THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Request for Determination of Insignificance
Under the Interbasin Transfer Act
MGL Chapter 21 Sections 8B - 8D

Groton Lost Lake Sewering Pond Project

WRC Decision
October 11, 2012

Decision

On October 11, 2012, the Massachusetts Water Resources Commission (WRC), by a unanimous vote, found that the Town of Groton's proposal to transfer wastewater from the Lost Lake and Four Corners areas of town, in the Merrimack River basin to the Ayer Wastewater Treatment Plant, in the Nashua River basin, was insignificant under the Interbasin Transfer Act (ITA). This decision is contingent on the proposed dam management plan being implemented, as described herein.

Background

On July 16, 2012, the Massachusetts Water Resources Commission (WRC) received a request for determination of insignificance (RDI) under the Interbasin Transfer Act (M.G.L. Chapter 21 §§ 8B-8D) (" Act") from the town of Groton. The RDI was submitted as part of the information filed with the Massachusetts Environmental Protection Act unit (MEPA) as an Environmental Notification Form (ENF) for the Town's Comprehensive Wastewater Management Plan (CWMP). The WRC discussed this project at its September 13, 2012 meeting.

Groton proposes to transfer wastewater from the Lost Lake area of town (Figure 1) to the Ayer wastewater treatment plant. Wastewater within the Lost Lake proposed sewer area is currently disposed of through on-site septic systems. Due to the area's geology, septic system malfunctions have led to lake eutrophication and potential impacts to private residential water supply wells. The water supply for the Lost Lake area originates in the Merrimack River Basin. The Ayer Treatment Plant discharges to the Nashua River Basin. The interbasin transfer amount is expected to be 0.363 million gallons per day (mgd). The proponent submitted a Request for Determination of Insignificance (RDI) under the Act concurrent with the MEPA filing. The Secretary's Certificate on the ENF for this project was issued on August 24, 2012, stating that the ENF has adequately disclosed potential impacts associated with the project, therefore no further MEPA review is necessary.

Proposed Transfer

Groton has been planning for its wastewater needs since the mid-1970's. The center of Groton was sewered to the Pepperell treatment plant (Nashua River Basin) in the late 1980's. The current CWMP planning process was initiated in the early part of this century and has identified two additional needs areas – the Lost Lake section of town and West Groton. These areas have been plagued with septic system failures, have areas of poor soils, and areas unsuitable for septic system upgrades. These problems are not so pronounced in the West Groton area, so Phase I of the CWMP recommends that this area can remain on on-site septic systems. However, the Lost Lake area has smaller lots and poorer soils. The Phase I CWMP also concluded that septic leachate is causing contamination in the Lake.

The Phase I CWMP recommended an in-town solution using an area of land near to the Lost Lake neighborhood for a ground water disposal system. However, once the scope of the project was explained, the owner of this land determined that this use was not compatible with the land's current use (a summer camp), and withdrew the property from consideration. Other areas of town had been explored for an in-town disposal option, but the Town could not find a parcel of appropriate size and environmental suitability to handle the wastewater from the Lost Lake area. Therefore, the Phase II CWMP is recommending that this wastewater be transferred to the Ayer plant for treatment and disposal.

The Lost Lake neighborhood is in the Merrimack River basin portion of Groton. Most of the properties obtain their water supply from on-site private wells. About five percent (5%) of the properties (those located on Lost Lake Drive, on the northwest side of the Lake) are on town water. The sewering proposal will also provide sewer service to the Four Corners area of town, which is adjacent to the proposed pipeline to Ayer. This section of town is zoned "business" and has been targeted for future commercial development. The Four Corners area is also in the Merrimack River basin portion of Groton and receives its water from the Groton Water Department, which has water supply sources in the Merrimack River basin. The area to be sewered by this project will be limited by the establishment of a sewer district. The sewer district will define the areal extent of sewering and restrict the flow amounts to be transferred. In addition, the Town has applied for a Rural Development Grant from the USDA to help fund the project. If this is awarded, it will require that the area to be sewered is restricted to certain lots. The amount of water requested for interbasin transfer is based upon the projected residential sewer connections at sewer district buildout plus the needs of the local business complex at Four Corners. Maximum daily sewering needs were estimated at 0.363 mgd. This is the amount considered for Interbasin Transfer Act purposes, although the average daily sewering needs were estimated to be 0.125 mgd.

