TOWN OF LUNENBURG, MASSACHUSETTS

COMPREHENSIVE WASTEWATER MANAGEMENT PLAN

Phase IV
Final Recommended
Wastewater Management Plan

Final - March 2010
Updated - April 2016

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LUNENBURG CWMP

PHASE IV - FINAL RECOMMENDED

WASTEWATER MANAGEMENT PLAN

UPDATED APRIL 2016

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EXECUTIVE SUMMARY

This updated report, entitled "Lunenburg, Massachusetts – Comprehensive Wastewater Management Plan – Final Recommended Wastewater Management Plan", presents an updated to the final phase of a four phase planning process undertaken by the town of Lunenburg to determine the viability of current wastewater management practices in satisfying existing and projected future wastewater needs through a 20-year planning period, year 2036. This report summarizes an evaluation of recommendations to address issues with conventional (traditional) on-site subsurface wastewater disposal systems serving specific areas of the Town. The recommended plan has been developed in accordance with the Massachusetts Department of Environmental Protection (MassDEP) Comprehensive Wastewater Management Planning (CWMP) guidelines to address the identified areas of need and provides the framework for near and long-term wastewater management for the Town.

The four CWMP phases are:

Phase I:	Assessment of existing conditions, projection of future wastewater disposal requirements, and a needs assessment for the Town. The needs assessment determined areas with need for further study, (was not updated);
Phase II:	Identify and short-list appropriate means of handling the wastewater management methods to address the areas identified in Phase I. The analysis included a review of technical, environmental, institutional, and economic factors, (was not updated);
Phase III:	Detailed evaluation of alternatives identified and shortlisted in Phase II, and a preliminary recommendation of a specific wastewater management plan for each area, (was not updated); and
Phase IV:	Finalized specific wastewater management plan for each area. Updated in April 2016.

The CWMP evaluated whether or not conventional (traditional) on-site Title 5 septic systems are providing adequate means of sanitation, environmental protection, and growth management within the Town today and through a 20-year planning period. Phases I - III were not revisited in the 2016 update, and MassDEP and MEPA were not involved in the final 2016 update.

ES.1 REASONS FOR STUDY

The town of Lunenburg has been involved in the wastewater planning process in various forms since the early 1970s and has implemented a regional wastewater management solution (sewer connections to both Leominster and Fitchburg) for specific areas of the Town. The Town determined in 2006 a review was necessary due to three major factors: 1) a concern for areas of Town that are not well suited for conventional (traditional) on-site subsurface wastewater disposal systems; 2) population growth concerns; and 3) the limited capacity for sending wastewater to nearby municipal facilities for treatment and disposal. An update to the original

Phase IV CWMP was necessary due to rising costs for sending flow to the city of Fitchburg. Alternatives were investigated for sending future flow in Needs Areas to Leominster instead.

ES.2 PHASE I - NEEDS ASSESSMENT

The needs assessment identified and evaluated the suitability of properties for continued, long-term reliance on conventional (traditional) on-site wastewater disposal systems. Phase I determined that the Town has 11 areas with need for further study, or "needs areas". This final grouping established a baseline for the Areas to be considered in Phase II. The Needs Areas are listed in Table ES-1.

TABLE ES-1
AREAS WITH NEED FOR FURTHER STUDY

Needs Area	Location Name
4	Lower Massachusetts Avenue
6	Baker Station
9	Lake Whalom
10	Massachusetts Avenue / Beal Street
12	Highland Street
14	Hickory Hills Lake
15	Rolling Acres Road
19	Lake Shirley
24	Squannacook
25	Pioneer GMD*
26	Chase GMD*

* Growth Management District (Industrial/Commercial)

The Phase I Report was submitted to the Town and the Massachusetts Department of Environmental Protection (MassDEP) on May 7, 2007. A public meeting to present the Phase I Report to the Town was held on May 17, 2007.

ES.3 PHASE II - ALTERNATIVES ANALYSIS

Phase II identified, described and evaluated several alternatives to address wastewater treatment, collection and effluent disposal for the "Needs Areas", identified in Phase I. The alternatives described were then analyzed for their applicability to each needs area and a short list of recommendations was established for wastewater management alternatives in the identified Needs Areas. Specific recommendations included a review of the appropriateness of utilizing septage management plans, I/A systems, decentralized, local and/or regional wastewater collection, treatment and disposal facilities. The Phase II Report was submitted to the Town and the MassDEP on October 22, 2007.

ES.4 PHASE III - DRAFT RECOMMENDED PLAN

Phase III included a detailed evaluation of wastewater collection, treatment, and disposal alternatives identified and shortlisted in Phase II. Several environmental and economic factors were considered in the evaluation of the alternatives. Each needs area was analyzed to determine potential effects caused by the various alternatives. The factors were weighted based on each needs area's sensitivity/applicability to the various factors and were assigned rankings. The weighted rankings were used as the basis for the selection of the preliminary recommended plan. In addition, wastewater management techniques were recommended to help control and maintain existing and future infrastructure. The Phase III report was submitted to the Town, MassDEP, and the Massachusetts Environmental Policy Act Office (MEPA) on March 31, 2008.

ES.5 PHASE IV - FINAL RECOMMENDED PLAN

Phase IV includes the updated recommended plan for wastewater management for the town of Lunenburg. Figure ES-1 includes a map of Lunenburg highlighting the revised Needs Areas, Needs Areas with need for further study, and the areas identified for a septage management plan. Figure ES-2 highlights the Sewer Service Area boundaries including all Sewer Service Zones that were adopted with the new sewer bylaw at the annual Town meeting in May 2009, and the Town adopted the updated Sewer Service Area Map at the 2014 annual Town meeting. Sewer Service Zones are simply the new terminology for "Needs Areas".

February 6, 2008 12:21:14 PM W:\GIS_Info\ArcMapLayout\template\11x17-Landscape.mxt

Source:
Town of Lunenburg
MassGIS
Wright-Pierce

N

TOWNSEND

FITCHBURG

Hickory Hills Lake

Study Area 10

Study Area 12

Study Area 14

Study Area 15

Study Area 4

Study Area 9

Study Area 6

Lake Whalom

Massapoag Pond

Lake Shirley

Study Area 19

Study Area 25

SHIRLEY

LANCASTER

13

2A

12

2

190

HOLLIS RD

Legend

Major Sub Basins

Minor Sub Basins

Study Areas

Need
Areas Recommended For Wastewater Management

Need
Areas Recommended For Further Study

Septic
Conventional Onsite/Septic Management Plan

Excluded Parcels

Protected Lands

Existing Sewer

Private Onsite Sewer (Groundwater Discharge)

0 3,000 6,000 Feet

Source:
Base data obtained from the Town of Lunenburg and MassGIS.
Study areas developed by Wright-Pierce

Comprehensive Wastewater Management Plan Update

Lunenburg, Massachusetts

Needs Areas

PROJ NO:	DATE:	FIGURE:
13382A	Apr 2016	ES-1

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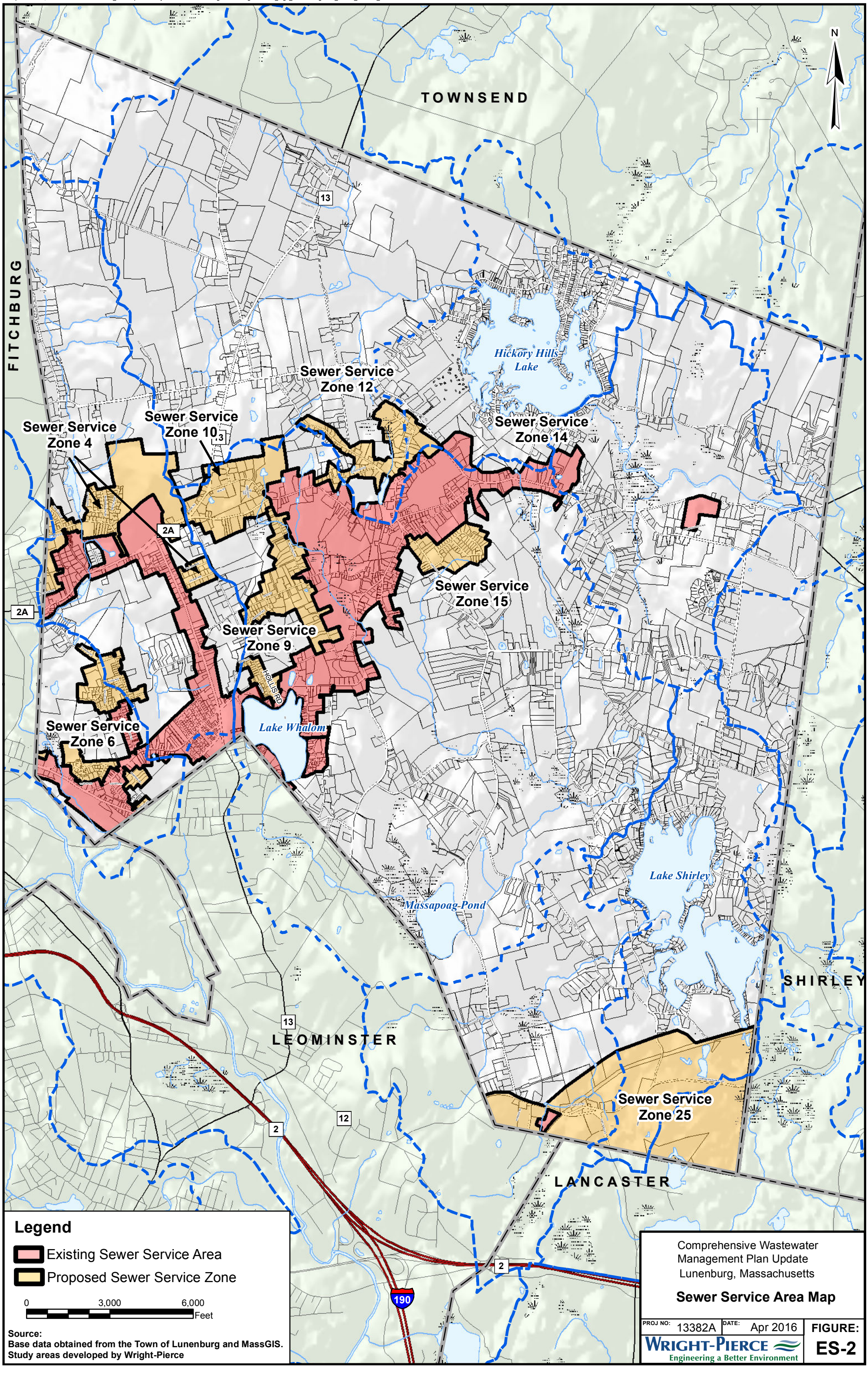
September 15, 2009 8:43:39 AM W:\GIS_Development\Projects\10849-Lunenburg\Phase4\Figures\New_Figs_4-27-09\FigES-2_Sewer_Service_Area-11x17.mxd



