dracut Water Supply District - Water System Improvements
PROJECT MUNICIPALITY : Tyngsborough, Dracut
PROJECT WATERSHED : Merrimack
EEA NUMBER : 16326
PROJECT PROPONENT : Dracut Water Supply District
DATE NOTICED IN MONITOR : February 10, 2021

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **does not require** an Environmental Impact Report (EIR).

Project Description

As described in the Environmental Notification Form (ENF), the project consists of several upgrades to the Dracut Water Supply District (DWSD)'s water supply system in the Towns of Dracut and Tyngsborough. The project consists of the construction of a new water treatment plant (WTP), transmission main improvements, installation of a redundant public water supply well, and the replacement of two water storage tanks (the State Forest Tank and the K-Street Tank). The project will address a number of water supply system deficiencies including the replacement of an undersized and tuberculated transmission main connecting the Tyngsborough wells to the rest of the system, construction of WTP to address iron and manganese present in the DWSD' drinking water supply and construction of two new water tanks to address hydraulic issues (i.e. low water pressure) associated with the low elevation of the two existing water storage tanks. No increase in permitted water withdrawal is proposed as part of the project. Specifically, the project will include:

Water Treatment Plant Construction: DWSD is proposing to construct a 2.65 million gallons per day (MGD) treatment facility that will remove the manganese from the Frost Road well water. The WTP will consist of a 7,500 square foot (sf) building with associated utilities and landscaping, located at 166 Frost Road in the Town of Tyngsborough. The WTP will include a process room, chemical room, chemical storage, electrical room, control room, and bathrooms. Two drying beds measuring 65 feet by 55 feet, with a 3 feet depth and rip rap sides will be constructed adjacent to WTP to facilitate drying of iron and manganese residuals from the WTP. A paved access road/driveway will be constructed connecting the WTP to Frost Road (Route 3A). A stormwater management system will be constructed to treat runoff from the new impervious surface.

State Forest Water Storage Tank Replacement: The new State Forest Water Storage tank will have a capacity of approximately 1 million gallons and will be installed in the footprint of the existing State Forest Tank after it is demolished. The proposed State Forest Tank will have a diameter of 56 feet, 7 inches (round) while the existing tank has a diameter of approximately 95 feet by 95 feet (square). The proposed tank will be taller than the existing tank to address the issues with hydraulic grade, with a top elevation of 320 feet compared to the existing top elevation of 270 feet. Approximately 0.22 acres of forest will be cleared in order to construct the new tank. Water main upgrades will also be completed between the new tank and the existing water main within the access road. The construction of the new tank will address bacterial issues associated with the aging water storage tank.

K-Street Water Storage Tank Replacement: As described in the ENF, the new K-Street Storage Tank is anticipated to be constructed on the same parcel of land as the existing K-Street Tank, located at 25 K-Street in Dracut. The K-Street Tank replacement is expected to proceed on a different timeline and utilize different funding than the rest of the proposed project. To achieve the required hydraulic pressure, the proposed K-Street Tank will be 35 feet higher than the existing tank, with a proposed top elevation of approximately 392 feet. According to the ENF, the existing K-Street Tank must remain in service throughout the construction of the proposed tank, with the new tank constructed on the northern portion of the parcel prior to the existing tank being demolished. A 100-foot extension of the existing driveway will be required.

Water Main Replacement: To address tuberculation within the existing water main, approximately 10,300 linear feet (lf) of watermain is proposed to be replaced within roadways in both Tyngsborough and Dracut. The existing 8- and 12-inch water mains will be replaced by a 16-inch diameter water main entirely within the footprint of the existing roadways. The existing water mains will be abandoned in place, all excavated areas will be backfilled, the roadway will be repaved, and any surfaces disturbed outside of the roadway will be stabilized with loam and seed.

Well 5a Installation: A new well, referred to in the ENF as Well 5a, will be installed within the existing property owned by the Proponent, located at 170 Frost Road in Tyngsborough. The new well is proposed to provide redundancy for the DWSD's Well 5 (also located on the 170 Frost Road property), which has the lowest manganese level of the five active wells in the Tyngsborough wellfield. DWSD has proposed to install the Well No. 5a so that the better water quality at this site can still be provided when the original well is temporarily off-line for

maintenance. The proposed Well 5a will also require the installation of 250 lf of water main to replace the existing main which connects Well 5 to the DWSD system.

Project Site

The project area includes several parcels of land owned by the DWSD totaling 222.5 acres within the towns of Tyngsborough and Dracut. DWSD supplies water to the Towns of Dracut and Tyngsborough and utilizes two groundwater sources: five active wells in the Tyngsborough (referred to in the ENF as the 'Tyngsborough Wells'), and two active wells in the Town of Dracut (referred to in the ENF as the 'New Boston Wells'). Additional water is purchased from the City of Lowell during periods of high demand. A previous version of the project was submitted to MEPA and assigned EEA# 16271 before being subsequently withdrawn.

The parcel which will contain the proposed WTP (166 Frost Road in Tyngsborough) currently contains a single-family residence, small barns, and undeveloped land. The undeveloped southwestern portion of the site (approximately 1.5 acre) will be conveyed to DWSD. The surrounding land use is primarily residential; the site is bound to the northwest by Frost Road. A small portion of the parcel in the southernmost area of the site is mapped as Bordering Land Subject to Flooding (BLSF). The entirety of the project site is mapped as Zone II Wellhead Protection Area as designated by the Massachusetts Department of Environmental Protection (MassDEP). This site is adjacent to the 71.7- acre DWSD property located at 170 Frost Road, which will contain the proposed Well 5a.

The parcel containing the existing pump station and State Forest Water Storage Tank is part of the Lowell-Dracut-Tyngsborough State Forest, owned by the Department of Conservation and Recreation (DCR). The State Forest is protected under Article 97 of the amendments to the Massachusetts Constitution (Article 97). A majority of the State Forest property is mature forest but includes a paved access road leading to the existing storage facilities. The project site within the State Forest contains mapped *Priority and Estimated Habitat of Rare Species* according to the 14th edition of the Massachusetts Natural Heritage Atlas.

The parcel containing the K-Street Water Storage Tank is located on the east side of K-Street in Dracut and is owned by the Proponent. The parcel is bounded by residential buildings and Wagon Wheel Road to north, M Street to the east, and Passaconaway Drive to the south. The parcel contains the existing K-Street tank, a booster station, maintained lawn, driveway, and forested land. The surrounding land use is characterized as residential.

The water main replacement will occur within the roadway rights-of-ways along Christine Avenue, Gloria Avenue, Lakeview Avenue, and Robert Road in the Town of Tyngsborough; and Tyngsboro Road in the Towns of Tyngsborough and Dracut. The ENF characterizes the land uses surrounding the proposed route as suburban residential neighborhoods, undisturbed forested areas, a church, the Tyngsborough Fire Department, commercial properties, Mascuppick Lake, Lakeview Conservation Area, and the Lowell-Dracut-Tyngsborough State Forest. The project corridor associated with the water main replacement includes land mapped as BLSF and buffer zones to other wetland resources areas.

The 170 Frost Road property is primarily forested, undeveloped land, but contains several wells and associated access roads. The parcel is bound to the south and west by the Merrimack River, and contains portions of Limit Brook, which runs parallel to the eastern boundary of the project site. The 170 Frost Road site contains several wetland resource areas including: Riverfront Area (RFA), BLSF, Isolated Vegetated Wetlands (IVW), Bordering Vegetated Wetlands (BVW), as well as Potential Vernal Pools. A significant portion of this parcel is mapped as Federal Emergency Management Agency (FEMA) Flood Zone AE, or an area inundated during a 100-year storm event. According to the ENF, the 100-year base flood elevation (BFE) lies between 107 and 108 feet for the Merrimack River. The entirety of this parcel is classified as Zone II Wellhead Protection Area and contains Zone I Wellhead Protection Areas as designated by MassDEP.

Environmental Impacts and Mitigation

As described in the ENF, potential environmental impacts associated with the project include the alteration of 4.5 acres of land; creation of 0.5 acres of impervious area (for a total of 7.4 acres); and an increase of 70 gpd of water use on site. The project will also alter 0.19 acres ($\pm$ 8,276.4 sf) of BLSF. The project will require the easement over approximately 0.5 acres of Article 97 Land for the construction of the replacement State Forest Water Storage Tank.

