

SECTION 1

INTRODUCTION

1.1 PROJECT BACKGROUND

The Town of North Reading (Town) is seeking alternative drinking water supply sources from outside the Ipswich River Basin to provide a reliable and safe long-term water supply. The Town historically has withdrawn approximately 0.50 million gallons per day (MGD) from its local supply groundwater wells and purchases approximately 1.0 MGD from the Town of Andover, located within the Merrimack River Basin, through an inter-basin transfer act approval (IBTA).

Concurrently, the Town is seeking the implementation of a municipal wastewater collection, treatment and disposal system. Currently the Town is served by localized on-site soil absorption systems (SAS) and a limited number of wastewater treatment facilities discharging to the ground through MassDEP issued groundwater discharge permits.

As required by the Executive Office of Energy and Environmental Affairs (EEA) Massachusetts Environmental Policy Act (MEPA), an Environmental Notification Form (ENF) was prepared and advertised in the Monitor on November 7, 2012. On December 7, 2012 a Certificate of the Secretary of Energy and Environmental Affairs on the Environmental Notification Form was issued and it was determined that a mandatory Draft Environmental Impact Report (DEIR) be prepared for these projects. Copies of the Certificate and comment letters received are included in the Appendix A of this Report.

The following is the DEIR completed in conformance with the Certificate. This DEIR additionally serves as the application for an approval from the Water Resources Commission for an Inter-Basin Transfer. It is virtually impossible to capture every potential element and public concern of such a large and complex project in a single document and comments will be received by many stakeholders in the process. These comments are anticipated to be addressed through the reissuance of the document as a Final Environmental Impact Report.

1.2 PROJECT HISTORY

The Town of North Reading has a registered water withdrawal from its existing wells of 0.96 MGD. In 1991, the Department of Environmental Protection authorized the Town to withdraw from its local groundwater sources in the Ipswich River Basin an additional annual average daily volume of 0.15 MGD. The Permit further allowed the Town to increase its annual daily withdrawal to 0.17 MGD in 1994, to 0.2 MGD in 1999, and to 0.25 MGD in 2004.

As in-Town sources were inadequate to meet all the Town's water needs, an interconnection with the Town of Andover's water distribution system, to supplement the Town of North Reading's water supply, was approved in 1991 for up to 1.5 MGD.

In accordance with Water Management Act (WMA) regulations the permit was reviewed by MassDEP in 1994 and it was noted that the actual withdrawals were below the volumes allocated to the Town in 1991. Therefore in 1997 the Department issued a revised permit stating the Town's annual average daily volume would remain at 0.15 MGD with requirements to reduce adverse impacts to the Ipswich River Basin. In 2003, MassDEP issued a Modified Water Withdrawal Permit including several performance standards and requirements that the Town took exception to including the following: (1) restriction on seasonal water use requiring the Town to limit its withdrawal from the Ipswich River Basin to 0.52 MGD (less than its registered volume), (2) restrict outdoor watering use during low flow periods, and (3) regulate private irrigation wells. These difficult restrictions resulted in the Town surrendering its Water Management Act permit in 2008.

Additionally the water supply from Andover presents challenges to North Reading. Under occasions of high system demand the flow through the interconnection has been restricted, resulting in the Town being unable to meet the water needs of its citizens.

The Town of North Reading is currently serviced by on-site soil adsorption systems (SAS) for wastewater disposal. Larger residential units, such as condos and senior housing, and industrial/commercial units dispose of their wastewater under MassDEP Groundwater Discharge Permits. Several areas in Town have evidenced of failing or problematic systems. Surface water resources in North Reading are impaired due to pathogens and nutrients discharged from failing and inadequate onsite wastewater management systems. Finally the Town is actively evaluating its stormwater system. It has identified a number of conditional issues as well as potential illicit connections that are contributing to water quality impacts in the community.