ES.5.1 Collection System Recommendation

The collection systems proposed in the recommended plan will be designed to transport wastewater generated in the Needs Areas to locations that can adequately treat and dispose of the wastewater. Conventional (traditional) gravity collection systems are recommended for areas where ground topography and other factors make it the most appropriate engineering design. Low pressure sewers are recommended for areas that are flat, subject to poor soils, ledge and high groundwater, and are not likely to be subject to future extensions.

ES.5.1.1 Conventional Gravity Collection Systems

In conventional (traditional) gravity collection systems, wastewater flows by gravity from the building through a service connection to a street or easement sewer and then through a piping network to a common collection system point (typically a low point in the system). At this location, a centralized pump station is typically installed to pump the wastewater to another downstream section of gravity sewer or to transport the wastewater to its final destination for treatment and disposal. Conventional gravity systems are prevalent throughout New England. The town of Lunenburg has conventional gravity sewers throughout its existing collection system, concentrated in the center of Town, Whalom area, west and southwest sections of Town.

Conventional gravity systems are often preferred over low pressure type systems because the municipality is in control of all the mechanical system components and has the ability to maintain the system on its own schedule. Conventional gravity systems also typically have centralized pumping stations, which are fewer in number as compared to the individual grinder pumping stations associated with a low pressure system. Conventional gravity systems are relatively simple and reliable systems. Low pressure sewers are generally more complex than conventional gravity systems (due largely to the number of pumping units).

ES.5.1.2 Low Pressure Sewers

A low pressure sewer system includes an individual grinder type pumping system, which conveys wastewater generated from the house or business into a low pressure piping network where it is transported to a central location such as a receiving gravity sewer, pump station or treatment facility. The piping system requires smaller "open cuts" during installation compared to a conventional gravity system due to the shallower depth of burial. Each home or business uses a grinder pump to discharge to the low pressure sewer main.

Low pressure systems have proven to be viable collection system alternatives especially in low-lying areas with high groundwater or shallow depth to bedrock. Low pressure sewer systems also work well in extremely hilly areas and waterfront areas where deep excavations and extensive dewatering could cause environmental harm. Additionally, low pressure systems are well suited for installation in areas adjacent to surface water, which are subject to periodic flooding, areas with relatively flat terrain, areas with perched groundwater, areas with narrow streets, and areas with shallow depth to bedrock.

There are several components of a low pressure system located on private property, including internal building plumbing between the house and the grinder pump, the wetwell sump/pump

structure that houses the grinder pump and stores the wastewater from the building, the alarm and control panel for the pump system and associated electrical wiring, discharge pressure piping to the street pressure piping network, and an isolation valve at the property line (a check valve is included within the pump housing). In 2015, the Town decided to place ownership, construction and operation and maintenance responsibility (including costs) on the property owner during construction of sewers within Phase IV Sewer Service Areas 6 and 9.

The grinder pump stations will provide a holding capacity to provide wastewater storage for normal operation and during most electrical power outages. Different wetwell holding capacities are available. The typical holding tank capacity ranges from 50-150 gallons. When power outages are experienced, water use significantly decreases, and the amount of wastewater discharged to the pump station is decreased. The pump owners need to be cognizant of the fact that during a power outage, they should only use water as necessary. Also, the pump unit could be powered by a home emergency power generator, if desired.

ES.5.2 Wastewater Management Considerations

The wastewater management plan was revised and updated with each phase of the CWMP process. The Phase III report included a draft recommended plan. The recommended plan was utilized to develop the final plan included in this report, which was updated in 2016. The original revisions were based on comments from the MEPA office, the MassDEP, the Natural Heritage and Endangered Species program (NHESP), the Nashua River Watershed Association (NRWA), Lunenburg residents, and Lunenburg Land Boards including the Sewer Commission, Board of Health and the Planning Board. The 2016 update was based only on review comments by the Lunenburg Sewer Commission.

Key revisions to the recommended plan in 2010 included:

- Altering the Needs Areas to match the proposed Sewer Service Area (refinement of Needs Areas);
- Altering the recommendations for a revised IMA agreement with Leominster;
- Removing the growth management provisions for Chase Road Area (Area No. 26);
- Revising collection system recommendations for GMD #25 (Pioneer Drive); and
- Removing the Lakes Areas (Hickory Hills and Lake Shirley) from the implementation plan and recommending such for further study.

Key revisions to the recommended plan from the 2016 update included

- Re-routing Sewer Service Areas 4 and 10F to discharge to Leominster;
- Updating Areas 6 and 9 to reflect sewer system construction completed in 2015.

The Phase III report was filed with MEPA and the Town received a certificate in May 2008, which required the completion of a Draft Environmental Impact Report (EIR). The requirement for the DEIR included several tasks associated with potential impacts to the Lakes regions. The Town subsequently decided to create Priority and Secondary Needs Areas. The Priority Needs Areas include Area 4 - Lower Massachusetts Avenue, Area 6 - Baker Station, Area 9 - Lake Whalom, Area 10 - Massachusetts Avenue/Beal Street, Area 12 - Highland Street, Area 15 -

Rolling Acres Road, and Area 25 - Pioneer Drive. These areas are included in the final recommended plan and the implementation plan. The Secondary Areas include Area 19 - Lake Shirley and Area 14 - Hickory Hills Lake. The Secondary areas will not be included in the implementation plan and are recommended for "further study".

ES.5.3 Wastewater Management Techniques

There are several wastewater management techniques recommended for the town of Lunenburg. The Town experienced several growth and development impacts due to the installation of a regional collection system (Contracts 1 and 2 of the Phase I sewer extension projects). The Town should continue to work on establishing wastewater management programs, so that these potential impacts will be controlled/minimized going forward.

In order to manage and operate the existing and proposed wastewater collection, transmission and treatment facilities, the Town should implement institutional and system management procedures prior to future infrastructure construction. The recommendations include water conservation, stormwater management, nutrient management, and a Septage Management Plan (SMP).

ES.5.3.1 Septage Management Plan

A Septage Management Plan (SMP) with a defined septage management overlay is recommended. A SMP legally identifies the septage management boundaries and allows the Town to set on-site system management policies. A SMP will include areas of Town proposed for long-term on-site wastewater disposal as well as those areas proposed for future infrastructure until such time as the wastewater management plan is implemented in those areas. The successful long-term sustainability of on-site wastewater disposal systems is dependent on proper operation and maintenance in order to prevent adverse health and environmental impacts. It is recommended that the Sewer Commission work closely with the local Board of Health in order to develop the SMP.

ES.6 RECOMMENDED WASTEWATER TREATMENT AND DISPOSAL

The recommended plan includes regional wastewater disposal at the city of Fitchburg's Easterly Wastewater Treatment Facility and the city of Leominster's Wastewater Treatment Facility.