Measures to avoid, minimize, and mitigate, environmental impacts include erosion and sedimentation controls during construction and restoration of temporarily impacted wetland resource areas to pre-construction conditions. The Proponent has engaged in conversation with DCR regarding impacts to Article 97 Land and will adhere to EEA's Article 97 Land Disposition Policy including providing mitigation land. The project will result in a decrease of 40 gpd of wastewater generation.

Jurisdiction and Permitting

This project is subject to MEPA review and preparation of an ENF pursuant to 301 CMR 11.03(1)(b)(3) and 11.03(4)(b)(4) because it requires a State Agency Action and involves the conversion of land held for natural resources purposes, in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth, for the purpose of water supply, and will construct a new drinking water treatment plant with a capacity of 1,000,000 or more gpd, respectively.

The project requires the Approval to Construct a Source of 70 Gallons per Minute or Greater (BRP WS 20), Approval to Construct a Water Treatment Facility with a capacity over 1,000,000 gpd (BRP WS 24), a Chemical Feed System Retrofit Permit (BRP WS 29), and the Approval for Distribution Modifications for Public Water Systems Serving More than 3,300 people (BRP WS 32) from MassDEP. Comments from MassDEP state the project will also require the Approval of Acquisition or Sale of Water Supply Land (BRP WS 26). The project will also require a Construction and Access Permit from DCR.

The project will be required to submit Utility Maintenance Notifications to the Dracut and Tyngsborough Conservation Commissions. The project will require an Order of Conditions from the Tyngsborough Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP). The project will require Site Plan Review from the Tyngsborough Planning Board, a Building Permit from the Tyngsborough Building Department, and a Local or State Plumbing

Variance for a Single Bathroom from the Tyngsborough Sewer Commission. The project will also require a National Pollutant Discharge Elimination System (NPDES) Construction General Permit from the U.S. Environmental Protection Agency (EPA).

Because the project will be receive Financial Assistance through the State Revolving Fund (SRF), MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

Review of the ENF

The ENF provided a description of existing and proposed conditions, preliminary project plans, correspondence with MHC and the Division of Fisheries and Wildlife's (MassWildlife) Natural Heritage and Endangered Species Program (NHESP), Excerpts from Massachusetts Year 2016 Integrated List of Waters, Chapter 202 of the Acts of 2016 (Article 97 Legislation), and identified measures to avoid, minimize and mitigate environmental impacts. To assist in MEPA review, the Proponent provided supplemental information to the MEPA Office regarding the analysis of alternative siting locations for the WTP on March 10, 2021. Comments from MassDEP identify additional information that should be provided during the MassDEP permitting process regarding the proposed public water supply modifications. Comments submitted on behalf of abutters to the proposed WTP express concern regarding the environmental impacts of the WTP in addition to the analysis included in the ENF of alternative sites for the WTP. Comments from the Northern Middlesex Council of Governments (NMCOG) and State Agencies do not request additional analysis in the form of an EIR.

Alternatives Analysis

The ENF described alternatives for the WTP and the water storage tanks based on their ability to address the water quality, resiliency, and infrastructure issues present in the current water system while minimizing environmental impacts. According to the ENF, the water main replacement is a required infrastructure improvement for all project alternatives, and all environmental impacts are limited to within existing roadways, so alternative siting locations were not considered. The construction of the redundant well (Well 5a) is required to be within proximity of the existing well (Well 5) and associated infrastructure, so alternative siting for Well 5a was also not independently considered.

The alternatives considered for the WTP include a No Build Alternative, 170 Frost Road Alternative, and 166 Frost Road Alternative (the Preferred Alternative). The No Build Alternative would not result in any environmental impacts, but would not satisfy the project purpose of treating the iron and manganese present in the water supply, and so it was dismissed. The 170 Frost Road Alternative would locate the WTP on the property currently owned by the Proponent (where Well 5a is proposed). According to the ENF, the majority (approximately 80%) of this parcel is located within the 100-year flood zone, with an area of approximately 15 acres above the flood zone. The ENF states MassDEP's Guidelines for Public Water Systems require that "Other than surface water intakes, all water supply facilities and water treatment plant access roads shall be elevated and/or protected for a minimum of two feet above the 100-year flood elevation or highest recorded flood elevation, whichever is higher, unless otherwise approved by MassDEP in writing." Comments from MassDEP state that, in addition to these guidelines, it is recommended recommend water supply facilities WTP access roads be elevated a

minimum of three feet above the 100-year flood elevation to address potential climate change conditions.

According to the ENF, the access road and any relocation of the access road within the 170 Frost Road parcel would involve crossing the 100-year flood zone, and would need to be elevated to ensure that access to the facility was still possible under emergency/flooding conditions. This would require approximately 9,500 cubic yards (cy) of fill within BLSF, and the creation of associated compensatory flood storage within the site, reducing the useable area above the flood zone to an area of about 2 acres. Approximately 2.23 acres of tree clearing within the parcel would also be required. There are also Potential Vernal Pools within the parcel that would be impacted by the construction of the access road. As stated in the ENF, this Alternative was dismissed based on the challenges, resiliency issues, and environmental impacts associated with construction within the 100-year flood zone.

The Preferred Alternative, as described herein, would involve siting the WTP on the adjacent 166 Frost Road property, which abuts the existing access road to the Tyngsborough Wellfield (located within 170 Frost Road). The property is located outside of the 100-year flood zone, and is at a higher elevation than the majority of the 170 Frost Road parcel. Additionally, the proximity to the wellfield allows the WTP to intake raw water from the Tyngsborough Wellfield with existing piping and will not require the installation of any piping within the 100-year flood zone. Approximately 1.73 acres of tree clearing within the parcel would also be required to construct the WTP (0.5 acres less than the 170 Frost Road Alternative).¹ According to the ENF, this site was selected as the Preferred Alternative due to the environmental, cost, constructability, and resiliency benefits compared to other alternatives.

The ENF included an alternatives analysis for the replacement of the two water supply storage tanks. The alternatives were evaluated based on the ability to improve water service pressure and fire flows while minimizing environmental impacts. The ENF evaluated eight alternatives including a No-Build Alternative and seven alternative locations for the construction of the new State Forest and K-Street Tanks. The No-Build Alternative was dismissed because it would not meet the project goals of replacing aging infrastructure and providing adequate water pressure. Siting locations were limited to those that were at a hydraulic grade that would address the lack of pressure in certain areas present in the current system, which would require a minimum elevation of 255 for each tank. A preliminary analysis of parcels within the DWSD distribution system did not identify any suitable parcels that were preferable to the K-Street parcel or State Forest parcel. The Proponent currently owns the K-Street parcel and has legal rights to negotiate the construction of a tank on the State Forest parcel. The alternatives evaluated various layouts of the two tanks, including siting both tanks within the State Forest parcel, constructing the replacement tanks at the elevation of the existing tanks (as opposed to a higher elevation), and locating the tanks within the footprint of the existing tanks or adjacent to the existing tanks within the same parcel. The ENF states the Preferred Alternative was selected based on feedback from DCR and the ability of the alternative to satisfy project goals while minimizing environmental impacts. Comments from DCR confirm that Alternative 2B (replacement of the State Forest Tank within the footprint of the existing tank and construction of a replacement tank for the K-Street Tank on the K-Street parcel) is the Department's Preferred Alternative.

¹ Tree clearing acreage for both alternatives provided in an email from Melissa Coady (Tighe & Bond) to Eva Murray (MEPA Office) sent on March 10, 2021.

Article 97

Prior to submitting the ENF, the Town consulted with staff from DCR to address the project's compliance with the EEA Article 97 Land Disposition Policy (Article 97 Policy). The transfer of land held for Article 97 purposes must be carefully considered to protect these lands from development pressures and to preserve the Commonwealth's legacy of open space conservation and protection. Land protected by Article 97 may not be disposed of without authorization from the legislature. The ENF included Chapter 202 of the Acts of 2016: "An Act Authorizing the Commissioner of Capital Asset Management and Maintenance to Convey an Easement over a Certain Parcel of Land in the Town of Dracut" (the Legislation), which authorized DCR to grant the DWSD (the Proponent) an easement to construct and maintain a new water tower on Parcel 5 within the Lowell-Dracut-Tyngsborough State Forest. The DWSD has an existing easement on Parcel 4 within the State Forest, which was granted in 1935 for the purpose of constructing a water tower. According to the ENF, the existing water tower was constructed on Parcel 5 (instead of Parcel 4/the existing easement) in 1939. The proposed tower will be constructed within the footprint of the existing tower on Parcel 5. As stated in the Legislation, the DWSD will release the existing easement on Parcel 4, in exchange for the easement on Parcel 5, in order to comply with the Article 97 Policy.