After review of the requirements of the Act for this project and the existing data, it was determined that in order to meet the criteria for insignificance, flow augmentation would be necessary. Therefore, on the advice of WRC Staff, the Town developed the "Dam

Management Plan for the Lost Lake Dam and Cow Pond Brook" (see discussion below), with input from the two Lake Associations[1] with an interest in Lost Lake: the Groton Lakes Association and the Mountain Lakes Club. The Act's regulations provide for flow augmentation (313 CMR 4.04(3)(i)).

Analysis of the Proposal

Groton's Request for Determination of Insignificance was reviewed by staff from the Department of Conservation and Recreation, the Department of Environmental Protection, the Division of Fish and Wildlife, the Natural Heritage and Endangered Species Program, and the Division of Ecological Restoration against the criteria for insignificance listed in the Interbasin Transfer Act regulations, 313 CMR 4.04(4):

Criterion	**Groton's Application**
(a) Is not over 1 mgd	Meets
(b) Is less than 1 mgd on an annualized basis and is temporary, of short duration and for a purpose other than water supply use	Not Applicable
(c) Additional flow is less than 5% of the instantaneous flow	Meets
(d) The 95% exceedance flow will not be diminished	Meets
(e) Special resource values will not be adversely affected	Meets
(f) The Commission shall consider the cumulative impacts of all past, authorized or proposed transfers on streamflows in the donor basin	Meets

A summary of how the application addressed these criteria is found in Attachment 1.

The wastewater to be transferred is currently being discharged to the upper reaches of Cow Brook within the Merrimack River basin (Figure 2). The source area surrounds Lost Lake/Knopps Pond, a Massachusetts Great Pond. The drainage area to Lost Lake is 5.26 square miles. These surface water bodies are impounded by a dam, from which flows a small stream approximately 1,000 feet to another impoundment, Whitney

[1] The Lake Associations are represented on the Groton Sewer Advisory Board.

Pond. Downstream of Whitney Pond the river is known as Cow Pond Brook, eventually flowing into Massapoag Pond and Lower Massapoag Pond in Dunstable. Downstream of the Massapoag ponds the river is called Salmon Brook, a tributary to the Merrimack River in southern New Hampshire. Water supply in the Lost Lake residential area is from private water supply wells, although the commercial development is served by public water, derived from sources in the Merrimack River basin.

Cow Pond Brook is not serviced by a US Geological Survey stream gage, from which historic streamflow could be derived for analysis of flow impacts. Daily estimated unimpacted flow data were generated using the USGS Sustainable Yield Estimator (SYE, USGS Scientific Investigations Report 2009-5227). Initial review of the flow data suggested that the request to transfer 0.363 mgd from the Merrimack River basin to the Nashua River basin would not meet criteria for a Determination of Insignificance under the Interbasin Transfer Act due to the small drainage area and natural low flows in the summer months, i.e., the transfer would be greater than 5 percent of instantaneous flow, and would diminish the 95th percentile flow.

To satisfy instream flow concerns associated with the interbasin transfer, Groton, with input from the Lake Associations, developed the "Dam Management Plan for the Lost Lake Dam and Cow Pond Brook" (submitted with the MEPA filing, EEA #14927). The plan was prepared with extensive agency staff review and input, and is integral to the interbasin transfer proposal. It is the WRC's opinion is that the plan satisfies the insignificance criterion for the transfer being less than 5 percent of the instantaneous flow from the donor basin and compensates for the transfer's volume in comparison to the 95th percentile flow, in that the proposed flow regime improves instream flow in the Cow Pond Brook system.