ES.6.1 Regional Recommendations to Leominster

It is recommended that Lower Massachusetts Avenue (Area 4), Baker Station (Area 6), Lake Whalom (Area 9), Massachusetts Avenue/Beal Street (Area 10), Highland Street (Area 12), Rolling Acres Road (Area 15), and Pioneer Drive (Area 25) transport the generated wastewater to Leominster's existing wastewater treatment facility. The Sewer Commission should continue discussions with Leominster for additional flow capacity and revise the current intermunicipal agreement (IMA). The revised IMA should include a "capacity contingency".

ES.6.2 Regional Recommendations to Fitchburg

As part of the 2016 CWMP update, it is no longer recommended that Lower Massachusetts Avenue (Area 4) and Massachusetts Avenue/Beal Street (Area 10F) transport the generated wastewater to Fitchburg's existing Easterly Wastewater Treatment Facility. After the recommended re-direction of Area 4 and Area 10F occurs, only a portion of the existing wastewater flow would continue to flow into Fitchburg's wastewater collection system. The existing and future flows projected for 2036 do not exceed the current IMA with Fitchburg, which was re-negotiated in 2013 for 151,000 gpd.

Section 1

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SECTION 1

INTRODUCTION

1.1 PURPOSE/BACKGROUND INFORMATION

In July 2006, the town of Lunenburg retained Wright-Pierce to prepare a Comprehensive Wastewater Management Plan (CWMP). The CWMP addresses current and future wastewater management needs, wastewater management alternatives, and develops a recommended plan through careful review and evaluation of management alternatives. Although there are some areas of town that are served by connections to adjacent communities' municipal wastewater collection systems or privately owned treatment facilities, the Town primarily relies on conventional on-site Title 5 systems for wastewater treatment and disposal. The Single Environmental Impact Report (SEIR), filed by the Town in December 2001, stated that many of these systems are older, located in poor soil conditions and/or are considered substandard under the Commonwealth's Title 5 regulations. The certificate from the Secretary of the Executive Office of Environmental Affairs (EOEA) dated March 18, 2002, for the original SEIR is included in Appendix A.

In the spring of 2001, the construction of Phase I sewers began as recommended by the approved Lunenburg Wastewater Facilities Plan (June 1999). The Phase I sewer construction consisted of two construction contracts and connected new sewers serving the Town Center and Whalom areas to existing sewers in Leominster and Fitchburg. Upon the completion of Phase I sewers, construction of later phases were postponed pending further study and investigation of the Town's overall wastewater management needs.

The further study and investigation of wastewater management is included in the CWMP. The CWMP is a multi-phase planning evaluation undertaken by the town of Lunenburg to determine the viability of current wastewater disposal practices in satisfying existing and projected future wastewater treatment and disposal needs through the year 2026. This 2016 update to the Phase IV CWMP projects wastewater needs and flows through 2036. In addition to evaluating future wastewater treatment and infrastructure needs within the currently sewered areas, the CWMP provides a comprehensive look at the Town's wastewater management needs by including reviews of the previous studies along with a "fresh look" at the Town's needs as a whole.

The assessment was performed to review whether or not conventional on-site Title 5 septic systems can provide adequate means of providing for sanitation, environmental protection and growth management within Town today and through the 20-year planning period. For the purposes of this report, wastewater management needs have been evaluated in the following five categories:

- **Public Health –** correction or avoidance of unsanitary conditions such as effluent surfacing over a leaching field, inadequate set-back from a private well, or direct discharge of sanitary wastewater to a watercourse.

- **Water Supply Protection –** preventing contaminants (such as bacteria, viruses or nutrients) from reaching private or public drinking water sources.

- **Protection of Surface Waters –** such as reducing nutrients (typically phosphorus) that can cause accelerated degradation of freshwater ponds.

- **Preserving Community Character –** highlighting areas of sensitivity particularly in regards to potential impacts of wastewater alternatives. Sensitive areas that were included in the assessment were Areas of Critical Environmental Concern (ACECs), Priority/Estimated Habitat Areas, Open Space/Protected Lands, and the Historic District.

- **Managed Growth –** providing wastewater treatment and disposal so that conventional Title 5 system conditions (such as impermeable soils or shallow groundwater) are not the limiting factors to managed growth and development. The Town continues to develop planning and regulations for managed growth.

The established Needs Areas from the Phase I and the original 2010 Phase IV CWMP were not revisited in the 2016 update.

1.2 REVIEW OF PLANNING EFFORTS

The town of Lunenburg, through its CWMP, continues to assess its current wastewater treatment and disposal methods and is evaluating alternatives for improved wastewater treatment and disposal. The DEP approved scope of work for the CWMP is included in Appendix B.

This document is Phase IV of the four phase CWMP process prescribed by DEP's Guide to Comprehensive Wastewater Management Planning. The four phases are:

Phase I:	Assessment of existing conditions, projection of future wastewater treatment and disposal requirements, and a needs assessment for the Town. The needs assessment determined areas with need for further study for Phase II;
Phase II:	Identified and short-listed appropriate means of wastewater management methods to address the areas identified in Phase I. The analysis included a review of technical, environmental, institutional and economic factors;
Phase III:	Detailed evaluation of alternatives identified and short-listed in Phase II, and a recommendation of a specific wastewater management plan for each area; the CWMP was filed with MEPA (Notice-of-Project Change) at the end of Phase III to provide a public comment period for the Town and State Agencies and other shareholders;
Phase IV:	Finalize specific recommended wastewater management plan for each area. Updated in April 2016.

The Phase I Existing Conditions, Future Requirements and Problem Identification/Needs Assessment report was completed in the Spring of 2007 and submitted to the Massachusetts Department of Environmental Protection (MassDEP) on May 7, 2007. The Phase I document

provided a comprehensive look at the Town's wastewater management needs by including reviews of the previous studies along with a "fresh look" at the Town as a whole. The Phase I needs assessment identified the suitability of properties for continued, long-term reliance on conventional, on-site wastewater disposal systems. The needs assessment provided a review of the entire Town and determined areas that:

- Are well suited for conventional, on-site wastewater disposal systems for long-term wastewater management;
- Will be further studied for continued reliance on conventional, on-site septic systems for long-term wastewater management; or
- Will be reviewed for potential growth management of industrial and commercial development.

Of the 26 total study areas evaluated in Phase I, 15 study areas were determined to be well-suited for the continued use of on-site systems. Some of these areas showed small pockets of "needs".

The Tier 1 and Tier 2 analyses determined that the Town had 10 areas with need for further study, or "Needs Areas". This final grouping established a baseline for the areas considered in the Phase II CWMP. Wastewater management alternatives for each area that were investigated in this phase included utilizing management techniques, I/A systems, local and/or regional wastewater collection, treatment and disposal facilities, effluent disposal and continued use of on-site Title 5 systems. The areas with need for further studied identified in Phase I are listed in Table 1-1. The Town did not update the Phase I report in 2016.

TABLE 1-1
AREAS WITH NEED FOR FURTHER STUDY

Needs Area	Location Name
4	Lower Massachusetts Avenue
6	Baker Station
9	Lake Whalom
10	Massachusetts Avenue / Beal Street
12	Highland Street
14	Hickory Hills Lake
15	Rolling Acres Road
19	Lake Shirley
24	Squannacook
25	Pioneer GMD*

* Growth Management District (Industrial/Commercial)

The Phase II Management Techniques and Alternatives Identification and Screening report was completed in the fall of 2007 and submitted to the Town and MassDEP on October 22, 2007. The Town did not update the Phase II report in 2016. The Phase II report included the identification and description of several alternatives to address wastewater treatment, collection

and effluent disposal for the areas with need for further study identified in the Phase I report. The alternatives described were then evaluated for their applicability to each Needs Area and a short list of recommendations was established for wastewater management alternatives in the identified Needs Area. Specific recommendations included a review of the appropriateness of utilizing septage management plans, I/A systems, decentralized, local and/or regional wastewater collection, treatment and disposal facilities and residuals treatment and disposal.

The Phase II report included an analysis of wastewater collection, treatment and effluent disposal alternatives. These management alternatives were evaluated for each Needs Area. The alternatives assessment was based on a rating methodology, which included a review of technical, environmental, institutional, and economic factors. These factors were reviewed as to whether the wastewater management alternatives were well suited or not well suited for the individual "needs area".

The results of the alternatives analysis were a shortlist of wastewater management alternatives for each area. The shortlisted alternatives were comprised of alternatives for conventional on-site Title 5 systems with a septage management plan, I/A Title 5 systems, decentralized systems, and regional treatment. These alternatives were further evaluated in Phase III of the CWMP.

Phase III of the CWMP, Detailed Evaluation of Alternatives and Recommendation of Wastewater Management Plan, was completed in Spring 2008 and was submitted to the Town, MassDEP and Massachusetts Environmental Policy Act (MEPA) office on March 31, 2008. The Town did not update the Phase III report in 2016. Phase III further evaluated each Needs Area and evaluated the shortlisted alternatives for each. Phase III also assessed environmental impacts, design criteria, and economic factors associated with each shortlisted alternative. The results of Phase III included near and long-term solutions for wastewater collection, treatment and effluent disposal in each Needs Area.