According to the ENF, the easement on Parcel 5 will likely be limited to the footprint necessary to maintain the proposed tank and accessory structures. Parcel 5 will continue to be used for drinking water supply purposes and the proposed replacement tank is required to ensure an adequate drinking water supply for the Town of Dracut. The land use will remain consistent with the existing use and Parcel 4, a forested tract of land, will be protected in the future. As described in the ENF, approximately 9,700 sf of tree clearing is proposed within the State Forest to construct the new tank, which will be replaced in-kind. Comments from DCR state the Department will work with the Proponent to ensure the project complies with Article 97 Policy and that the easement area to be disposed of is strictly limited to the current project area, and not the entirety of Parcel 5. I refer the Proponent to comments from DCR which provide additional guidance on mitigation efforts that will be required during construction to minimize project impacts within the State Forest.

Water Supply

As described in the ENF, the Tyngsborough Wells and the New Boston Wells are permitted public water sources with a combined MassDEP issued withdrawal rate of 2.96 million gpd. According to the ENF, the DWSD can only pump a maximum of 1.49 million gpd due to high levels of manganese in the two wellfields. The 2016 average daily demand of the DWSD system was 2.23 million gpd and projected to increase to 2.3 million gpd by 2023. The DWSD maintains an interconnection with the Lowell Regional Water Utility (LWRU) and purchases water during periods of high demand (up to 2.01 million gpd). According to the ENF, even if this supply is fully utilized, the DWSD will not be able to meet its projected maximum daily demand without improving the supply from the Tyngsborough Wells. Comments from NMCOG state the proposed improvements to the DWSD's drinking water infrastructure are necessary.

Currently, Tyngsborough Wells 2, 4a, and 4b and the New Boston Wells 2a and 2b cannot be run without exceeding the Office of Research and Standards Guideline (ORSG) for manganese of 0.3 mg/L. The WTP will treat raw water from the Tyngsborough Wells, with a capacity to treat 2.65 million gpd.

According to the ENF, Well 5 within the 166 Frost Road parcel has the lowest manganese levels of those in the Tyngsborough wellfield. Well 5a is proposed to provide redundancy such that the groundwater can still be pumped should the original Well 5 be taken temporarily off-line for maintenance. As stated in comments from MassDEP, the combined pumping from Well 5 and Well 5a may not exceed the 0.57 million gpd approved daily pumping volume that was previously established for Well 5. Comments from MassDEP also identify discrepancies in the location of Well 5a as shown in the ENF as compared to the location shown in the relevant permit application, and note that replacement (redundancy) wells that are more than 250 feet from the original well are not approved. The Proponent has indicated that Well 5a is located within 250 feet of Well 5.²

To address bacterial issues present with the aging State Forest Water Storage Tank and issues with water pressure associated with the hydraulic grade of the existing tanks, the 0.85-million-gallon State Forest Water Storage Tank will be replaced with a 1 million gallon tank at an elevation 50 feet above the existing tank, and the existing K-Street Tank (which has a capacity of 2.5 million gallons according to comments from MassDEP) will be replaced with a 1 million gallon tank at an elevation 35 feet above the existing tank. The proposed K-Street Tank will require a height variance from the Town of Dracut Zoning Board of Appeals. The ENF states that, given the dense residential development in this location, opposition to the height variance is anticipated. Should the DWSD choose to proceed with a different design of the K-Street Tank replacement than that presented in this ENF, the MEPA Office should be consulted prior to its construction to determine if further review is necessary.

As noted above, comments from MassDEP state the project will require the Approval of Acquisition or Sale of Water Supply Land (BRP WS 26) in addition to the permits identified in the ENF. The ENF identifies the requirement of a Chemical Feed System Retrofit Permit (BRP WS 29), however comments from MassDEP indicate this may not be required. I refer the Proponent to Comments from MassDEP for further guidance on information that should be provided during the permitting process.

Wetlands

The project will result in temporary impacts to 8,395 sf (0.19 acres) of BLSF associated with the installation and upgrading of the water main. All water main replacement work will occur within the limits of the existing roadway. The project will restore pre-existing grades and will not result in any loss of flood storage capacity. As stated in the ENF, Utility Maintenance Notifications were submitted to the Tyngsborough and Dracut Conservation Commissions for exempt water main work within the roadway. According to the ENF, a Notice of Intent was submitted to the Tyngsborough Conservation Commission for the construction of the WTP due to work proposed within the buffer zone to BLSF. The Tyngsborough Conservation Commission will review the project for its consistency with the Wetlands Protections Act (WPA), the Wetland Regulations (310 CMR 10.00), and associated performance standards.

Stormwater

The project will create a net increase of 0.5 acres of impervious area, resulting in a total of 7.4 acres of impervious surface within the project site. Specifically, the new WTP and K-Street Water

² Location of Well 5a confirmed in email sent from Melissa Coady (Tighe & Bond) to Eva Murray (MEPA Office) sent on March 12, 2021.

Storage Tank will increase the amount of impervious area located within the Project Site, while impervious area will decrease at the State Forest Water Storage Tank site. As described in the ENF, the stormwater management system at the WTP site will include bioretention basins and vegetated strips. The proposed State Forest Water Storage Tank will result in a reduction of 2,100 sf of impervious surface. Stormwater at the site will be directed to a stormwater basin located in the northeast portion of the project area. Stormwater at the K-Street Water Storage Tank will be directed to a stormwater basin which will provide groundwater recharge on-site. The impervious surface associated with the existing K-Street Tank will be loamed and seeded following demolition.

Rare Species

According to the ENF, the proposed State Forest Water Storage Tank is located within the limits of mapped Priority Habitats for Rare Species (PH 1892) and Estimated Habitats for Rare Wildlife (EH 1314). Correspondence from NHESP included in the ENF indicate the Priority and Estimated habitat is designated for Blanding's Turtle (*Emydoidea blandingii*), a state-listed Threatened Species; the species and its habitat area protected pursuant to the Massachusetts Endangered Species Act (MESA) and its implementing regulations (312 CMR 10.00). The project will be required to undergo MESA Review. The ENF indicates that the project is not anticipated to result in a prohibited "take" of Blanding's Turtle.

Climate Change

Governor Baker's Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth (EO 569) was issued on September 16, 2016. The Order seeks to ensure that Massachusetts will meet greenhouse gas (GHG) emissions reduction limits established under the Global Warming Solution Act of 2008 (GWSA) and will work to prepare state government and cities and towns for the impacts of climate change. I encourage the Town to include features and measures that would reduce both the consumption of grid electricity and the related greenhouse gas (GHG) emissions. The Town should consult MassDEP's "*Energy Efficiency and Renewable Energy Opportunities at Water and Wastewater Facilities*" website and other resources to identify energy efficiency practices for WTPs.³ I note that the project design incorporates resiliency measures, including locating the proposed WTP entirely out of the 100-year flood zone and the replacement of aging infrastructure within the water supply system.

Archaeological Resources

The project site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth (Inventory). However, the ENF states a review of MHC's Inventory indicated archaeological resources have been recorded in the vicinity of portions of the proposed project, including the proposed Well 5a, water main replacement routes, and the proposed WTP in

³ <http://www.mass.gov/eea/agencies/massdep/climate-energy/energy/water-utilities/energy-efficiency-at-water-and-wastewater-facilities.html>; *Water Environment Research Foundation's Utilities of the Future Energy Findings* report (2014) available online at <https://www.werf.org/a/ka/Search/ResearchProfile.aspx?ReportId=ENER6C13>, and the *Water and Wastewater Energy Management Best Practices Handbook* (2010) available online at <https://www.nyscrda.ny.gov/-/media/Files/Programs/Clean-Energy-Communities/NYSERDA-Water-Wastewater-Energy-Management-Best-Practices-Handbook.pdf>

Tyngsborough, as well as the new tank within the Lowell-Dracut-Tyngsborough State Forest. According to the ENF, MHC requested that an archaeological reconnaissance survey (950 CMR 70) be conducted for the project. Based on the results of the archaeological reconnaissance survey, an archaeological intensive (locational) survey was recommended in the location of the proposed WTP and State Forest Water Storage Tank. The intensive survey field work was conducted and completed in December 2020, with no archaeological sites identified. Comments from MHC state no further archaeological survey for the project is currently proposed and that the project is unlikely to affect significant historic and archaeological resources. As stated in comments from MHC, should the project change substantially in the future, the Proponent should consult with the Commonwealth Heritage Group to update the archaeological sensitivity assessment.