Groton commits to maintaining seasonal releases (summarized in Table 1) from the dam on Lost Lake (depicted in Figure 2), which it recently gained control over. Releases are planned to accommodate seasonal fill of the ponds in the springtime and drawdown in the fall, to maintain water levels needed for private well operations and meet recreational safety requirements. The release program is adequate to maintain seasonal instream flow for downstream aquatic habitat and is an improvement over the current flow conditions on Cow Pond Brook. The plan contains provisions to maintain releases within the 25th and 75th percentile of natural estimated monthly flows, while lake levels remain in the normal range. Reduced releases are proposed when the lake level declines and a release equivalent to the average day interbasin transfer (0.19 cfs) will be maintained during state-declared drought conditions. A graph of the seasonal release targets and estimated unimpacted streamflows for Cow Pond Brook is shown in Figure 3. Groton has installed a staff gage downstream of Lost Lake and is in the process of rating the staff gage against streamflows, while monitoring existing flow conditions prior to constructing the sewer system. A sluice gate will be installed prior to sewer system construction, to allow for releases to be made. Following sewer system construction and connection, Groton will monitor streamflow downstream of the Lost Lake Dam and manage releases according to the plan. Reports of lake levels and releases will be made to the Water Resources Commission annually.

Groton commits to implementing voluntary outdoor water use restrictions for the Lost Lake area. The dam management plan specifies outdoor water use conservation equivalent to those required by the Town's current or future Water Management Act permit of users served by the public water supply system. Customers on the public water supply system are currently restricted to an odd/even day watering schedule during the hours from midnight to 9 AM and 6 PM to 9 PM from June 1 to September 30. The town intends to install meters on all private wells in the Sewer District to monitor for overall water usage for sewer billing purposes. This should also encourage water conservation. These actions should assure that environmental instream flow needs are not sacrificed for outdoor irrigation, and prolong the period of releases during dry periods.

Correspondence from the Massachusetts Division of Fisheries & Wildlife indicates that state-listed rare species have been found in the Lost Lake/Knopps Pond area, including blue-spotted salamander (species of special concern), Blanding's turtle (threatened species), and the plant small bur-reed (endangered species). The proposed sewering area is also within the Petapawag Area of Critical Environmental Concern (ACEC). The implementation of the Dam Management Plan should mitigate any concerns arising from alterations in surface water and ground water levels associated with the interbasin transfer. As proposed, the management plan should maintain lake levels near their historic range, and improve downstream aquatic habitat conditions.

WRC Decision

After reviewing the proposal and the comments received, **the WRC finds that this project, as proposed, is insignificant under the Interbasin Transfer Act** if the Dam Management Plan is revised as described below, approved by the WRC, and implemented, and if the Town furnishes the Town Meeting Article and any other documentation establishing and delineating the sewer district served by this project (when approved)[2]. The Dam Management Plan will be revised to note that drawdowns for aquatic weed control, which have not proven successful in the past, will be discontinued in the future. However, fall drawdowns may still occur to reduce the amount of water in the lake for the winter months. The timing and extent of the fall drawdowns should be reevaluated after two (2) years of data have been collected subsequent to the implementation of the dam management plan, to assure that fall drawdowns are protective of the watershed.

In addition, the town must implement a rigorous conservation plan to address potential low lake levels. The plan must be approved by the WRC and must emphasize effective and consistent outreach and education efforts to all homeowners using private wells in the affected area. The Lakes Associations should be participants in this water conservation outreach effort. Because the homeowners around the lake are on private wells, the WRC understands that the actual implementation will be voluntary and,

[2] Town Meeting will vote on this Article in Fall 2012.

therefore, strongly recommends that the town adopt a local by-law requiring that property owners on private wells abide by water conservation measures equivalent to those required of users of the public water supply system, as specified by the Town's current or future Water Management Act permit. It has been documented that when the lake drops to a certain level, private wells in the area are impacted. Curtailing non-essential water uses around the lake when water levels decline will benefit the homeowner, as well as the environment. This could serve to mitigate the rate of water level drop, thus minimizing the impacts to private wells for essential water uses and increasing the amount of water available to release downstream. To address extreme low lake levels, the water conservation plan should include an additional tier of more stringent water conservation measures to be implemented.