The Phase III report included a refinement of the Needs Areas, review of the environmental and cost impacts for each viable alternative, and develops a schematic layout and cost estimate for each alternative.

The Phase III report was filed with MEPA and the Town received a certificate in May 2008, which required the completion of a Draft Environmental Impact Report (DEIR). A copy of the certificate is included in Appendix C. The requirement for the DEIR includes several tasks associated with potential impacts to the Lake Shirley and Hickory Hills Lake areas. Response to comments on the certificate and comment letters received by State agencies, Lunenburg citizens, and Lunenburg Land Boards are included in Appendix D.

The Town decided to create Priority and Secondary Needs Areas. The Priority Needs Areas include Area 4 - Lower Massachusetts Avenue, Area 6 - Baker Station, Area 9 - Lake Whalom, Area 10 - Massachusetts Avenue/Beal Street, Area 12 - Highland Street, Area 15 - Rolling Acres Road, and GMD 25 - Pioneer Drive. These areas are included in the final recommendations and the implementation plan. The Secondary Needs Areas include the areas for Lake Shirley and Hickory Hills Lake. The Secondary areas will not be included in the implementation plan and are recommended for further study.

The Phase IV report includes a final recommended plan based on the three previous phases and considers/incorporates (as appropriate) feedback from State agencies, Lunenburg residents and Lunenburg Land Boards, including the Sewer Commission, Board of Health, Planning Board and Zoning Board of Appeals. This Phase IV report was updated in 2016 and only included feedback from the Town's Sewer Commission.

1.3 STAKEHOLDERS

Involvement of the citizens and interested stakeholders of Lunenburg is an important component in developing a CWMP. Wright-Pierce assisted the Town with coordinating the involvement of the many stakeholders. The Project Stakeholders include the citizens of Lunenburg, the Lunenburg Board of Selectmen, Sewer Commission, Board of Health, Conservation Commission, Planning Board, Water District, Zoning Board of Appeals, Department of Public Works (DPW), Lake Shirley Improvement Corporation (LSIC), Hickory Hills Lake Association, MassDEP, Department of Fish and Wildlife (DFW), Natural Heritage Program, Water Resources Commission (WRC), the Executive Office of Environmental and Energy Affairs (EOEEA), Massachusetts Environmental Policy Act (MEPA) Office, the Nashua River Watershed Association (NRWA), Montachusett Regional Planning Commission (MRPC) and officials from neighboring communities. Input from many of these stakeholders was solicited and considered in the development of the CWMP. Many of the stakeholders have been actively involved in aspects of Phase IV and previous CWMP phases through monthly Land Board workshops, telephone conversations, special meetings, board meetings and public meetings.

The above stakeholders were not involved in the 2016 update process, except for the Lunenburg Sewer Commission.

Section 2

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SECTION 2

REFINEMENT OF NEEDS AREAS AND ESTIMATED WASTEWATER FLOWS

The Phase I CWMP identified areas with need for further study. These are areas which may need wastewater management beyond a conventional on-site system. The areas of "need for further study" identified for possible off-site solutions have been refined throughout the CWMP process to best define the most appropriate areas for off-site wastewater management.

The evaluative factors utilized in this "refinement" include the layers identified in the Phase I - Needs Analysis and include:

- Title 5 System Inspections;
- Soils/Drainage Class;
- Depth to Bedrock;
- Lot Sizes;
- Water Supply Protection;
- Depth to Groundwater;
- Lunenburg Water Resource Protection District;
- Areas with Regulated Setbacks (Distance to Surface Water, wetlands, etc.);
- Floodplains;
- Areas of Critical Environmental Concern (ACEC);
- Priority/Estimated Habitat Areas; and
- Historic District.

Several sources were utilized in developing the evaluative factors including the Board of Health database, MassGIS and Soil Conservation Service. Other factors that were used in the analysis included BOH hardcopy files from selected systems within each area, a visual analysis of specific areas within the Town and the potential for further development and growth management. The BOH files were reviewed for property percolation rate, ground slope, system age, and depth to groundwater at the time of inspection. The BOH files were also used to identify area trends. In addition, the Assessor's database provided age of properties. This information identified area trends for the age of systems. The future uses in these areas were also considered, and some areas include important recreational resources and others are included in the Town's growth management district.

For several Needs Areas, individual parcels have been identified for potential off-site treatment. The remaining areas of the Town are recommended for a Septage Management Plan (SMP). In addition, the SMP is recommended for areas proposed for long-term on-site wastewater disposal as well as those areas proposed for future "off-site" infrastructure until such time as the recommended "off-site" infrastructure plan is implemented in such areas. The sustainability of on-site wastewater disposal systems is dependent on proper operation and maintenance in order to prevent adverse health and environmental impacts. It is the intent of a SMP to operate in

conjunction with the Town's existing municipal wastewater collection systems in the proper collection and disposal of septage. It is recommended that the Sewer Commission and Department of Public Works (DPW) work in conjunction with the Board of Health in order to develop the regulations to manage and oversee the SMP. A decision can then be made regarding the process to administer the institutional requirements set forth in the final approved SMP.

The following provides a brief description of each Needs Area, which are summarized from previous CWMP phases.

2.1 AREA 4 - LOWER MASSACHUSETTS AVENUE

This area was found to have moderately well drained soils and high groundwater levels. This area is zoned as Residence A (Lunenburg residential zoning definition). This area is generally comprised of smaller parcels with older homes (circa 1950's - 1960's) with some mounded systems. There are ledge outcroppings and land parcels that slope steeply back to wetlands areas. This area is adjacent to larger, undeveloped, and unprotected land parcels.

According to the BOH database, there have been several Title 5 variances and failures in this area. Some failures have resulted in variances for groundwater offset, leachfield area, failed perc tests, bedrock offset, and lack of area due to small parcel size. Many of the variances were granted due to limited septic design possibilities. In general, groundwater was observed at depths of 3 feet, although some areas reported groundwater at approximately 5 feet below grade.

2.2 AREA 6 - BAKER STATION

This area is comprised of dense, built-out neighborhoods which show "need", but also include larger, undeveloped and unprotected parcels. This area is zoned primarily as Residence A. This area was found to have high groundwater levels and moderately well drained soils with some portions of poorly drained soils. It was observed that portions of this area have smaller parcels with older homes (circa 1950's - 1960's), steep slopes, forested yards, streams, and wetlands. The sections of need are the small parcels along the existing roadways.

There have been several Title 5 failures in this area according to the BOH database. Some failures resulted in variances for groundwater offset, leachfield area, and failed perc tests. Many of the variances were granted due to limited septic design possibilities. In general, groundwater was observed at varied depths from 1.5 to 12 feet below grade. Perc tests varied from 2 to 40 miles per inch (mpi). The varied soil and groundwater conditions allow some areas to support on-site wastewater disposal systems, while other areas show additional needs.

2.3 AREA 9 - LAKE WHALOM

This area has some dense development with small parcels, but also includes several larger, undeveloped, and unprotected parcels. This area is zoned as Residence A. The soils in this area

are of varied drainage qualities. Sections of this area were observed to have significantly mounded systems, high groundwater, and very steep slopes. It was also noted that this area has a number of older homes (circa 1960s - 1970s), wetlands, and built-out neighborhoods.

According to the BOH database, there have been several Title 5 failures in this area. Some of the failures resulted in variances for groundwater offset and mounded systems. In general, groundwater was observed at depths from 2 to 3.5 feet below grade. Perc tests varied from 2 to 40 mpi.

There are several parcels with on-site issues making new systems expensive and in need of a variance. The wastewater management alternative must account for this area being the drainage sub-basin for Lake Whalom, which is an important recreational surface water body for this region.

2.4 AREA 10 - MASSACHUSETTS AVENUE/BEAL STREET

This area has steep slopes, small parcels, and wetlands. According to the BOH database, there have been several Title 5 failures in this area. Several failures resulted in variances for groundwater offset and use of I/A systems. In general, groundwater was observed at depths of approximately 2 feet below grade.

The area has several parcels with poor site conditions for on-site wastewater disposal. The final recommendation should take into account the possibility of providing additional wastewater management in this area to promote/support commercial and industrial development.

2.5 AREA 12 - HIGHLAND STREET

This area has soils which are of varied drainage qualities with areas of very poorly drained soils. Sections of this area have wetlands and high groundwater. In general, groundwater was observed at depths of approximately 2 feet below grade. Perc tests varied from 6 to 30 mpi.

2.6 AREA 14 - HICKORY HILLS LAKE

The parcels in Area 14 are small and there are no large, undeveloped and unprotected parcels in the area. This area is primarily built-out. In addition, several mounded systems were observed. Area 14 is adjacent to the Squannassit Area of Critical Environmental Concern and is a NHESP priority and estimated habitat area (on the eastern side of the lake). This area was determined to be a Needs Area based on soil, high groundwater and sensitive receptors and ecosystems.
According to the BOH database, there have been several Title 5 failures in this area. Some failures resulted in variances for groundwater offset, on-site wastewater disposal system area, failed perc test, bedrock offset, and lack of area due to small parcel size. Many of the variances were granted due to limited septic design possibilities. In general, groundwater was observed at

depths to 3 feet, although some areas reported groundwater at approximately 9 feet below grade. Perc tests varied from 2 to 38 mpi.

