

**Drinking Water State Revolving Fund
Groton Utilities
Poquonnock Water Treatment Plant Improvements Project
Plan of Conservation and Development Consistency Determination
January 2, 2014**

Background Information: Groton Utilities (GU) maintains and operates Poquonnock Water Treatment Plant (WTP) located off of Poquonnock Road in Groton, CT. The WTP was originally constructed in 1938 with capacity expansions occurring in 1947 and 1962. The latest renovations to the WTP occurred in 1989 and consisted of major modifications to the chemical feed systems. Currently, GU still utilizes many original components of the treatment plant which are in need of rehabilitation or replacement. The plant currently has a rated capacity of 14 million gallon per day (MGD) and has a maximum flow rate of 20 MGD.

Water quality of GU's source waters has changed over the years and these changes have affected the working efficiency of the WTP. Changes to state and federal drinking water regulatory requirements have also presented challenges to the older treatment technologies that are currently utilized.

GU currently provides water to the residents of the City of Groton and has existing commitments to supply water to several municipalities including Noank Fire District, Groton Long Point, Ledyard, Montville, and Aquarion Water serving Mystic. For 2013, the actual reported maximum daily demand (MDD) of the water system is approximately 10 MGD.

GU has submitted a Financial Assistance Application (FAA) to the DWSRF program to fund necessary renovations and rehabilitation of the WTP. The estimated cost for construction is \$34 million. Construction is expected to commence in 2015. Conceptual design has been initiated and evaluation of treatment processes is being undertaken.

Proposed WTP Improvements: Due to the changes in water quality of the sources and revisions to federal and state drinking water regulations, GU proposes to make significant improvements to its WTP to address water quality issues. Realizing that the majority of the existing WTP components are antiquated, improvements to the facility are also crucial for infrastructure sustainability.

Standard engineering design capacities of WTPs are based on the projected MDD over the life span of the facility. GU's 2006 Water Supply Master Plan projects an MDD of 15.5 MGD in year 2025. Since 2006, The City of Groton has incurred a reduction in industrial water demand including the loss of Pfizer's product manufacturing facility and a scaling back in General Dynamic's Electric Boat operations that has significantly affected the 2025 MDD projection. In 2005, the average daily demand (ADD) of GU's water supply was 7.41 MGD and the MDD was 11.83, whereas, in 2011 the ADD dropped to 5.7 MGD and the MDD to 8.27 MGD. Water use data for 2013 is currently showing a slightly upward trend with an ADD of 6.0 MGD and 10.0 MDD. Long term future water use patterns are difficult to project due to the industrial water use reductions in recent years and potential for reuse or redevelopment of existing industrial

properties currently served by GU. GU is proposing a 12 MGD plant capacity should be capable of meet the MDD projections for the foreseeable future.

Plan of Conservation and Development (POCD) Consistency Determination: The upgrades to the treatment plant can support appropriate sustainable infrastructure and asset management planning principals that are critical to public drinking water infrastructure for public health and safety purposes. The project also has been reviewed against the POCD and DPH has preliminarily determined it to be generally consistent in the following areas:

Growth Management Principle 1

It is important to recognize that the project will result in the downsizing of the existing capacity of GU's WTP from 14MGD to 12MGD and thus will not result in an expanded capacity of existing facilities. However, the City of Groton has seen a decline in industrial water use in recent years and its existing water service to these industrial locations is currently underutilized. To the extent that any excess water production capacity is reserved for such uses, this project is expected to provide GU with the capacity to support the reuse or redevelopment of these industrial properties to revitalize the economy of the area and create new jobs. Population growth projections in GU's service are relatively flat.

It is important to note that the treatment plant will need to operate and continue to provide water service to customers during the construction phase of the project. This may result in the need to expand the existing footprint of the treatment plant to allow existing treatment facilities to operate while replacements for these facilities are constructed. Expansion of the footprint may also be necessary to install new treatment processes necessary to comply with new or future state and federal drinking water regulations.

The DPH Drinking Water Section has determined that this project is generally consistent with policies associated with Growth Management Principle #1 in the following areas:

- Ensures the safety and integrity of existing infrastructure over its useful life through the timely budgeting for maintenance, repairs and necessary upgrades;
- Supports infill development and redevelopment opportunities in areas with existing GU drinking water infrastructure which are at an appropriate scale and density for the area;
- GU will be performing a life cycle cost analysis, and value engineering study, as part of the project to identify potential cost burdens with the capital investment and beyond the capital investment over the useful service life of the treatment plant;
- Promotes the continued use or adaptive reuse of existing facilities and developed property;
- Proactively markets available properties that are currently served by infrastructure and that could meet the needs of new or expanding businesses with close proximity to existing industry clusters;
- Utilizes the state's strategic location and infrastructure to promote the expansion of markets for Connecticut grown and manufactured products;

Growth Management Principle #5

As identified in GU's 2012 Water Supply Master Plan, GU receives its active source of water supply from the Great Brook Watershed located in the Towns of Groton and Ledyard. The direct

watershed (contributing area without diversion) covers 14.2 square miles. In addition, water is diverted through an inter-basin transfer from the upper reaches (1.4 square mile watershed) of Billings Avery Brook, in Ledyard, to the Great Brook Watershed for a total contributing watershed area of 15.6 square miles.

