

Dracut Water Supply District Capital Improvement Projects Evaluations

Submitted by
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The Dracut Water Supply District (DWSD) was established under Massachusetts Legislation Acts (MLA) in 1905 to supply water to part of Dracut and passed MLA in 1943 to supply water to part of Tyngsborough. DWSD is an independent Public Entity, governed by an annual meeting of the District, 3 elected Water Commissioners, and operated by 10 employees. The DWSD’s source of income is from the water rate payers.

Water System

The DWSD has three sources of water:

- New Boston Wellfield (located in Dracut, 2 wells): This Wellfield produces less than 1% of the system’s water.
- Tyngsboro Wellfield (located in Tyngsborough, 6 wells): This produces 84% of the system’s water.
- Lowell Regional Water Utility (located in Lowell): The DWSD purchases 15% of the water to meet system demand.

The DWSD provides the following treatments to the water it supplies:

- Corrosion Control
- Fluoridation

The DWSD provides potable water to serve:

- 2,566 residents in Tyngsborough.
- 23,174 residents in Dracut.

Current Water System Challenges:

- Aging Water System Infrastructures: The majority of the DWSD’s system was installed between 1951 and 1963. Some of the wells, water mains, and water storage tanks have almost exceeded their service life expectancy.
- Regulation changes: Massachusetts DEP regulates the Public Water Systems (PWS) in Massachusetts. The DWSD is required to meet Massachusetts DEP’s Drinking Water Quality Standards. The Massachusetts DEP issued a Drinking Water Health Advisory for Manganese (Mn) in 2014. This Health Advisory requires the PWS to notify the public if Mn is greater than 0.3 mg/L in the water. <http://www.mass.gov/eea/agencies/massdep/water/drinking/>.
- Water Demands: Water usages have increased in recent years due to population growth. The DWSD has difficulty producing adequate water with the existing infrastructure to meet water demands during the summer months. Water usage restrictions may be implemented if the DWSD cannot increase its water production.
- Water Hydraulic Limitations:
 - Well water is rich with Iron and Manganese. Iron and Manganese build up in the water mains and results in restriction of water flow, pressure loss, and brown water; when this buildup is disturbed by the flow.
 - Without water from the Tyngsborough Wellfield, the DWSD would need to purchase more water from Lowell. There would be difficulty to back feed water from Lowell to Tyngsborough customers due to the pressure loss caused by buildups in the water mains.
- Redundancy: Without water from the Tyngsborough Wellfield, 99% of the DWSD’s water would have to be purchased from Lowell.
- Cost of water: The DWSD cannot control the water rate if 99% of its water is purchased from Lowell. The water rate will increase if 99% of the DWSD’s water is purchased from Lowell.
- Water Quality: Lowell water is pumped directly from the Merrimack River and is treated before being pumped for public consumption. The DWSD’s water is primarily from the Tyngsborough Wellfield. The water quality (WQ) of ground water, such as the water from the Tyngsborough Wellfield, is usually better than the WQ of surface water, such as that pumped from the Merrimack River.
- Fire Protection: some areas in Dracut and Tyngsborough do not have enough water flow for fire protection.

With all of this in mind, it has become increasingly clear to the Commissioners of the DWSD that a series of capital improvement projects must be undertaken. The projects currently under consideration include a Manganese Removal Treatment Facility, Improvements of Water Transmission Mains, and Replacement of Water Storage Tanks. The Commissioners feel these projects are warranted for the following reasons:

- To improve the Water Quality to meet the regulatory requirements.

- To increase the water production at the Tyngsborough Wellfield.
- To improve the water flow and pressure for residents of Tyngsborough for fire protection.
- To provide redundancy of water system.
- To reduce the cost of operations.

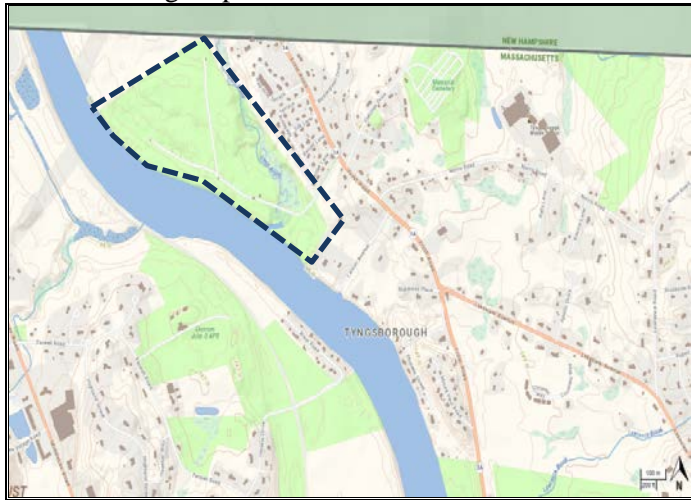
Location for the future Water Treatment Facility