The recommended management alternative needs to mitigate impacts to surface waters since this is the drainage sub-basin for Hickory Hills Lake, which is an important recreational surface water body for the region. A large portion of this area is built-out, but portions are adjacent to developable parcels. In addition, the recommended management alternative should take into account that this area is within the Mulpus sub-basin, which is a medium stressed sub-basin of the Nashua River watershed.

2.7 AREA 15 - ROLLING ACRES ROAD

The soils in this area are moderately well drained and the groundwater levels are high. Small parcels, severe slopes, and wetlands were observed during the visual analysis. There were a few Title 5 failures in this area, according to the BOH database. Some failures resulted in variances for groundwater offset and mounded systems. In general, groundwater was observed at depths between 2.5 and 4 feet below grade.

2.8 AREA 19 - LAKE SHIRLEY

This area is comprised of Residence A, Residence B, and Commercial zoning districts. The area also includes an industrial manufacturer of construction earth products (PJ Keating), a campground, and a public beach. There are areas with severely steep slopes and the soils are extremely well drained.

The parcels adjacent to the lake are small and primarily built-out. The homes at one time were primarily summer residences, but many have converted to year-round residences.

According to the BOH database, there have been several Title 5 failures in this area. Some failures resulted in variances for groundwater offset, distance to wetlands, distance to surface water, and distance to drinking water wells. Many of the variances were granted due to limited septic design possibilities. The surface water in this area is known for having elevated nutrient levels. Groundwater was observed at depths between 1 and 12 feet below grade. In general, perc tests in the area were 2 mpi.

This area has varied needs due to several factors including fast perc-ing soils, growth management concerns, and nutrient loading. There are several parcels with on-site issues in the area making new systems expensive and in need of a variance. The recommended alternative needs to take into account that this area is a portion of the drainage sub-basin for Lake Shirley, which is an important recreational surface water body for this region. Lake Shirley is a nutrient sensitive area, which has an elevated level of phosphorus.

2.9 AREA 25 - PIONEER DRIVE GROWTH MANAGEMENT DISTRICT (GMD)

This area is included in the Town's Growth Management District for commercial and industrial development. The area is zoned as Office Park/Industrial. The Town is considering encouragement of commercial and industrial development in this area. The Planning Board continues to review this area for growth potential in regards to commercial and industrial development. The recommended management alternative for this area must "manage" flows large enough to attract commercial and industrial development and should be able to meet the requirements to treat industrial wastewater.

2.10 WASTEWATER FLOWS

Wastewater flows were estimated for existing and future residential sanitary sources, existing and future commercial and industrial sources, and existing and future I/I flows. Total future flows were calculated for the existing sewered areas and each Needs Area. The flows were based on the theoretical growth in year 2036 for the existing sewered areas and Needs Areas. Sanitary, commercial and industrial flows are based on the parcels defined in the Lunenburg Assessor's database.

2.10.1 Existing Flows

The existing wastewater flows were estimated using data from the Town, as well as the Metcalf & Eddy Wastewater Engineering textbook 4th edition, TR16, and the Massachusetts Environmental Code (Title 5). Flows from residential properties were estimated by the number of bedrooms for each parcel, according to the Lunenburg Assessor's database. For residential sanitary unit flows, it was determined that the State Environmental Code is overly conservative (110 gallons per day per bedroom (gpd/bedroom)). In fact, this unit flow is approximately twice the actual unit rate of water usage for the Lunenburg Water District (LWD) (which is typical of most communities). As such, the estimated flow generation was reduced to reflect the LWD actual usage of 170 gpd for a residential service. According to the Assessor’s database, the average residential home in Lunenburg is 3 bedrooms. Therefore, the residential sanitary flows were estimated based on a generation rate of 57 gpd/bedroom. Estimating flow on a “per bedroom” basis instead of a “per capita” basis allows estimates to be specific to each parcel (listed in the Town Assessor’s database) instead of using the same average household size, and therefore the same sanitary wastewater generation rate, for every residential parcel in the Town. Using the average household size in Lunenburg of approximately 2.6 people per household, the 57 gpd/bedroom rate corresponds to a per capita flow rate of 64 gpd/person, which is within the expected range of industry standards. Wastewater generation for the public schools was based on actual annual average water usage at each school.

For non-residential flows (commercial and industrial flows for example), water usage data for individual parcels was unavailable, so the wastewater generation rate (unit flow) was estimated based on the use of the parcel. The State Environmental Code, Metcalf & Eddy, and experience with similar generation rates in other similar Massachusetts municipalities were used to determine the generation rate. Table 2-1 shows the wastewater generation rates used to

determine sanitary flows from different types of non-residential properties included in the Assessor's database.

TABLE 2-1
NON-RESIDENTIAL WASTEWATER FLOW RATES

ZONE	WASTEWATER GENERATION RATE
Commercial (C)	75 gpd/1000 SF
Industrial (I)	100 gpd/1000 SF
Limited Business (LB)	75 gpd/1000 SF
Office Industrial (OI)	75 gpd/1000 SF
Office Park (OP)	50 gpd/1000 SF

The building area (in SF) of each of the non-residential parcels and the wastewater generation rates were used to determine the total flow for each parcel.

2.10.2 Residential and Non-Residential Sanitary Flows from Existing Infrastructure

The total existing sanitary flow (residential and non-residential) to Fitchburg was estimated to be approximately 44,200 gpd based on the above methodology. Recent wastewater flow meter data was shown to be slightly less than the above estimation, so the more conservative calculation will be used for projecting flows.

The existing sanitary flow to Leominster was taken from recent wastewater flow meter data, which was higher than the original estimation of 58,700 gpd. The average daily flow to Leominster based on this data is approximately 170,000 gpd.

2.10.3 I/I Estimates for Existing Collection System

The estimated I/I flows are based on the quantity of gravity sewer pipe using an assumed I/I rate of 300 gpd/inch-diameter-mile (TR16 range for new pipe is 250-500 gpd/inch-diameter-mile) for the 20-year planning period. I/I rates are not applied to sewer force mains or low pressure systems.

The Town currently reports flow conveyed to Leominster and Fitchburg based on wastewater flow meter readings. However, the actual amount of I/I entering the system is unknown and must be estimated. In general, the amount of I/I entering a wastewater collection system is highly variable, and dependent on many factors, including the age of the system, type of pipe used in the system, depth to groundwater, and the existence of any direct or indirect connections to the wastewater collection system (such as storm drain piping). In order to estimate the amount

of I/I flows in the existing collection system, the total length of pipe was obtained by examining the as-built plans for the construction of the existing collection system.

Separate I/I assessment studies have been performed to date, and the Town continues to perform work to reduce the amount of I/I entering their collection system During one of the I/I studies, an engineering firm conduct a short-term flow monitoring program in the spring 2011. The estimated flow of infiltration was 29,000 gpd, which was equivalent to approximately 220 gpd/inch-diameter-miles (idm). According to DEP Guidelines for Performing I/I Analysis, subareas exhibiting an infiltration rate equal to or greater than 4,000 gpd/idm are considered excessive. Using this benchmark, none of the subareas in the Town had excessive infiltration.

The estimated flow of peak inflow was 1,225,000 gpd, which was equivalent to approximately 9,400 gpd/inch-diameter-miles (idm). According to DEP Guidelines for Performing I/I Analysis, subareas exhibiting an inflow rate equal to or greater than 4,000 gpd/idm are considered excessive. Using this benchmark, five of the six areas had excessive inflow.

When I/I studies have not been performed, a typical estimated amount of I/I flow is 300 gpd/idm for a "design year".

It is worth restating that these I/I flow totals are only estimates, It is prudent to consider the possibility of such I/I flows in wastewater planning. Because I/I rates are variable, it is recommended that Lunenburg gather more information regarding the actual amount of flow in its system.

2.11 FORECAST OF 2036 FLOWS

Analysis of the wastewater flows discussed in previous sections examined the wastewater flows for the existing infrastructure. The original Phase IV report used 2006 as the current year and 2026 as the future year. This update to the Phase IV report used 2016 as the current year and 2036 as the future year. The following section details the flow estimates for the future (2036) wastewater flows.

2.11.1 Future Wastewater Flows

To estimate future wastewater flows, population growth projections for the Town were evaluated to estimate how the characteristics of the Town could change over time. The long-term impacts of growth and development were analyzed by looking at a baseline of build out flows for the Town. The baseline build out is calculated by examining land area and zoning requirements to determine the amount of growth which could theoretically occur in Lunenburg over a long period of time.