Construction

As described in the ENF, the improvements included in the proposed project will be contracted and undertaken separately. The project will utilize SRF to fund the project, except for the K-Street Tank replacement. All construction and demolition activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11). I encourage the Proponent to require that its contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the Proponent should notify MassDEP in accordance with the Massachusetts Contingency Plan (310 CMR 40.00). All construction activities should be undertaken in compliance with the conditions of all State and local permits. I encourage the Proponent to reuse or recycle construction and demolition (C&D) debris to the maximum extent.

Conclusion

The ENF has adequately described and analyzed the project and its alternatives, and assessed its potential environmental impacts and mitigation measures. As noted above, should the Proponent choose to proceed with a different design of the K-Street Tank replacement than that which was presented in this ENF, the MEPA Office should be consulted prior to its construction to determine if further review is necessary. Based on review of the ENF and comments received on it, and in consultation with State Agencies, I have determined that an EIR is not required.



March 12, 2021

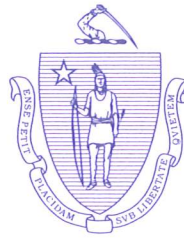
Date

Kathleen A. Theoharides

Comments received:

03/01/2021 Massachusetts Historical Commission
03/01/2021 Northern Middlesex Council of Governments (NMCOG)
03/02/2021 Law Offices of Jeffrey L. Roelofs, P.C.
03/02/2021 Massachusetts Department of Environmental Protection (MassDEP), Northeast Regional
Office (NERO)
03/12/2021 Massachusetts Department of Conservation and Recreation

KAT/ELM/elm



The Commonwealth of Massachusetts

February 26, 2021 William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

Secretary Kathleen A. Theoharides
Executive Office of Energy & Environmental Affairs
Attn: Eva Murray, MEPA Unit
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Dracut Water Supply District, Water System Improvements, Dracut and Tyngsborough, MA. MHC #RC.68682.
EEA #16326.

Dear Secretary Theoharides:

Staff of the Massachusetts Historical Commission (MHC) have reviewed the revised Environmental Notification Form (ENF) submitted for the project referenced above. The MHC has also reviewed the archaeological report, *Archaeological Intensive (Locational) Survey for the Dracut Water Supply District System Improvements Project, Dracut and Tyngsborough, Massachusetts*, prepared and submitted by the Commonwealth Heritage Group (CHG), for the project referenced above.

The archaeological survey did not identify any significant archaeological resources within the project impact areas, including at the water treatment plant at 166 Frost Road in Tyngsborough, or the new Reservoir within the Dracut State Forest, as currently proposed. The MHC recommends no further archaeological survey for the project as currently proposed.

After review of our files and the information submitted, the MHC has determined that the project is unlikely to affect significant historic and archaeological resources. If project plans change substantially in future, then the MHC recommends that current project information be provided by the project proponent or engineer to the Commonwealth Heritage Group for their updated archaeological sensitivity assessment. Additional intensive (locational) archaeological survey (950 CMR 70) may be required in future for any proposed project impact areas that are archaeologically sensitive.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), Massachusetts General Laws, Chapter 9, Sections 26-27C (950 CMR 70-71), and MEPA (301 CMR 11). If you have any questions concerning this review, please contact Jonathan K. Patton, Archaeologist/Preservation Planner at this office.

Sincerely,

A handwritten signature in blue ink that reads "Brona Simon".

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc: Michael Sheu, Superintendent, Dracut Water Supply District
Maria Pinaud, DEP-SRF
David Weeden, Mashpee Wampanoag Tribe
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah)
Ellen Berkland, DCR
Melissa Coady, Tighe & Bond
Martin G. Dudek, Commonwealth Heritage Group



Northern Middlesex Council of Governments

March 2, 2021

Kathleen Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
Attention: MEPA Office
Eva Murray: EOEEA #16326
100 Cambridge Street, Suite 900
Boston, MA 02114-2509

A Multi-Disciplinary

Regional Planning

Agency Serving:

Billerica

Chelmsford

Dracut

Dunstable

Lowell

Pepperell

Tewksbury

Tyngsborough

Westford

RE: EOEEA #16326/NMCOG #679 – Dracut Water Supply District – Water System Improvements, Dracut, Tyngsborough

Dear Secretary Theoharides:

The Northern Middlesex Council of Governments (NMCOG) has reviewed the Environmental Notification Form (ENF) for the Dracut Water Supply District – Water System Improvements in Dracut and Tyngsborough. The proposed project includes the construction of a new manganese water treatment facility to treat up to 2.65 million gallons per day (MGD). The project proponent, the Dracut Water Supply District, proposes to replace approximately 10,300 lf of water main within roadways to address tuberculation within the existing water main. The project will also include the construction of a new redundant public water supply well and the replacement of two water storage tanks, one of which is located in State Forest land. The project site therefore comprises four separate geographic areas within the Towns of Dracut and Tyngsborough due to the scope and nature of the improvements.

Andrew Deslaurier
Chair

Beverly A. Woods
Executive Director

This project triggers MEPA review due to the fact that it trips the following thresholds:

- Includes the conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97; and
- Includes the construction of a new drinking water treatment plant with a capacity of 1,000,000 or more gpd.

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The project requires MassDEP Technical Review and Permitting for the wastewater treatment plant (WTP) process. In addition, the project will require a Local or State Plumbing Variance, a Superseding Order of Conditions under the Wetlands Protection Act (if local Order of Conditions is Appealed), and a NPDES General Permit for Stormwater Discharge from Construction Activities under the US EPA Clean Water Act.

The purpose of this project is to make necessary improvements to the Dracut Water Supply District's drinking water infrastructure. The potential impacts to the built environment and natural resources environment resulting from the construction process will largely be temporary in nature and will be mitigated. Some impacts will be permanent and associated with the new building and parking area for the wastewater treatment plant (WTP). Other construction activities are intended to replace existing

infrastructure and will therefore be located on existing sites. The proposed State Forest water storage tank is located within Priority and Estimated Habitat for Rare Species (Blanding's Turtles). The proponent is working with the Natural Heritage and Endangered Species Program (NHESP) in minimizing impacts to this species.

Based on the information provided within the Environmental Notification Form, project alternatives have been carefully considered and the analysis has shown that all potential negative impacts of this project will be mitigated where possible. In addition, NMCOG received no significant environmental concerns from the Town of Dracut or the Town of Tyngsborough following our request for MEPA review comments. Therefore, future review under the MEPA process does not appear warranted. Any outstanding issues relative to the project can be adequately addressed through the state and local permitting processes.

Should you have any questions regarding the NMCOG staff comments please feel free to contact me directly at (978) 454-8021, ext. 120.

Sincerely,

A handwritten signature in dark ink, appearing to read "Beverly Woods". The signature is fluid and cursive, with the first name "Beverly" written in a larger, more prominent script than the last name "Woods".

Beverly Woods
Executive Director

cc:

Tyngsborough: Board of Selectmen, Town Administrator, Planning Board, Town Engineer, Highway Department, Town Planner, Conservation Commission, Historical Commission, NMCOG Councilors.

Dracut: Board of Selectmen, Town Manager, Planning Board, Town Engineer, Highway Department, Community Development Director, Conservation Commission, NMCOG Councilors.