The new Water Treatment Plant (WTP) contains treatment equipment/pumps/storage tanks and process control computer devices/instruments. The following are critical when choosing a location for the WTP:

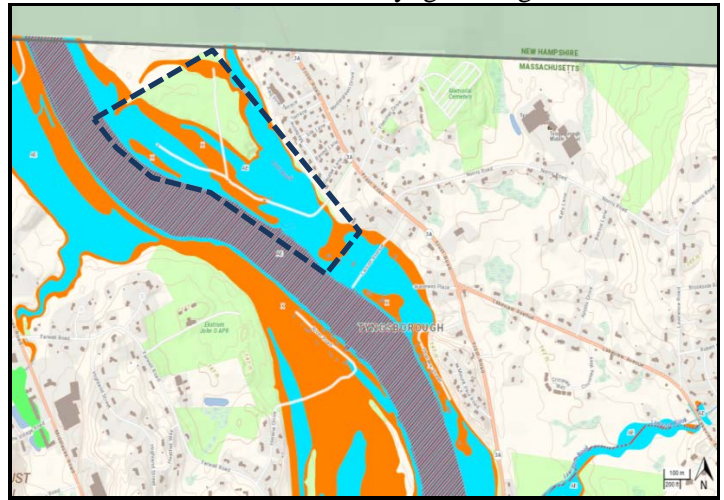
- Easy access to the public utilities such as electrical power, gas, communications.
- Easy access for emergency response.
- Easy access for delivery of materials.
- Minimize the threats of natural events such as floods, wind/snow storms, etc.
- Minimize the threats from vandalism or terrorists.

The Flood Map of the Tyngsborough Wellfield

The Following maps are downloaded from FEMA. The dash line shows the location of the Tyngsborough Wellfield:



The topographic view of Frost Road area.



The topographic view of 100 flood zone using historical data.

- 1% Annual Chance of Flooding
- 0.2% Annual Chance of Flooding

Pictures of 2006 Flood at Tyngsborough Wellfield

The following pictures show the flood of 2006 at the Tyngsborough Wellfield (TWF). Approximately 40% of the Tyngsborough Wellfield was under water in the flood of 2006.



Well #1



Access Road to Well #4

The District is reviewing the data with its Engineering Consultant and Massachusetts DEP to provide a plan for the Water Treatment Plant at the Tyngsborough Wellfield.

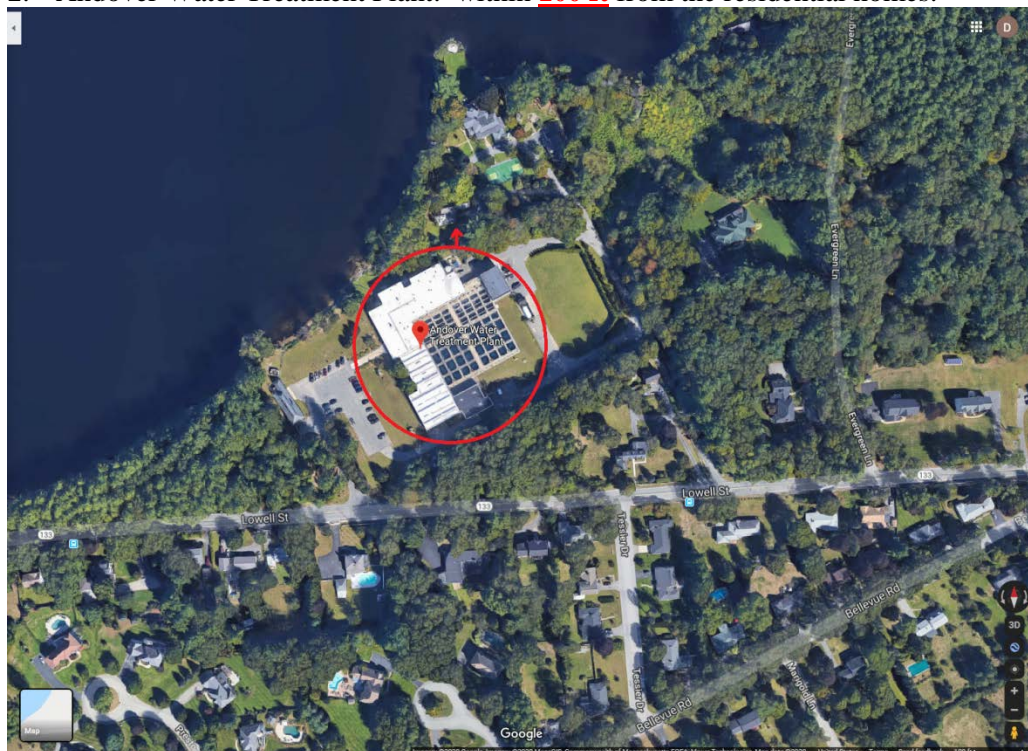
Concerns about the Water Treatment Plant Location:

Many residents have concerns that the location of the Water Treatment Plant may be too close to a residential area. This is a Drinking Water Treatment Plant, not a waste water treatment plant. The water will be pumped from the ground into the Water Treatment Plant. All the Treatment Plant will do is remove the Iron and Manganese to improve the water quality. There will be no odors. The noise will be minimized with proper insulation. With landscaping, the Water Treatment Plant will blend into the neighborhood environment. The following maps show the locations of Water Treatment Plants that are within residential areas:

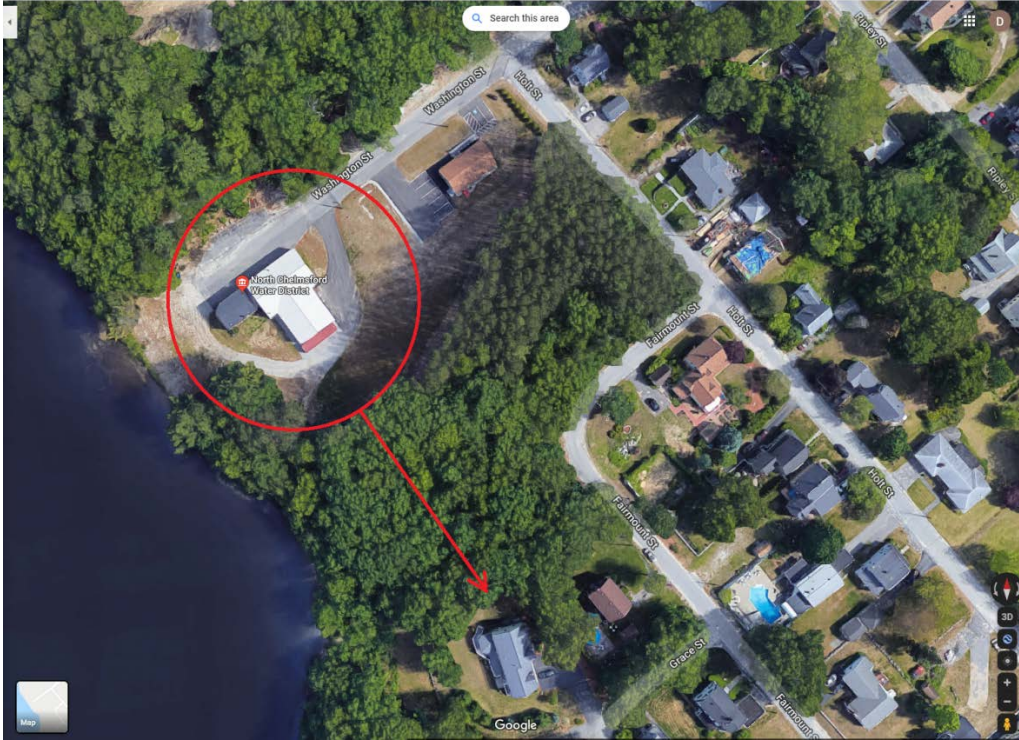
1. Lowell Regional Water Utility: within **400 ft** from the residential homes



2. Andover Water Treatment Plant: within **100 ft** from the residential homes.



3. N. Chelmsford Water District: within **500 ft** from the residential homes.



4. Pennichuck Water Treatment Plant: within **300 ft** from the residential homes.



For more information about the Dracut Water Supply District and its projects, please check out the District's home page at www.dracutwater.com. Please contact Michael Sheu at 978 957-0441 if you have any questions.

We are committed to providing safe and high quality drinking water to our customers. We pledge to continue to work on behalf of all the District customers and we welcome your constructive criticism in order to improve the efficiency of the District's operations.