Preliminary review of the EOEA estimates indicates that by the time the Town reaches theoretical build out, the population of Lunenburg is expected to more than double as compared to the 2000 census, and the water use increased by a factor of almost five as compared to 2000

water use. It is unrealistic to expect that growth on such a scale could occur within the 20-year planning period of the CWMP (2016 - 2036).

2.11.1.1 Year 2036 Flows

To calculate the future wastewater flows for the end of the study period (year 2036), the population increase in the Town was estimated for the 20-year planning period. The projected population from the University of Massachusetts Donahue Institute study in Year 2035 is expected to be 10,642. This equates a 20-year growth rate of 5 percent over the 2015 estimated population. This UMass Donahue Institute study growth rate was also used as a baseline to estimate the projected population growth between 2016 and 2036. Lunenburg has seen an increase in the number of proposed residential units, which has largely been concentrated in the existing sewered areas. It is reasonable to assume that this trend will continue in the future. Furthermore, it accounts for the possibility of additional 40B development (beyond those projects already presented to the Planning Board) in the existing sewered area. Given the proximity of the existing sewered areas to transportation and commercial districts, it is assumed that the majority of future large scale developments like 40B projects (or additional town-approved 40R projects) will occur in the existing sewered area. Therefore, it is projected that wastewater generation from currently connected properties will increase by 10 percent, or double the baseline growth rate projected by the UMass Donahue Institute study (5%). Furthermore, it is estimated that only 10 percent of the potential development will occur by 2036. This value is an estimate to account for the additional growth possible as a result of the presence of an existing wastewater collection system.

2.11.2 Estimated 2036 Residential Sanitary Flows

The estimated 2036 residential sanitary flows were estimated based on three development scenarios. The scenarios that were considered are as follows:

1. Currently sewered parcels that are further expanded;
2. Currently non-sewered parcels that can be connected; and
3. Currently undeveloped parcels that are/can be connected (in the 'sewered area'/'non-sewered area').

The amount of potential residential sanitary wastewater flow was calculated based on the following methodology (the methodology was the same for each scenario, described above): The area of the parcel (in acres) was divided by the minimum lot size required by zoning requirements shown in Table 2-2. A "utilization factor" of 84 percent to account for odd-shaped parcels, driveways, wetlands, steep slopes, setbacks, for example, was then applied, which yields the number of potential parcels with the appropriate minimum lot size. If the property had an existing residential unit, the potential number of parcels was decreased by one (there were no adjustments made to undeveloped properties, i.e. Scenario 3 above). If the resulting number of potential parcels was greater than two, it was rounded to the nearest whole number. The potential parcels were assumed to have an average size of 3.5 bedrooms per parcel. This is slightly higher than the existing average household of just over 3 bedrooms per parcel, to reflect development trends towards larger homes. Therefore, each parcel was assigned 3.5 bedrooms

per parcel and a unit flow of 57 gpd/bedroom. Finally, it was assumed that only 10 percent of this potential development would occur by 2036.

TABLE 2-2
ZONING REQUIREMENTS

ZONE	MINIMUM LOT SIZE
Commercial (C) [1]	10,000 SF
Industrial (I) [1]	10,000 SF
Limited Business (LB) [1]	10,000 SF
Office Industrial (OI) [1]	10,000 SF
Office Park (OP) [1]	10,000 SF
Residence A (RA)	40,000 SF
Residence B (RB)	80,000 SF
Residence 1 (R1) [2]	40,000 SF
Outlying (O)	80,000 SF

Notes:
1. Dependent on the protective bylaw
2. Assumed to be the same as Residence A

2.11.3 Potential Flows from New and Proposed Developments

In addition to the residential wastewater flows estimated for 2036, there are several large development projects, which have recently been completed or are planned for construction. Estimated flows for these developments are included in the total estimated flows for 2036. Table 2-3 details these developments and their estimated flows. The original list of developments in the Phase IV CWMP has been updated to the development list in 2016.

It should be recognized that a number of factors make further development in the sewered areas possible. One such factor is the simple presence of existing sewers. Sewers may allow larger scale, more dense development, due to the fact that wastewater does not need to be disposed of on-site. Another factor which encourages development in Lunenburg's existing sewered areas is the transportation access. These areas have close proximity to highways such as Route 2, as well

TABLE 2-3
NEW AND FUTURE DEVELOPMENTS

Project Name	Location	Home Type	# Units	# of Over 55 Units	Project Status	Expected Date Online	Assumed Bedrooms per Unit	Estimated Flow (57 gpd/bedroom)	Area #
Standard Subdivisions									
274 Prospect St	274 Prospect		18		in review		3	3,078	9
Aro Estates	318 Howard St				In Litigation				N/A -not public sewer
Benjamin Hill	69 Mass Ave	single family	2		dormant		3	342	4
Emerald Place At Lake Whalom	10 Lakefront	town house & garden-style (1 & 2 bdrm)	239	38	211 of 239 units complete - no target date per EP (or Building Dept) for remaining 28 units as of 2/24/16		2	24,054	Included in Existing Sewered Area to Leominster
Emerald Place-commercial development		opposite Electric Ave			will be developed commercially -currently vacant land				Included in Existing Sewered Area to Leominster
Highfield Village	361 Mass Ave	single family	66		in review	3 phases(min) - 10 years	3	21,780	Area 10
Lena Lane	Lancaster Ave/Gibson St	single family	4		in construction		3	684	N/A -not public sewer
Oak Ave homes(Ashoryn LLC)	175 Northfield Rd	single family	9 (5 to be sewered)		in construction	1st house in construction/all lots cleared	3	855	12
Oak Haven Estates	Arbor St	single family	6		dormant		3	1,026	N/A -not public sewer
Sequoia Drive	341 Howard St	single family	8		complete		3	1,368	N/A -not public sewer
Stone Farm Estates	748 Mass Ave	condo-type	58	5	58 total - 5 still under construction		2	6,042	Included in Existing Sewered Area to Leominster
Villages at Flat Hill	Flat Hill Rd	single family	45		structures completed/ road mitigation incomplete		3	7,695	N/A -not public sewer
Whispering Pines	Beal Street	single family	19		never filed for definitive		3	3,249	Area 10
White Tail Crossing	209 & 331 Burrage St	single family	16		complete		3	2,736	N/A -not public sewer
40B Projects									
Lunenburg Estates	1229 Mass Ave	town houses	64		Approved (construction period not known)		2	7,296	Included in Existing Sewered Area to Leominster
Hollis Hills	Hollis Rd &t West St	condo-type (3-brm)	146		In Litigation		3	24,966	Assumed not sewered
Whalom Luxury Apts(prev Lunenburg Village)	250 Whalom Rd	garden-style apartments	15		15 1 BR UNITS, 105 2BR - Approved - 5 BUILDINGS		1	12,825	Included in Existing Sewered Area to Leominster
Others									
Project Name	**Location**	**Home Type**			**Project Status**	**Expected Date Online**	**Assumed Building Footprint (sf)**	**Estimated Flow (gpd)**	**Area #**
270 Electric	270 Electric	self-storage units			approved		1,500	113	Included in Existing Sewered Area to Leominster
339 Electric	339 Electric	Automotive shop			proposed		4,000	400	Included in Existing Sewered Area to Leominster
357 Electric	357 Electric	Unitil headquarters			in review		20,300	1,523	Included in Existing Sewered Area to Leominster
Lunenburg High School	1079 Mass Ave	New High school			in construction		0	0	replaces existing high school
835 Leominster Rd (Kevin Hill)	835 Leominster Rd	single family			taken out of consideration (2/16)				N/A -not public sewer
Summay of Estiamted Flow (gpd)									
								Flow in Exsting Sewered Area	53,000
								Flow in Needs Areas	30,000
								Flow in Town Sewers	**83,000**
								Flow in Non-Public Sewers	**38,000**
								Total Flow from New and Future Developments	**121,000**

as access to the MBTA Commuter Rail. Therefore, it is possible that future growth may be concentrated in the sewered areas of Lunenburg.

2.11.4 Estimated 2036 Non-Residential Sanitary Flows

The same three scenarios as discussed in the previous section were used to determine the 2036 non-residential sanitary flows. The amount of potential non-residential sanitary wastewater flow was calculated based on the following methodology (the methodology was the same for each scenario): The area of the parcel (in acres) was multiplied by a "utilization factor" of 84 percent to account for odd-shaped parcels, driveways, wetlands, setbacks and steep slopes. This area was then multiplied by a "usable building" factor of 60 percent to account for the portion of the parcel which would be usable building space. Finally, the appropriate wastewater generation rate was assigned to the area based on the current zoning of the parcel (and it was assumed that only 10 percent of this potential development would occur by 2036).