March 2, 2021

Submitted through Public Comment Portal

Eva Murray, MEPA Analyst
EEA MEPA Office
100 Cambridge St., Suite 900
Boston, MA 02114

RE: Dracut Water Supply District – Water System Improvements
EEA # 16326

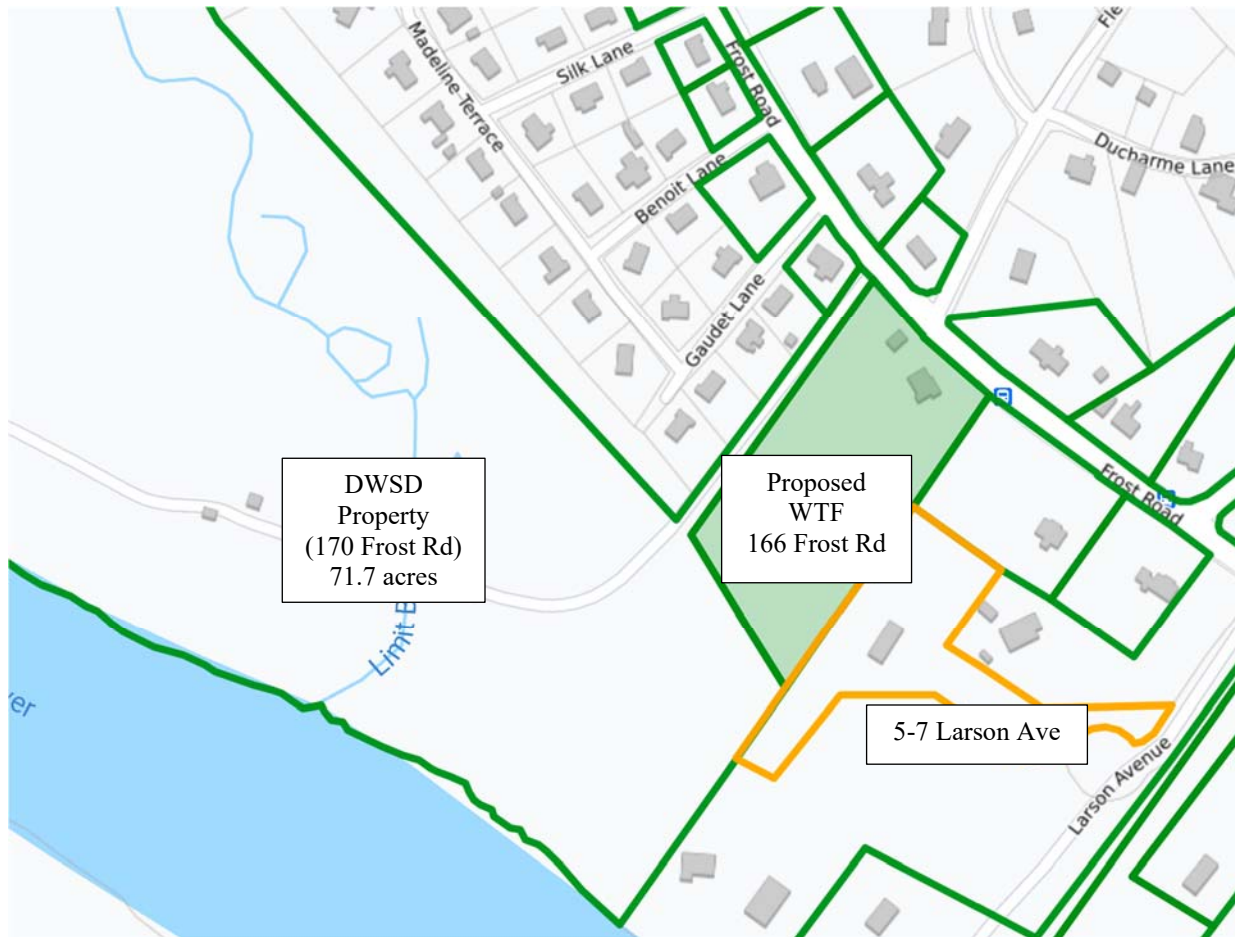
Dear Ms. Murray:

I write to submit comments related to the above-referenced project of the Dracut Water Supply District (“DWSD”), specifically, DWSD’s proposed construction and operation of a water treatment facility in a wooded portion of a residential property located at 166 Frost Road, Tyngsborough, MA (Parcel ID 18 6 0) that it intends to take by eminent domain and that lies within a dense residential neighborhood. These comments are submitted on behalf of Laurie and Mark Brodeur, who reside at 5 Larson Avenue, Tyngsborough, MA, and Pamela Zipps, who resides at 7 Larson Avenue (together, 5-7 Larson Avenue, Parcel ID 18 4 3). My clients’ homes directly abut the DWSD’s proposed treatment facility, which will involve clearing of the existing trees and other vegetation, destruction of wildlife habitat and the construction and operation of an industrial building and facility with substantial impervious surfaces (driveway and parking areas) and two large drying beds to be located 30’ from my clients’ property line.

Generally, the Environmental Notification Form (“ENF”) and supporting materials submitted by DWSD fail to sufficiently describe the proposed treatment facility details and operations and its potential environmental impacts (e.g. related to wetlands, wildlife habitat, water quality, electricity consumption, air emissions and noise), fail to sufficiently identify and evaluate alternative locations for the facility, including the useable area above the flood zone on the DWSD’s adjacent 71.7-acre property at 170 Frost Road, and fail to evaluate alternatives for mitigating the impacts of its treatment facility.

I. Context

The following figure shows the location of the proposed water treatment facility (in green), my clients’ adjacent property at 5-7 Larson Avenue (in yellow), a portion of the DWSD’s 71-acre property along the Merrimac River and the many residential properties that will be impacted by the proposed treatment facility.



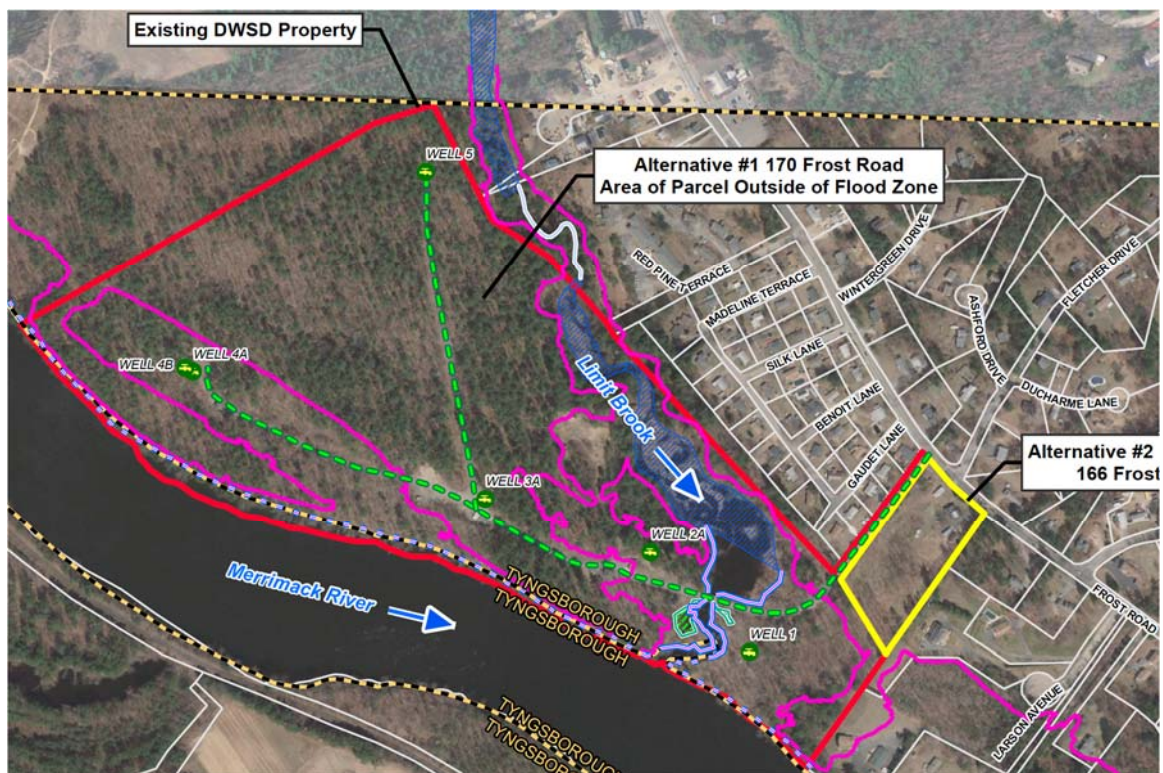
II. The DWSD Should Locate the Treatment Plant on Its Existing Property

In the ENF filing (Section 3.1.2), the DWSD explains its reasoning for not locating the treatment facility on its currently owned property at 170 Frost Road as follows:

In order to raise the existing access drive above the flood elevation, approximately 9,500 cubic yards (cy) of fill would be required. Since adding fill to the flood zone will reduce flood storage capacity, a compensatory flood storage area that is connected to the same source of flooding that is not already used for flood storage must be added to offset the reduction in storage capacity of this area. This would require removal of 9,500 cy of material from the only location on the parcel above the flood zone. The usable area above the flood zone would be reduced by about 2 acres in order to provide the compensatory storage while avoiding the construction of retaining walls and minimizing costs. Raising the elevation of the access road would result in impacts and fill within BLSF, as well as the clearing of existing forest to construct the compensatory flood storage. (Section 3.1.2).