The Town may want to consider entering into a Memorandum of Understanding with the Lakes Association concerning the implementation of the water conservation plan, but ultimate responsibility for development of the plan and encouraging implementation must remain with the Town.

Monitoring/Reporting Requirements

In order to assure that the project as proposed is implemented, the Town must develop a final plan to monitor releases as required by the Dam Management Plan, for WRC Staff review. This plan should include staff gage calibration data, flow monitoring data collected prior to submittal of the plan, and a reporting schedule. Annual reports shall be submitted to the WRC by January 31 of each year. The annual reports should include all monitoring data, and provide details of times when additional conservation measures to address extreme low lake levels were required of the homeowners around the Lake, as well as an estimate of homeowner compliance.

The final dam management and water conservation plans should be submitted and approved by the WRC before wastewater from the Lost Lake and Four Corners area is transported to Ayer.

If there is any change in the operating rules for this project, the maximum flow levels transferred, or the area of the Sewer District, further review by the Water Resources Commission will be required.

Table 1. Lost Lake Estimated Natural Flows and Dam Management Plan Target Releases

Month	Estimated Natural Flows * (cubic feet per second)					Target Releases cfs
	10th pctl	25th pctl	50th pctl	75th pctl	90th pctl	
Jan	1.92	3.97	5.42	9.64	13.80	7.0
Feb	3.16	4.37	6.24	10.13	15.10	4.3-10.1
Mar	5.89	8.94	14.07	19.06	24.74	8.9-19.1
Apr	7.63	10.11	18.43	24.27	28.89	12.6
May	4.70	6.68	8.94	13.15	16.53	6.7
Jun	1.59	2.47	3.93	6.84	11.40	2.5-6.8
Jul	0.56	1.14	1.70	2.97	3.52	1.1-3.0.
Aug	0.30	0.69	1.29	2.07	2.72	0.7-2.1
Sep	0.26	0.57	0.87	1.77	2.21	0.6-1.8
Oct	0.52	1.06	1.79	2.94	6.14	1.1-2.9
Nov	1.40	2.30	4.75	8.73	12.20	6.2
Dec	2.11	3.75	6.46	12.91	15.51	9.1
Drought	N/A	N/A	N/A	N/A	N/A	0.19

Notes:

* Estimated daily natural flows from USGS Sustainable Yield Estimator (USGS SIR 2009-5227). Statistics generated by The Nature Conservancy's Indicators of Hydrologic Alteration software.

cfs = cubic feet per second

pctl = percentile of estimated natural daily flows for each month.
50th percentile = median value
25th percentile = value at which 25 percent of daily flows are lower
75th percentile = value at which 75 percent of daily flows are lower