It should be noted that the projected increased flows do not include any flows from “change of use” for individual parcels of land. For example, if an existing single-family home were to be subdivided into several parcels, or changed to a different use, the increase in flows could be even higher. Even within existing commercial zones, there is the possibility of increased flow from the same parcel if the type of business changes. For example, a 4,000 square foot office building would generate 300 gpd of sanitary wastewater flow, according to Title 5. If that same 4,000 square foot building were converted to a 100-seat restaurant, the sanitary flow generated would increase to 3,500 gpd. Furthermore, if the building were converted to a Laundromat with 25 washing machines, the flow would increase to 10,000 gpd. It is difficult to predict where these types of “change of use” may occur. Therefore, it should be noted that the possibility exists that the future flow from existing "bettered" parcels could be even larger than the flow predicted.

Table 2-4 summarizes the 2016 and 2036 flows, for areas with existing infrastructure flows to Leominster and Fitchburg**.** It is important for the Town to determine which developed properties within the existing Sewer System Service Area have paid a betterment for sewer, but have not yet connected to Town sewer. The Town will need to continue to keep in reserve available flow capacity for these parcels to connect to the sewer. We have included these units in our flow estimates.

TABLE 2-4
FLOWS FROM EXISTING SEWER SERVICE AREAS
2016 AND 2036

	EXISTING FLOW (2016) GPD	FUTURE FLOW (2036) GPD
Fitchburg		
Existing Sewered Flow[1]	44,200	48,600
Non-Residential Flow	-	65,000
Residential Flow	-	2,500
New & Proposed Developments	-	-
Total to Fitchburg	**44,200**	**116,100**
Leominster		
Existing Sewered Flow[1]	170,000	187,000
Non-Residential Flow	-	52,600
Residential Flow	-	39,200
New & Proposed Developments	-	25,900
Total to Leominster	**170,000**	**304,700**

1. Taken from existing flow meter data, which includes I/I flow.

2.12 FLOW ESTIMATES IN NEEDS AREAS

To estimate the amount of wastewater generated in each of the new Needs Areas, GIS software was used to group the existing parcels of land in the Assessor's database by Needs Area. Other data imported from the Assessor's database included the zoning for the parcel, the number of bedrooms (if the parcel currently has a residential unit on it), the building square-footage (if the parcel is currently developed), and the total acreage for the parcel. With this data the amount of sanitary wastewater generated under theoretical build out was estimated. The rationale for the estimates for each type of parcel is discussed below.

2.12.1 Theoretical 2036 Growth in Residential Zoned Areas

As previously discussed in this Section, the existing residential properties in Lunenburg average 57 gallons of water usage per bedroom per day. This rate was also applied to the existing residential properties in the Needs Areas of the Town, to determine the amount of wastewater currently generated in each Needs Area.

To determine potential flows, it was assumed for each parcel in the Needs Area, the maximum amount of homes allowed under existing acreage requirements would be built on the parcel, including parcels with existing residential units. For a single property in a Needs Area with specific zoning, the existing parcel acreage was divided by the appropriate minimum lot size (Table 2-4) for the zoning category and multiplied by the utilization factor of 84 percent. If the

property has an existing residential unit, the potential number of parcels was decreased by one (there were no adjustments made to undeveloped properties). If the resulting number of potential parcels was greater than two, it was rounded to the nearest whole number and counted toward the total potential parcels for that zone in that Needs Area. This was repeated for each residential zoned area in all of the Needs Areas. The properties were assumed to have an average size of 3.5 bedrooms per parcel. This is slightly higher than the existing average household of just over 3 bedrooms per parcel, to reflect development trends towards larger homes. Therefore, each parcel was assigned 3.5 bedrooms per parcel. At 57 gpd/bedroom, the unit flow assigned is 200 gpd per parcel. Finally, the potential flows were calculated by adding the amount of wastewater currently generated in each Needs Area to the amount of wastewater generated at "theoretical build out" in each Needs Area.

Parcels which were identified as State or Town-owned conservation land were omitted from the analysis. The wastewater flow generated at these parcels was assumed to be zero for each scenario. Additionally, parcels with large percentages of wetlands (as identified by MassGIS) were scaled back to account for the fact that wetlands would not be developable.

2.12.2 Theoretical 2036 Growth in Non-Residential Zoned Areas

Although almost 97 percent of the parcels in unsewered areas are currently zoned as residential, there remain some parcels of land, which are zoned for commercial, industrial, or office park use, which are not served by the existing wastewater collection system. For these parcels, the amount of sanitary wastewater currently generated was estimated as follows: The building area of each of the parcels and the wastewater generation rates (Table 2-1) were used to determine the total flow for each parcel in each Needs Area. The potential flow for each parcel was estimated as follows: for both developed and undeveloped parcels, the area of the parcel was multiplied by a "utilization factor" of 84 percent to account for odd-shaped parcels and requirements for additional roadways within the parcel. This area was then multiplied by a "usable building" factor of 60 percent to account for the portion of the parcel which would be usable building space. Finally, the appropriate wastewater generation rate was assigned to the area based on the zoning of the parcel. Finally, the potential flows were calculated by adding the amount of wastewater currently generated in each Needs Area to the amount of wastewater generated at "theoretical build out" in each Needs Area.

2.12.3 Study Period (2036) Flows

The sanitary flows listed in Table 2-5 were used for planning purposes as the study further evaluates the needs and potential solutions for wastewater management in the last phase of the CWMP. These sanitary flows are “average daily flows”, or the amount of flow expected to be generated, on average, over a period of a month or longer.

TABLE 2-5
PROJECTED YEAR 2036 FLOWS

AREA	EXISTING FLOW, GPD[1]	2036 FLOW FROM EXISTING, GPD[2]	NEEDS AREA FLOW, GPD	NEW & PROPOSED DEVELOPMENTS, GPD	I/I, GPD	BUILD-OUT FLOW, 2036	TOTAL FLOW 2036, GPD
Leominster							
Existing to Leominster	170,000	187,000	-	53,000	- [1]	91,800	332,000
Needs Area 4			21,800	350	5,600	25,500	54,000
Needs Area 6			37,300	-	400	43,200	81,000
Needs Area 9			34,400	3,100	4,400	41,200	84,000
Needs Area 10			13,100	25,000	3,600	29,800	72,000
Needs Area 12			15,900	850	2,700	18,600	39,000
Needs Area 15			14,300	-	2,600	15,700	33,000
GMD 25			11,400	-	4,100	111,200	127,000
Subtotal	170,000	187,000	148,000	83,000	23,400	377,000	822,000
Fitchburg							
Existing to Fitchburg	44,200	48,600	-	-	- [1]	67,500	116,000
Subtotal	44,200	48,600	-	-	- [1]	67,500	116,000
TOTAL	214,200	235,600	148,000	83,000	23,400	444,500	938,000

[1] Taken from existing flow meter data, which includes flow from I/I.
[2] 10% increase due to population growth.

It is important to note that because of the re-routing from Fitchburg to Leominster in Area 4, there are existing sewered parcels that will now send flow to Leominster. The flows from these parcels will be a reduction in 23,600 gpd from Fitchburg that will discharge to Leominster instead in 2036. This number is derived from Commercial lots estimated at 18,000 gpd and 5,600 gpd from Residential areas. This means that 92,400 gpd are estimated to flow to Fitchburg and 845,600 gpd are estimated to flow to Leominster in 2036.

Section 3

WRIGHT-PIERCE
Engineering a Better Environment

SECTION 3

WASTEWATER MANAGEMENT CONSIDERATIONS

The wastewater management plan was revised and updated with each phase of the CWMP process. The Phase III report included a preliminary recommended plan. The Phase III preliminary recommended plan was utilized to develop the final recommended plan included in the original Phase IV report. The recommended plan also was updated in this 2016 Phase IV report. The final recommended plan was modified based on feedback from many entities, but primarily the Sewer Commission, Board of Health, and Planning Board.

Key revisions to the recommended plan in 2010 included:

- The Needs Areas to match the proposed Sewer Service Area Zones;
- A revised IMA agreement with the city of Fitchburg and city of Leominster;
- The collection systems recommendations to remove the growth management provisions;
- Removing Hickory Hills Lake and Lake Shirley from the implementation plan and recommending these Areas further study.

Key revisions to the recommended plan from the 2016 update included:

- Re-routing Needs Area 4 to discharge flow to Leominster;
- Re-routing Needs Area 10F to discharge flow to Leominster; and
- Reflect work done over the last year in Needs Areas 6 and 9.

3.1 REFINED NEEDS AREAS

The Needs Areas were refined and are included in Section 2.0. The revisions are based on information provided by the Lunenburg Sewer Commission including the new Sewer Service Zones. The recommended plan includes an implementation plan for the revised Needs Areas projects.

3.2 AMENDMENTS TO EXISTING INTERMUNICIPAL AGREEMENTS

Phase III included a recommendation to revise the existing Intermunicipal Agreements (IMA) with Fitchburg and Leominster. The Town previously was in communications with the city of Leominster regarding additional wastewater capacity. The Town has decided to revise the proposed collection system layout and routing, which will increase flows to Leominster (not implement a limited infrastructure collection system). Recommendations for the revised IMA to Leominster are included in the recommended plan. The Town has entered into a new IMA with Fitchburg, effective on December 15, 2013, which allows 151,000 gpd to be discharged along Route 2A and 10,000 gpd along Summer Street. The new IMA was negotiated based on recommendations for flow capacity in the original Phase IV CWMP.