Its explanation is insufficient to justify its “preferred” location at 166 Frost Road – requiring the clearing of trees and construction of its facility directly among existing residential properties. As related to the DWSD’s explanation, note the following:

1. DWSD’s justification is based primarily on its desire to preserve the “usable area above the flood zone” on its current 71.7-acre property, that is, to avoid having to convert a small portion of that usable area to provide compensatory flood storage. What is the point or value of preserving this “useable area” if DWSD does not plan to actually use it? There is plenty of “useable area above the flood zone” on its property to accommodate the proposed treatment facility and to also provide the compensatory flood storage that would be required. See the following figure from the ENF filing and the large area above the flood zone that is already accessed by existing gravel drives (estimated to be over 7 acres of land):



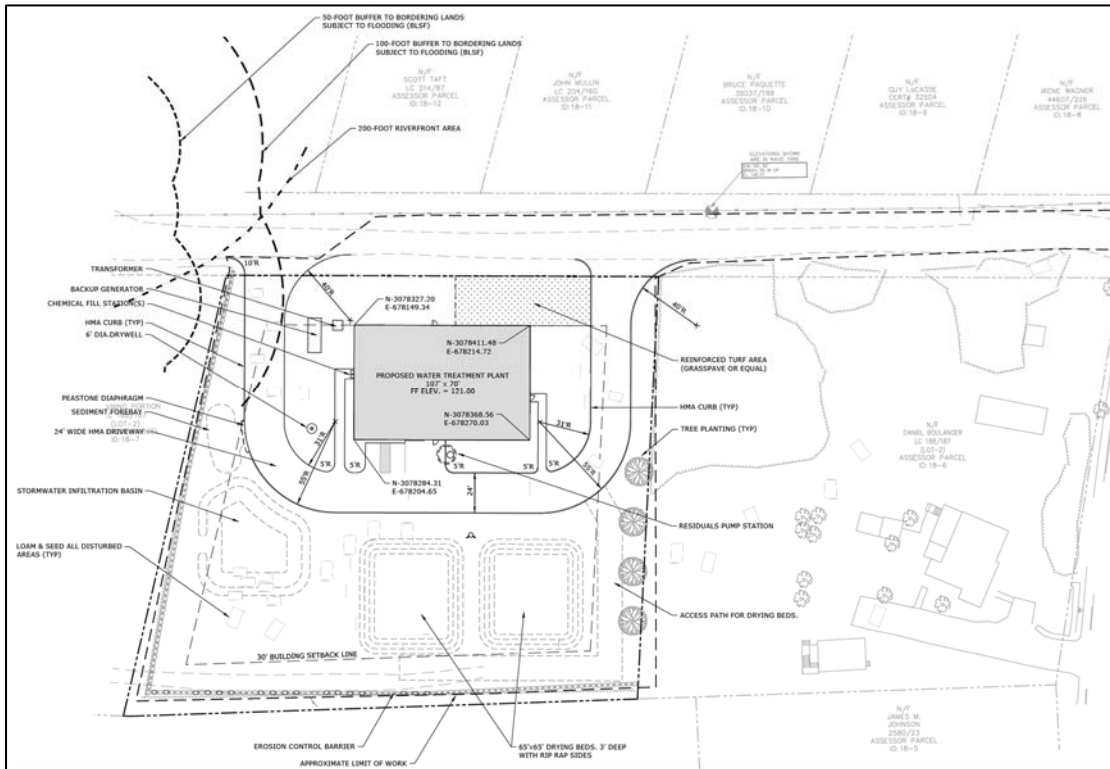
2. DWSD complains that locating the facility on its property will require clearing of existing forest. That argument ignores the reality that constructing the facility on the 166 Frost Road property also involves clearing of existing trees, including within the wetlands buffer zone. DWSD has not provided any quantitative comparison of the tree clearing associated with each alternative.
3. DWSD’s explanation acknowledges that the existing access roads could be used to access a treatment facility on the “useable area above the flood zone” on its property, although raising those roads (or portions of them) would be required to mitigate potential flooding

impacts. The work associated with raising the road should be more fully detailed and evaluated. It may be, for example, that improving the existing wetlands crossing results in improvements over existing conditions as related to wetlands values and wildlife habitat – as is often the case when older crossings are upgraded to meet the current stream crossing guidelines.

4. DWSD does not assert that constructing the treatment facility on its own land is infeasible or that it could not be done in a manner that complies with applicable regulatory standards and in a manner that appropriately avoids, minimizes and mitigates environmental impacts. DWSD should evaluate those issues more comprehensively and cannot rule out that alternative by way of the thin explanation provided in its ENF filing.
5. That constructing the facility on its own property may be more expensive than constructing it on the 166 Frost Road property does not justify locating it at the 166 Frost Road property. The construction costs can be spread over time and over the DWSD's many users through the water rates – that is, by those directly benefiting from the facility. The costs associated with the proposed location of the facility at 166 Frost Road (e.g. lost vegetation, lost wildlife habitat, noise and other potential nuisance conditions resulting in impaired property values) will be borne by the few residents that directly abut the facility rather than by those who stand to benefit from the facility.

The ENF is also deficient in detailing the proposed facility and associated operations and, therefore, all potential impacts cannot reasonably be identified or evaluated. For example, the ENF fails to sufficiently discuss the following:

- Impacts to vegetation and wildlife habitat, including with the buffer zone, and alternatives for reducing those impacts (tighter limit of work, less impervious surfaces, etc...). No meaningful wildlife habitat assessment or tree/vegetation survey appears to have been conducted. Nor is there any attempt to justify the extent of clearing and the broad limit of work proposed for this treatment plant. Alternatives for minimizing these impacts should be evaluated. See the following excerpt from the site plans included in the ENF filing, depicting the limit of work as being almost directly adjacent to the property boundaries:



- Noise and odor sources and efforts to mitigate. In its ENF, the DWSD notes as follows: “Additional landscaping will be used to improve the aesthetics of the WTP and to reduce potential noise and visual impacts to the nearby neighborhood.” (Section 4.1.3). However, the only “landscaping” shown on the plans is the planting of 4 trees – which would be completely ineffective in screening this plant or compensating in any way for the number of trees proposed to be removed. What are the noise sources? What levels will be generated? How have noise levels been mitigated? What alternatives exist for avoiding noise impacts?
- Drying bed process and details. For example: How frequently are sediments removed? What does the removal process entail? Are there odors associated with these beds? Are there odors associated with the removal activities? How will odors be mitigated? How can the odors be avoided?
- Traffic – during construction and during normal operations. Frequency of chemical and other deliveries and vehicle trips? Types of vehicles?
- Energy consumption and related greenhouse gas emissions. Have these been quantified and how will they be mitigated?

The DWSD notes in Section 5.1 of its ENF filing that “Land use and facility access impacts associated with the Project will be temporary in nature and confined to the area of construction work and

associated work times.” Section 5.1. That statement ignores the permanent land use impacts that wedging this treatment facility will have on the nearby residents.

The DWSD notes in Section 6.1.4 of its ENF filing that “A Site Plan Review may be required to the Tyngsborough Planning Board under the Town of Tyngsborough Zoning Bylaw.” In fact, the treatment facility is not permitted by right in this residential zoning district. Instead, under the Zoning Bylaw, this facility can only be constructed if DWSD secures a special permit from the Tyngsborough Board of Selectmen.

Thank you for considering these comments.

Sincerely,

A handwritten signature in blue ink, appearing to read 'J. Roelofs', with a stylized, cursive flourish.