N/N indicates Not Applicable

Project Location

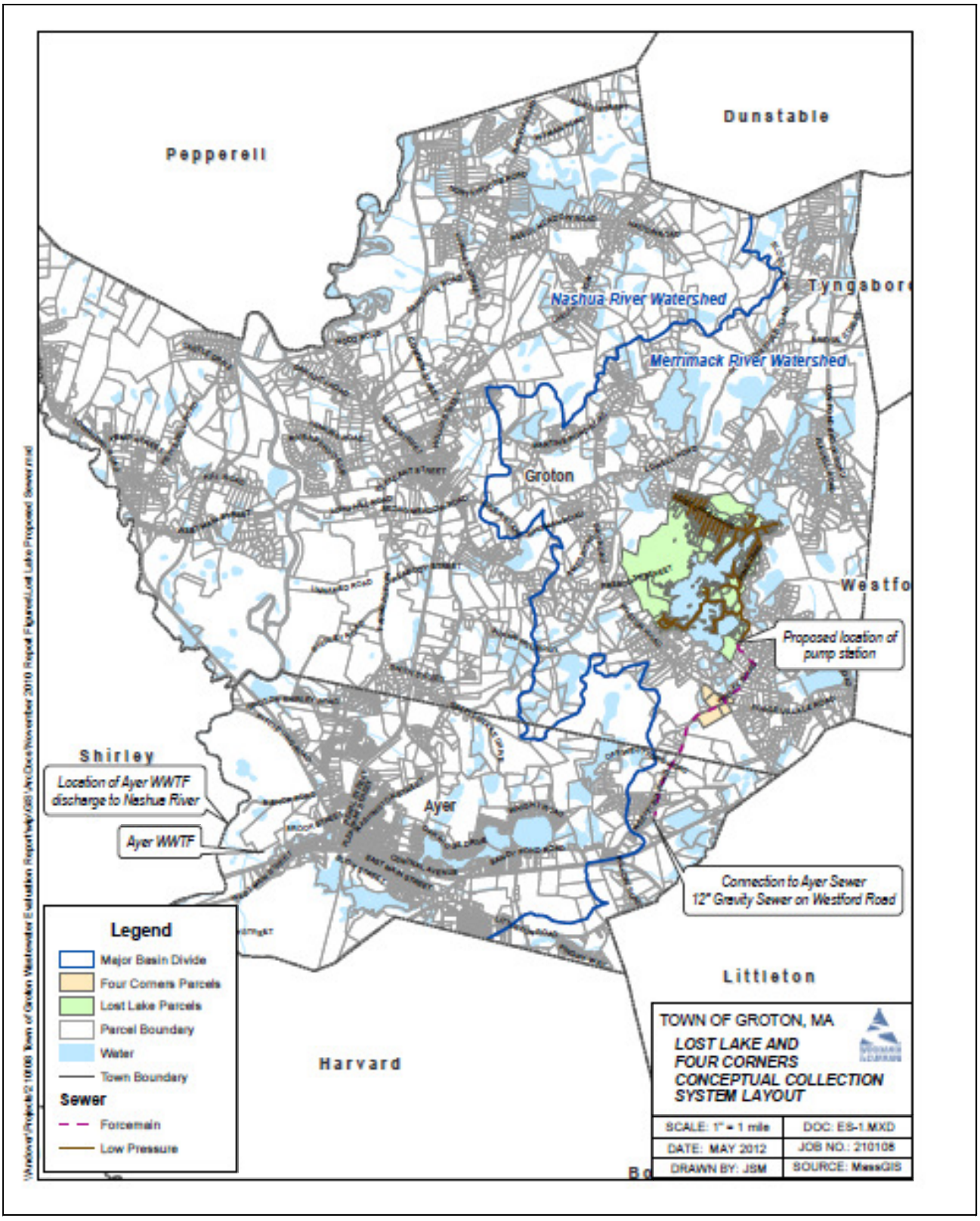


Figure 2