1.3 PLANNING TOOLS

Considerable analysis of the existing conditions and Project was required to understand the impacts and address the requirements of the MEPA and IBTA process. The sources for the data used in the study include the following:

Existing Conditions

- Base mapping data obtained from the Town of North Reading and the Massachusetts Office of Geographic Information, and Massachusetts Department of Environmental Protection.
- Historic Inventory Points obtained from the Massachusetts Historical Commission.
- Water bodies and wetlands information obtained from National Wetlands Inventory
- Surficial Geology obtained from the U.S. Geological Survey, dated 2012.
- Soils information obtained from USDA NRCS Soil Survey, dated 2009.
- NHESP Estimated Habitats of Rare Wildlife and Priority Habitats of Rare Species obtained from the Massachusetts Natural Heritage Atlas, dated 2008.
- Vernal Pools obtained from the Natural Heritage and Endangered Species Program.
- North Reading, MA Drainage Infrastructure Mapping Project: Interim Report Phase 1, New England Civil Engineering Corp, September 2013

- Several years of Annual Statistical Reports
- North Reading Board of Health Septic records

Existing local and regional planning efforts have been used during the DEIR process. Some of the planning efforts that were consulted and referenced throughout this document include the following:

Planning Documents

- Metropolitan Area Planning Council (MAPC) Metro Boston 2020 Population and Housing Demand Projections, Municipal Report for North Reading, dated January 2014.
- Comprehensive Wastewater Management Report Final Draft, Weston & Sampson Engineers, Inc., dated September 2008.
- Town of North Reading Open Space and Recreation Plan, Brown Walker Planners, Inc. with the North Reading Open Space Plan Committee, dated March 2013.
- Executive Summary for Strategic Planning, Board of Selectman, dated November 15, 2010.
- North Suburban Planning Council Sub-regional Priority Mapping Project Final Report, MAPC, dated January 2014.
- 2009 Survey of Aquatic Plants in Martins Pond, Department of Biology Merrimack College, dated August 2009.
- The Martins Pond Assessment and Remediation Project, Diagnostic/Feasibility Study Final Report, Department of Biology Merrimack College, dated March 2007.
- Stressed Basins in Massachusetts, The Commonwealth of Massachusetts Water Resources Commission, Approved December 13, 2001.
- North Reading Water System Master Plan, 2014

1.4 TERMINOLOGY

A Project this large and complex cannot be constructed under a single set of construction documents or in a single time period. The use of “Project” represents the entirety of all the proposed improvements from the recommended plan contained herein. The use of “project” is generally used to mean a portion or single element of the recommended plan.

1.5 PROJECT OBJECTIVES AND GOALS

North Reading is seeking alternative solutions to provide a reliable and safe long-term water supply and wastewater collection system for the Town. The DEIR will investigate the alternatives and identify impacts and the capacity of the municipal and regional infrastructure to sustain the recommended alternatives.

The Town’s water system goals are:

- Provide long-term, sustainable option(s) for water supply
- Reduce water system complexity

- Allow community to provide services to maintain existing and future commercial/industrial base
- Manage capital and O&M costs
- Mitigate stress on the Ipswich River

The Town's wastewater system goals are:

- Improve surface and ground water quality
- Provide long-term sustainable option(s) for wastewater treatment and disposal
- Allow community to provide services to maintain existing and future commercial/industrial base
- Address water quality impairments

1.5.1 Water Resources – Ipswich River

The Ipswich River suffers from low flow conditions or events and attributed mostly to water withdrawals for drinking water according to studies performed by the United States Geological Survey (USGS). The Ipswich River watershed provides drinking water to 14 communities including: Beverly, Boxford, Danvers, Hamilton, Ipswich, Lynn, Lynnfield, Middleton, North Reading, Peabody, Salem, Topsfield, Wenham, and Wilmington; however it is one of the most stressed basins in the country. In recent years communities with water supply sources in the Ipswich watershed used an average of about 40 million gallons of water per day. About two thirds of this water comes directly from the Ipswich River or wells within the Ipswich watershed.

In 1997 the Ipswich River was designated as one of the “20 Most Threatened Rivers in America”, as determined by American Rivers. In 2003 that designation was upgraded to one of the “10 Most Endangered Rivers in America” due to worsening flow conditions. While reductions in water withdrawal have occurred through the towns of Reading and Wilmington connections to the MWRA, the River is still considered a “stressed basin” under the hydrologic criteria developed by the Massachusetts Water Resources Commission. The Ipswich River has experienced repeated low-flow and even no-flow periods: segments of the upper river have gone dry in 6 of the last 10 years, resulting in fish kills and other ecological damage.