Jeffrey L. Roelofs



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Northeast Regional Office • 205B Lowell Street, Wilmington MA 01887 • 978-694-3200

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

March 2, 2021

Kathleen A. Theoharides, Secretary
Executive Office of
Energy & Environmental Affairs
100 Cambridge Street
Boston MA, 02114

RE: Dracut, Tyngsborough
Dracut Water Supply District – Water System
Improvements
EEA # 16326

Attn: MEPA Unit

Dear Secretary Theoharides:

The Massachusetts Department of Environmental Protection Northeast Regional Office (MassDEP-NERO) has reviewed the Environmental Notification Form (ENF) submitted by the Dracut Water Supply District to construct a new manganese treatment plant and improve transmission main lines for the water district. MassDEP provides the following comments.

Drinking Water

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) for the Dracut Water Supply District's (DWSD's) proposed Water System Improvements. The project includes construction of a water treatment plant to treat the DWSD wells located off Frost Road in Tyngsborough, construction of a supplemental replacement well for Frost Road Well No. 5, installation of two water storage tanks, and water main improvements.

MassDEP notes that the scope of its ENF review **did not** include review of the design plans included as appendices to the ENF. Design plans will be reviewed by MassDEP staff as part of permitting, as described below.

DWSD serves much of the Town of Dracut and a portion of the Town of Tyngsborough. The District presently has six wells located off of Frost Road in Tyngsborough — Frost Road Wells Nos. 1, 2A, 3A, 4A, 4B, and 5. The wells have elevated levels of naturally occurring manganese. DWSD has been managing its use of the wells so that the blended water from the Frost Road Wells that enters the water distribution system will remain below the Massachusetts Drinking Water Guideline of 0.30 milligrams per liter (mg/L). All of the wells except Well No. 5 tend to have manganese levels in excess of the 0.05 mg/L Secondary Maximum Contaminant Level that is based on aesthetic effects, such as staining of laundry and fixtures.

DWSD is proposing to construct a 2.65 million gallons per day (MGD) treatment facility that will remove the manganese from the Frost Road well water. The maximum volume that may be withdrawn in any day from the combined water from the Frost Road Wells, including replacement wells, is 2.65 MGD, in accordance with DWSD's Water Management Act Permit (Permit #9P2-3-13-079.01). The treatment plant design is based upon this rate, so that the plant will be able to accommodate the **maximum** volume of water that will have to be treated in any day.

DWSD proposes to acquire a portion of a property adjacent to the Frost Road Wells, upon which the treatment facility will be constructed. The treatment to be provided will include filtration for removal of iron and manganese, calcium hypochlorite for disinfection, potassium hydroxide for pH adjustment, zinc orthophosphate for corrosion control, and sodium fluoride for fluoridation.

Frost Road Well No. 5 has the lowest manganese level of the six wells. DWSD has proposed to install a supplemental replacement well, Frost Road Well No. 5A, for redundancy purposes, so that the better water quality at this site can still be provided when the original well is temporarily off-line for maintenance. The two wells will be combining to produce a volume of water that was previously produced by a single well. The original well and the replacement well are proposed to be pumped alternately. The combined pumping from the original well and the replacement well may not exceed the 0.57 MGD approved daily pumping volume that was previously established for the original well. MassDEP set forth the requirements for approval of the replacement well on November 21, 2019.

The replacement Well No. 5A was installed in July 2020 as an 18" x 24" gravel packed well 71 feet deep, with a 10 foot length of screen. The water quality samples required in MassDEP's November 21, 2019 letter were collected in July 2020 after the well had been pumped to waste for 48 hours.

DWSD intends to replace the existing 0.86 MG storage tank located on State Forest property with a 1 MG tank. The top of the new tank will have an elevation of 320 feet, which is 50 feet higher than the elevation of the existing tank. The new tank will not be as wide as the existing tank, so its footprint will be smaller. The ENF states that the impervious area at the tank will decrease by about 2,100 square feet. In 2016, the Massachusetts Legislature authorized the conveyance of an easement on the State Forest land for this work; DWSD is currently in the process of obtaining this easement from the Massachusetts Department of Conservation and Recreation (DCR). The ENF states that DCR prefers the new tank to be constructed upon the

footprint of the existing tank, which means that the existing tank must be demolished before the new tank can be built. A tank will not be available at this location for 12 to 18 months during the construction period, which will require temporary physical and operational modifications to provide water to the State Forest pressure zone.

The ENF appears to state in Attachment L that the new K Street tank will have a capacity of 1 MG. Information provided to MassDEP in the past stated that the existing tank has a 2.5 MG capacity. The overflow elevation of the new tank will be 385 feet, compared to 350 feet for the existing tank. The existing tank will remain active while the new tank is built.

Dracut's existing storage tanks do not have a high enough elevation to provide water to the portion of the distribution system that is in Tyngsborough. Tyngsborough can presently receive only water from the Frost Road Wells, and not from the New Boston Road Wells or the water that DWSD purchases from the Lowell system. The replacement tanks are proposed to have higher overflow elevations, which will provide atmospheric storage to the Tyngsborough portion of the system. The higher elevations will also provide a greater amount of usable storage to meet peak hourly demands and fire flows.

Attachment L of the ENF, "Water Storage Tank Alternatives Analysis," states that when the new tanks with higher elevations are built, several of DWSD's eight pressure zones can be consolidated, and several booster pump stations will no longer be needed. The new State Forest tank will provide atmospheric storage to the State Forest and Marsh Hill pressure zones, eliminating the need for two pump stations and improving fire flows within the new combined zone. The new K Street tank will provide atmospheric storage for the K Street, K Street Boosted, Birchmont, and Makos pressure zones, which will allow them to be consolidated into a single zone.

The project will also include replacement of 10,300 feet of 8" and 12" water main with 16" main.

The project will require the following Drinking Water Program permits from MassDEP:

- **Approval to Construct Treatment Facility 1 Million Gallons Per Day or Greater** (MassDEP Permit Category BRP WS 24) – Reviews the design plans and specifications for construction of the water treatment plant. The application for this permit was submitted to MassDEP in November 2020 and is presently under review.
- **Approval to Construct Source 70 Gallons Per Minute or Greater** (BRP WS 20) – Reviews the design plans and specifications for construction of the permanent pumping facilities for Frost Road Well No. 5A, the proposed replacement well. The application for this permit was submitted to MassDEP in December 2020; review is pending.
- **Approval of Distribution System Modifications for Public Water System Serving More Than 3,300 People (BRP WS 32)** – Reviews the design for construction of transmission water main. The application for this permit was submitted to MassDEP in January 2021, and is presently under review.

- **Approval of Distribution System Modifications for Public Water System Serving More Than 3,300 People** (BRP WS 32) – Reviews the design plans and specifications for construction of the proposed replacement State Forest and K Street storage tanks, and the demolition of the existing tanks.
- **Approval of Acquisition or Sale of Water Supply Land** (BRPWS26) – This permit is not listed in the ENF. Massachusetts General Laws, Chapter 40 Section 41, requires MassDEP approval and a public hearing for a town, water supply district, or fire district to acquire land or rights in land. The District is seeking to acquire by eminent domain a 1.73 acre portion of a 3.25 acre parcel at 166 Frost Road for construction of the water treatment plant. The application for this permit was submitted to MassDEP in January 2021, and is presently under review. The public hearing was held via Zoom on February 18, 2021.

The ENF states that a Chemical Feed System Retrofit permit (BRP WS 29) will be required. The ENF does not explain the reason for this permit. Any chemical feeds and checklists for the water treatment plant should be included within the Approval to Construct Treatment Facility (BRP WS 24) permit submittal, and any demolition of the feeds at the existing chemical feed facility may also be included within this submittal. Unless the BRP WS 29 permit is intended for the provision of booster chlorination at the storage tanks, this permit does not appear to be necessary.

Removal of the booster pump stations will require a Distribution System Modifications (BRP WS 32) permit. MassDEP recommends that this be included as part of the submittal for construction of the storage tanks. The submittal should include the “Water Storage Tank Alternatives Analysis” from Attachment L of the ENF, as well as the hydraulic analysis that was done by Tighe & Bond to arrive at its conclusions that the booster stations can be eliminated without harmful impacts.