Lost Lake Site area

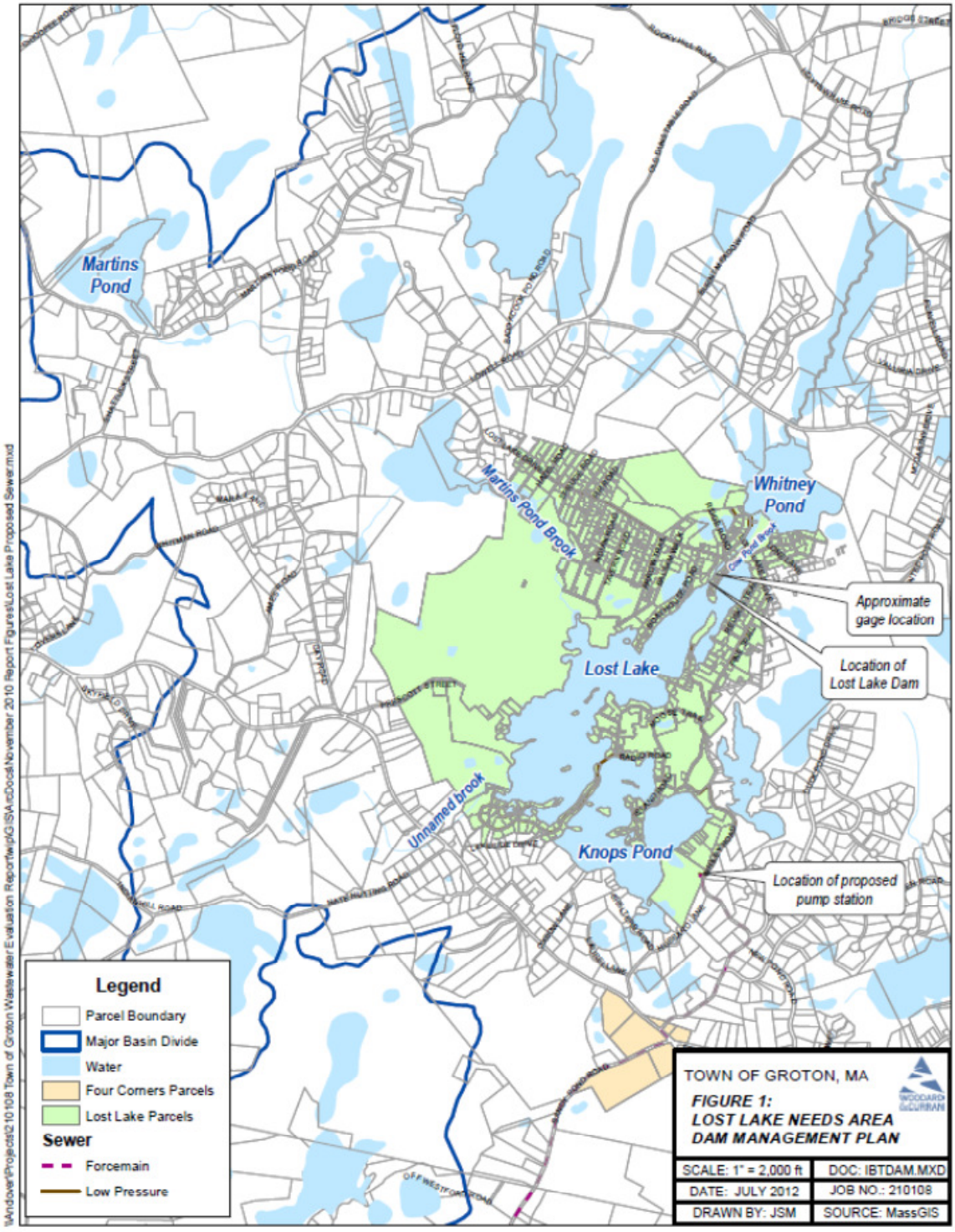
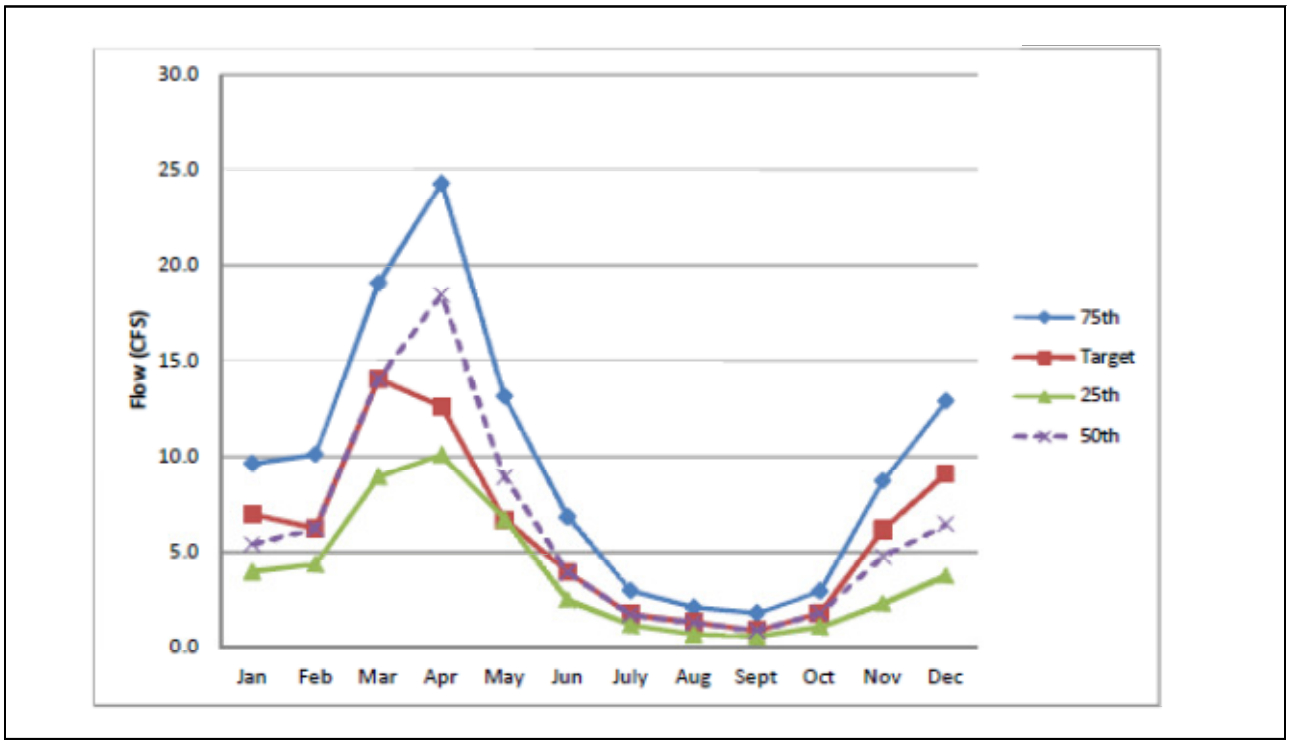