GU obtains its water from a system of impounding reservoirs located in the great Brook Valley. Morgan Pond Reservoir and Ledyard Reservoir are located at the north end of the valley in the Towns of Ledyard and Groton. A diversion dam on Billings Avery Brook in Ledyard diverts water from an adjacent watershed to Morgan Pond Reservoir. Poheganut and Poquaonock Reservoirs, together with Smith Lake, are at the south end of the valley. Poquaonock Reservoir serves as the terminal reservoir for the supply system. Emergency Wells 1, 2 and 3 are located adjacent to Smith Lake and Poquaonock Reservoir.

The total estimated safe yield of GU's active water supplies is 12.6 MGD based on GU's 1999 Water Supply Master Plan. GU has registered diversions and permitted water diversions from the DEEP for all impoundments, for groundwater wells, for the Morgan Pond crest gate, and for distribution systems interconnections with Ledyard (2), Montville and Aquarion Water in Mystic. While these sources are presently adequate for the foreseeable future, GU has performed a preliminary study and design to raise the dam at Ledyard Reservoir to increase storage and safe yield. This study will continue throughout the current planning period.

In 2008 GU implemented a Watershed Protection Plan which includes surveillance, water analysis and participation with local authorities in land use and zoning to protect the City's watershed. The local participation includes review of proposed site use and development plans and agreements (in the form of Memorandum of Understanding) with commercial and large scale residential developments. The MOU agreements obligate cooperation between the owners of such development sites and GU, with periodic maintenance and monitoring requirements to preserve water quality for the future. These are long term or permanent obligations to maintain on site drainage systems so that discharges are not detrimental to the watershed. In addition, GU collects data on controlled and uncontrolled stream flow releases in the watershed at various study points as well as in-stream dissolved oxygen levels and temperature readings. A Water Resource Protection District (WRPD) was established in the Town of Groton covering watershed tributary to existing supply sources. The WRPD reviews all proposed development projects within the district that could potentially affect water quality to ensure strict adherence to source water protection goals. Preservation of open space is of primary importance in the watershed whether by municipal, institutional, land trust or individual means.

In addition to control of land use, source protection measures include patrolling watershed land adjacent to reservoirs, monitoring septic systems and both underground and above ground fuel and chemical storage tanks on the watershed, establishing emergency response procedures for hazardous spill containment, controlling erosion and sedimentation, limiting use of roadway deicing chemicals, posting and fencing watershed land, reviewing plans for future land development on the watershed and educating the public on the need for protecting water supply.

GU has a Water Conservation Plan which was updated in 2012 and includes minimizing unaccounted for water loss (leakage), wasteful use, adjustment of water rates to encourage

conservation, a customer meter replacement schedule, promotion of water-saving fixture installations, recycling of water by large users, reduction of excessive service pressure and a public education program. GU's long term conservation plan incorporates a supply management program which includes annual dam inspections to monitor and manage leakage, source-meter calibration, distribution system meter calibrations, leak detection and repairs of distribution system leaks, and a reduction of excessive system pressures.

The DPH Drinking Water Section has determined that this project is generally consistent with policies associated with Growth Management Principle #5 in the following areas:

- Utilize a multiple barrier approach, including source water protection and appropriate treatment, to ensure the availability of safe and adequate public water supplies that meet or exceed state and federal drinking water standards;
- Utilize an integrated watershed management approach to ensure that high quality existing and potential sources of public drinking water are maintained for human consumption;
- The project will allow redevelopment and rebuilding of coastal areas and will be reviewed by the Department of Energy and Environmental Protection's Coastal Management Program to ensure compliance with coastal area management principals, regulations and prevailing federal rules and requirements during the public scoping phase;
- Identification of water supply resources sufficient to meet existing demand, to mitigate water shortages during droughts, and to meet the projected growth and economic development over at least the next 50 years;
- Ensure that water conservation is a priority consideration in all water supply planning activities and regulatory decisions;
- Annual dam inspections
- Minimize the impacts of development on drinking water sources
- Emphasize pollution prevention, the efficient use of energy and recycling of material resources as a primary means of maintaining a clean and healthful environment

Furthermore, the DPH has determined that GU's WTP project is not a "growth-related project", as defined in CGS Section 16a-35c(2), because it consists of renovations to the existing WTP facility.

Finally, the project will be publicly scoped at an appropriate time during DPH's CEPA review, in order to assess the project's direct and indirect impacts on the environment.