Except for the area around Frost Road Well No. 5, much of DWSD’s Frost Road property is within the 100-year flood plain, including a long stretch of the access road. As noted in the ENF, MassDEP Drinking Water Guidelines state that:

Other than surface water intakes, all water supply facilities and water treatment plant access roads shall be elevated and/or protected for a minimum of two feet above the 100-year flood elevation or highest recorded flood elevation, whichever is higher, unless otherwise approved by MassDEP in writing. MassDEP recommends the station and access roads be elevated a minimum of three feet above the 100-year flood elevation to address potential climate change conditions.

For the water treatment plant to be built on the higher ground near Well No. 5, the grade of the access road would have to be built up significantly. Additional raw and finished water main would have to be constructed to this part of the property, and compensatory flood storage would have to be created to offset the elevated access road. Therefore, rather than building the water treatment plant on its current property, DWSD has proposed to acquire part of the 166 Frost

Road parcel, which is outside the flood plain. The eastern part of the property includes a residence, but the western part is presently undeveloped.

On Figure 3, Mapsheet 1, in Attachment B, the location of the replacement well, Well No. 5A, is shown over 300 feet farther south than the location that has been shown in the BRP WS 20 permit application for construction of the permanent pumping facilities. In that application, the well location is 230 feet south of the existing well. MassDEP does not approve replacement well locations that are more than 250 feet from the original well. The location shown on Figure 3 is roughly 550 feet south of Well No. 5. The location for Well No. 5A that is shown in the BRP WS 20 application is acceptable to MassDEP; the location shown in the ENF is not.

The MassDEP appreciates the opportunity to comment on this proposed project. Please contact Rachel.Freed@mass.gov at (978) 694-3258 for further information on drinking water issues. If you have any general questions regarding these comments, please contact me at John.D.Viola@state.ma.us or at (978) 694-3304.

Sincerely,

This final document copy is being provided to you electronically by the Department of Environmental Protection. A signed copy of this document is on file at the DEP office listed on the letterhead.

John D. Viola
Deputy Regional Director

cc: Brona Simon, Massachusetts Historical Commission
Eric Worrall, Rachel Freed, Jim Persky, MassDEP-NERO



March 2, 2021

Secretary Kathleen A. Theoharides
Executive Office of Energy and Environmental Affairs
Attn: Eva Murray, MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Re: EOEEA #16326 Dracut Water Supply District – Water System Improvements ENF

Dear Secretary Theoharides:

The Department of Conservation and Recreation (“DCR” or “Department”) is pleased to submit the following comments in response to the Environmental Notification Form (“ENF”) submitted by Tighe & Bond on behalf of the Town of Dracut Water Supply District (the “Proponent”) for the Dracut Water Supply District Water System Improvements (the “Project”).

As described in the ENF, the Project consists of improvements for the Dracut Water Supply District (“DWSD”) including the construction of a new manganese treatment plant with a design capacity of 2.65 million gallons per day (“MGD”); transmission main improvements; the construction of a redundant public water supply well; and the replacement of two (2) water storage tanks: the State Forest and the K-Street tanks. The replacement of one water tank will be on so-called “Parcel 5” which includes part of the Lowell-Dracut-Tyngsboro State Forest trail system. The State Forest is an important public resource for residents of the Commonwealth, and especially within surrounding communities, providing opportunities for outdoor recreation, including hiking and hunting.

Parcel 5 contains the existing DWSD water storage tank that was constructed in 1939. The Proponent’s Alternatives Analysis includes demolition of the existing ~20-foot tall State Forest water storage tank, and construction of a replacement storage tank with a maximum height of 65 feet. The area will be restored to match the surrounding grades.

Considering that the water tank is proposed on State Forest land, a disposition of an easement from DCR is required. Such easement was authorized pursuant to Chapter 202 of the Acts of 2016: “An Act Authorizing the Commissioner of Capital Asset Management and Maintenance to Convey an Easement over a Certain Parcel of Land in the Town of Dracut.” Construction activities within the State Forest will require a DCR Construction and Access Permit.

Article 97 Land Disposition

Transfers of interests in state conservation property must meet the requirements set forth in the Executive Office of Energy and Environmental Affairs (“EEA”) Article 97 Land Disposition Policy (the “Policy”). The Policy has the stated goal of ensuring no net loss of Article 97 lands under the ownership and control of the Commonwealth, and states as a general premise that EEA and its agencies shall not sell, transfer or otherwise dispose of any right or interest in Article 97 lands. Transfer of ownership or interests therein only may occur under exceptional circumstances, as defined in the Policy, including the determination that

COMMONWEALTH OF MASSACHUSETTS · EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

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Charles D. Baker
Governor

Karyn E. Polito
Lt. Governor

Kathleen A. Theoharides, Secretary,
Executive Office of Energy & Environmental Affairs
Jim Montgomery, Commissioner
Department of Conservation & Recreation

no feasible alternative is available, and a minimum amount of land or an interest therein is being disposed for the proposed use. DCR will work with the Proponent to ensure that the Project complies with the EEA Article 97 Policy and that the easement area to be disposed of is strictly limited to the current Project area, and not all of Parcel 5.

DCR staff reviewed the Alternatives Analysis with the Proponent prior to ENF submission. DCR notes that all the proposed alternatives would result in loss of habitat and impacts to recreation and viewshed. Alternative 2B is DCR's Preferred Alternative because it will have the least impact on resources and will best protect natural, recreational and aesthetic attributes of the State Forest and trail system. The following comments reflect DCR's assessment of the Preferred Alternative.

Site Considerations

The Project site within the State Forest is forested, with the exception of the existing, mainly underground water storage tank, the pump house, the paved access to these facilities, and other associated underground and above ground utilities. To prepare the site, approximately 0.22 acres of forested area will be cleared and graded to construct the replacement 1-million-gallon, maximum 65-foot high State Forest Water Storage Tank. The proposed water storage tank is located within the limits of mapped Priority Habitats for Rare Species (PH 1892) and Estimated Habitats for Rare Wildlife (EH 1314). Several invasive species including Japanese knotweed, *Reynoutria japonica*, and garlic mustard, *Alliaria petiolate*, are present along the edge of the paved facility access.

DCR requests that the Proponent flag the areas of the site that will be disturbed and cleared of vegetation, in order to accommodate a thorough site visit by DCR's Ecologist and Management Forester to evaluate impacts to existing vegetation, habitats, and the trail system. Potentially disturbed areas resulting from Project activities shall include materials storage and stockpiling as well as equipment laydown areas. Timber value will be calculated during the DCR site assessments. Given the potential for rare bat roost sites, larger trees should be allowed to remain.

During the construction phase of the Project, DCR requests that the Proponent assist in preventing and managing invasive plant species on the property within the easement area by implementing equipment cleaning protocols, ensuring the removal of invasive plants prior to repurposing excavated soils, using weed free sediment/erosion controls and stabilizing exposed soils with native seed mixes. DCR requests that the total extent and duration of impacts be minimized to the greatest extent possible.

A post-construction site restoration plan, inclusive of areas impacted during Project development and planning, must be developed in consultation with DCR staff to protect rare species, encourage native plant species, and actively reduce invasive species on the subject property. DCR requests that site restoration plantings consist of native species currently found in the adjacent forest and that stormwater be managed appropriately to prevent further sediment migration along the edge of the paved access road. Finally, DCR requests that the Proponent commit to ongoing invasive plant monitoring, reporting and control for two growing seasons following completion of Project construction. DCR requests that the Proponent notify the DCR Ecologist and Management Forester of these activities and report findings back in a timely fashion during those two seasons. DCR's Archaeologist is coordinating with the Proponent related to a comprehensive archaeological survey required by Massachusetts Historical Commission.

Thank you for the opportunity to comment on the ENF. Questions and requests for consultation related to Article 97 can be directed to Christine Berry at christine.berry@mass.gov. Please contact the Director of Construction & Access Permitting, Sean Casey at sean.casey@mass.gov regarding the required DCR Construction and Access Permit. Please contact DCR's Archaeologist, Ellen Berkland at ellen.berkland@mass.gov regarding the required archaeological survey. Please contact DCR's Management Forester Mike Waterman at michael.j.waterman@mass.gov and DCR's Ecologist Ale Echandi at ale.echandi@mass.gov regarding site assessment and restoration.

Sincerely,



Jim Montgomery
Commissioner

Cc: Andy Backman, Christine Berry, Mike Waterman, Ale Echandi, Priscilla Geigis, Tom LaRosa (DCR)