Figure 3
Cow Pond Brook Hydrograph;
Estimated Natural Flows and Target Releases



Attachment 1
Request for Determination of Insignificance
Groton Lost Lake Sewering Project

Criterion	Proposal Meets	Explanation
(a) Is not over 1 mgd	Yes	Total transfer will be 0.363 mgd
(b) Is less than 1mgd on an annualized basis and is temporary, of short duration and for a purpose other than water supply use)	Not Applicable	Proposal is long-term for wastewater disposal
(c) Additional flow is less than 5% of the instantaneous flow	Yes	Applicant's proposed Dam Management Plan provides a reasonable instream flow to Cow Pond Brook
(d) The 95% exceedance flow will not be diminished	Yes	Applicant's proposed Dam Management Plan provides a reasonable instream flow to Cow Pond Brook
(e) Special resource values will not be adversely affected	Yes	Division of Fish & Wildlife/Natural Heritage Endangered Species Program concurrence
(f) The Commission shall consider the cumulative impacts of all past, authorized or proposed transfers on streamflows in the donor basin	Yes	There is currently a wastewater transfer of 0.275 gpd out of the Merrimack River Basin to the Pepperell Treatment plant in the Nashua River Basin by the Town of Groton. It is not expected that this transfer out of the Merrimack River Basin will contribute to adverse cumulative impacts. It is also expected that the proposed Dam Management Plan will provide improved streamflow to Cow Pond Brook.