Several existing water resources within the community have been identified with water quality impairments associated with poorly performing and failed septic systems as well as systems located in close proximity to the water resources. Martins Pond, Martins Brook and the Ipswich River are impacted and do not meet their current usage class. Additionally, the ability for areas of the Town to upgrade these systems is limited, given existing siting constraints.

1.6 RECOMMENDED PLAN

The Town of North Reading intends to pursue full-time membership as an MWRA water system customer. The Town will discontinue drinking water withdrawals from within the Ipswich River Basin and convert the existing connection to the Andover water supply to an emergency supply. Upon approval of a MWRA membership and connection, North Reading's intent would be to voluntarily forfeit their registration to the MA-DEP.

The Town intends to develop a municipal wastewater collection system, which would connect to the Andover wastewater collection system. The wastewater would ultimately be conveyed to the Greater Lawrence Sanitary District for treatment and disposal. The area served by the proposed wastewater collection system is within the highest needs area of the Town and provides municipal wastewater management to approximately 2,000 properties.

1.6.1 Costs and Schedule

The Project costs for the water work is estimated at \$14M with an increase in the annual operation and maintenance (O&M) cost to the Town of less than \$100,000 per year. The Project cost for the wastewater work is estimated at \$70M with an estimated annual O&M cost of \$1.1M per year.

The implementation of Project is expected to take almost twenty years. A summary of the schedule is as follows:

Water projects:

- Design – Est. June 2016 to June 2017
- Construction – Est. June 2017 to June 2019
- Target Date for MWRA Connection - July 2019
- Decommission water treatment plants/wells – 2020-2021

Wastewater projects:

- Permitting and Agreements 2018-2020
 - Design and Construction of Andover System Improvements 2021 – 2025
 - Design and Construction of North Reading Sewer System 2025 - 2034
- § 5 phases are planned

1.6.2 Impacts

The Project is not anticipated to provide any permanent impacts to resources in the Project Area. Any construction related impacts will be mitigated and eliminated through the incorporation of minimally invasive construction techniques and Best Management Practices. During the design of the individual projects, a thorough evaluation of the impacts and permitting will occur at each stage and modifications and adjustments will be made based upon the specific configuration and potential impacts of the project.

From a Green House Gas standpoint, the Project represents a significant reduction in the greenhouse gas creation over the current condition. Within the final Project there are anticipated to be limited need for electricity in the pumping of water and wastewater. These facilities will utilize premium efficiency equipment, low friction pumps, high efficiency HVAC and lighting systems. Additional off-sets from limited energy use will be provided by the installation of solar panels on the two pumping stations with permanent structures.

1.7 Permits and Approvals

The following permits and approvals have been identified regarding the Project. Other project specific permits may be required relative to specific construction related activities, but are not anticipated to require State approval.

- Massachusetts Environmental Policy Act Compliance
- Water Resources Commission – Inter-Basin Transfer
- Local approval (planning, zoning, BOH, conservation commission, historic commission)
- MWRA/OP.10
 - § Advisory Board
 - § Board of Directors
- MassDEP approval
 - § Modification to distribution system
 - § Decommissioning/abandonment of current infrastructure
- Stormwater management – Construction mitigation

1.7.1 Inter-Basin Transfer Act

As this document serves as the application for approval under the Inter-Basin Transfer Act, a summary of the requirements is provide below. The table identifies the specific requirement and the section of the report that addresses the requirement.

IBTA Requirement	Report Section
MEPA Compliance	This report is a DEIR required as a result of the Project exceeding specific thresholds, including the inter-basin transfer of 1,000,000 gallons per day of water. The entirety of the report serves as compliance with this requirement.
Develop all viable sources in the receiving area	Section 5 provides details on the Town's ability to maintain existing in basin sources as well as develop new ones.
Must have implemented all practical water conservation measures	The Town has recently adopted and implemented several water conservation strategies. These are detailed in Section 3 and 4 of the report.
Have implemented a forestry management plan	Not applicable.
Maintain Reasonable Instream Flow	Section 9 provides information on the impacts of the transfer on the donor and receiving basins.
Provide results of the pumping test	Not applicable.
Develop a Local Water Resources Management Plan	This document in its entirety provides the information necessary for the Town to implement a Local Water Resources Management Plan. The Project is consistent with Regional planning for the Ipswich River.
Cumulative Impacts	Information is provided in Section 9.