3.3 COLLECTION SYSTEM RECOMMENDATIONS

The collection system recommendations were assessed based on technical, economic, operation and maintenance factors. The collection system alternatives included in the recommended plan are conventional sewers (including gravity mains, force mains, and pump stations) and low pressure sewers (with individual grinder pump stations).

Conventional gravity collection systems are prevalent throughout New England due to their ease of long-term maintenance and simplicity. They require the lowest energy usage of the collection system alternatives and can handle power outages with mandatory backup power generators installed at each pump station. These systems are typically sized with excess working capacity to allow for future connections.

Low pressure sewer systems have the potential for lower capital cost; and are easier to construct due to shallower and narrower excavations. This also reduces the environmental impact and duration of construction. These systems are better suited for challenging terrain, crossings of streams, roads, railroads, and narrow streets. Low pressure sewers can also be used to manage growth. Sprawl or expansive growth outside of identified Needs Areas as well as limited "infill building" can be reduced with low pressure sewers. There will be some potential for future connections, but these systems are generally physically limiting in capacity (due to the smaller piping size).

3.3.1 Collection System Considerations

The Phase III preliminary plan included recommendations to maximize the amount of low pressure sewers utilized for the Needs Areas. This preliminary recommendation limited the physical capacity of the system. The recommendation assumed beneficial impact to limit unwanted secondary growth, and would minimize impacts to the IMAs with Leominster and Fitchburg. The Town decided that maximizing low pressure sewers to limit growth was too "limiting" and determined to utilize conventional and low pressure sewers only as dictated by best engineering judgment based on the specifics of each Needs Area.

3.4 RECOMMENDATIONS FOR AREA 14 - HICKORY HILLS LAKE AND AREA 19 - LAKE SHIRLEY

The Phase III report was filed with MEPA (Notice-of-Project Change) and the Town received a certificate in May 2008, which requires the completion of a Draft Environmental Impact Report (DEIR). The requirement for the DEIR included several tasks associated with potential impacts to the Lakes regions. Accordingly, the Town decided to create Priority and Secondary Needs Areas. The Priority Needs Areas include Area 4 - Lower Massachusetts Avenue, Area 6 - Baker Station, Area 9 - Lake Whalom, Area 10 - Massachusetts Avenue/Beal Street, Area 12 - Highland Street, Area 15 - Rolling Acres Road, and GMD 25 - Pioneer Drive. These areas will be included in the final recommendations and the implementation plan. The Secondary Needs Areas include the areas for Lake Shirley and Hickory Hills Lake. The Secondary Areas are not included in the implementation plan and are recommended for "further study".

The alternatives detailed in the Phase III report for Area 14 - Hickory Hills Lake and Area 19 - Lake Shirley should be further investigated as part of continued wastewater management planning for these areas. Maintaining the local water balance in both lakes areas is an important factor in "future study".

These areas were identified through the needs analysis as areas, which are not well suited by the current Title 5 regulations for on-site disposal. On-site Title 5 wastewater disposal systems are the existing prevalent method of management for residential properties in these areas. On-site wastewater disposal systems collect, treat, and dispose of wastewater typically from an individual dwelling into the ground within the boundaries of the property. There are two main categories of Title 5 on-site systems: Conventional (Traditional); and Innovative and Alternative (I/A). The two lakes areas may require off-site or a combination of enhanced on-site and off-site wastewater treatment and disposal.

These areas were identified for several reasons including small lots, poor soils, and high groundwater. These areas have also had issues with replacement of on-site systems (for the previously stated reasons). The current Title 5 regulations have specific requirements for a conventional onsite wastewater disposal system and also allows for Innovative/Alternative systems. The current Title 5 regulations have specific requirements for site conditions, soils, and setbacks which these areas may not be able to provide, hence, an alternative wastewater system may be recommended. As such, several wastewater treatment, collection and disposal alternatives were reviewed for these areas.

The alternatives for "further study" for these two areas are recommended in addition to the current Title 5 regulations. The alternatives include Conventional Title 5 systems with a Septage Management Plan, Innovative/Alternative Systems, Decentralized Systems and Regional Treatment. These alternatives are further described in the following sections.

3.4.1 On-Site System Alternatives

3.4.1.1 Conventional Title 5 systems with a Restrictive Septage Management Plan

The wastewater management alternative for conventional on-site systems includes a septage management program (with restrictions), in addition to Title 5, to be managed by the Town (typically the Board of Health). A restrictive septage management plan, including additional siting requirements, required maintenance and public education could allow for sustainability for areas not well suited for onsite systems and also provide support for areas proposed for future sewer system extensions. The recommendations for a septage management plan include requiring existing systems to be pumped and inspected at regular intervals, and perhaps upgraded with I/A technologies. The recommendations also include provisions for funding mechanisms, such as requiring septage haulers to have a permit and pay a fee to an escrow account for each pump out. This allows the Board of Health to support the septage management plan, including development of a database of information on the systems (and pumping), verifying inspections, and associated testing.

3.4.1.2 Innovative/Alternative (I/A) Systems

The wastewater management alternative for I/A systems includes recommendations for bylaw changes, including additional siting requirements in the BOH regulations. The bylaw changes would provide more situations where I/A system installations would be necessary. In addition, the recommendations include bylaw changes to require I/A systems in environmentally sensitive areas. This alternative would provide a mechanism for requiring additional nutrient treatment in areas proximate to surface waters.

3.4.2 Off-Site System Alternatives

An off-site wastewater system collects, treats, and discharges wastewater from an individual property to a location beyond the boundaries of the property. Off-site solutions include decentralized and regional wastewater management alternatives. Lunenburg currently has two private decentralized facilities in Town (Village at Flat Hills and Woodland Village) and also utilizes a regional system for off-site treatment and disposal at the existing Leominster and Fitchburg treatment facilities.

3.4.2.1 Decentralized Systems

The decentralized system alternatives include a local collection system, small package type treatment facility and effluent disposal system. Treatment facilities that treat flows less than 10,000 gpd are designed, permitted and constructed under Title 5 regulations. Facilities that treat flows over 10,000 gpd require a DEP Groundwater Discharge Permit (GWDP).

The effluent disposal alternatives must consider potential sites proximate to Needs Areas. For each effluent disposal alternative, sites are preliminarily selected for the construction of a decentralized wastewater treatment facility to determine cost estimates and other impacts. The effluent disposal alternatives include subsurface disposal.

3.4.2.2 Regional Alternatives

The wastewater management alternative for regional treatment includes treatment and effluent disposal at the regional treatment facilities in Shirley/Devens and Leominster.

<u>Shirley/Devens</u>

This regional alternative includes ultimate wastewater disposal at the existing Devens WWTF via the existing Shirley wastewater collection system. This alternative would include successfully implementing Intermunicipal Agreements (IMAs) with both the town of Shirley and Devens (currently managed by MassDevelopment). Discussions with Shirley and Devens to date indicate that this is potentially a politically viable alternative. The intermunicipal agreements would need to include the infrastructure connection to the system within Shirley and any necessary upgrades to existing infrastructure (including sewer, force mains and pump stations). The viable alternative for regional treatment at the Devens WWTF includes Needs Area 19.

Leominster

The regional alternative to Leominster includes treatment at the existing Leominster WWTF. The town of Lunenburg and the city of Leominster have an established IMA for the treatment and effluent disposal of 500,000 gpd. The potential flows from Area 14 and Area 19 could be included in the revised IMA with Leominster.

3.4.3 Treatment Considerations for Area 14 - Hickory Hills Lake and Area 19 - Lake Shirley

As part of the review of the Phase III preliminary recommended plan, the Sewer Commission, Board of Health and Planning Board commented on the wastewater management alternatives for these areas. The comments included suggested revisions to the assumptions for these alternatives. The proposed changes to the preliminary recommendation included:

- Comments from the Board of Health, which do not support required septage tank pumping at this time.
- Comments from the Board of Health and Sewer Commission, which do not support bylaw changes to BOH regulations to make siting requirements under Title 5 more stringent.
- Comments from the Board of Health and Sewer Commission, which do not support requiring I/A systems in environmentally sensitive areas.
- Comments from the Sewer Commission, which do not support the installation of low pressure sewer mains solely to reduce potential secondary growth impacts (low pressure sewers will still be recommended for practical engineering purposes, such as low lying areas, varying elevations, and high groundwater).

For the reasons noted above, the Phase III preliminary recommended plan included a recommendation for decentralized treatment because the Town currently does not plan to support requirements in addition to Title 5. The Phase III plan states that the potential impacts from growth and development should be managed through a defined Sewer Service Area (implemented by the Town in May 2009) and Town development guidelines, such as Zoning regulations, Sewer Use regulations, Planning Board regulations and stormwater management plans.

Section 4

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Engineering a Better Environment

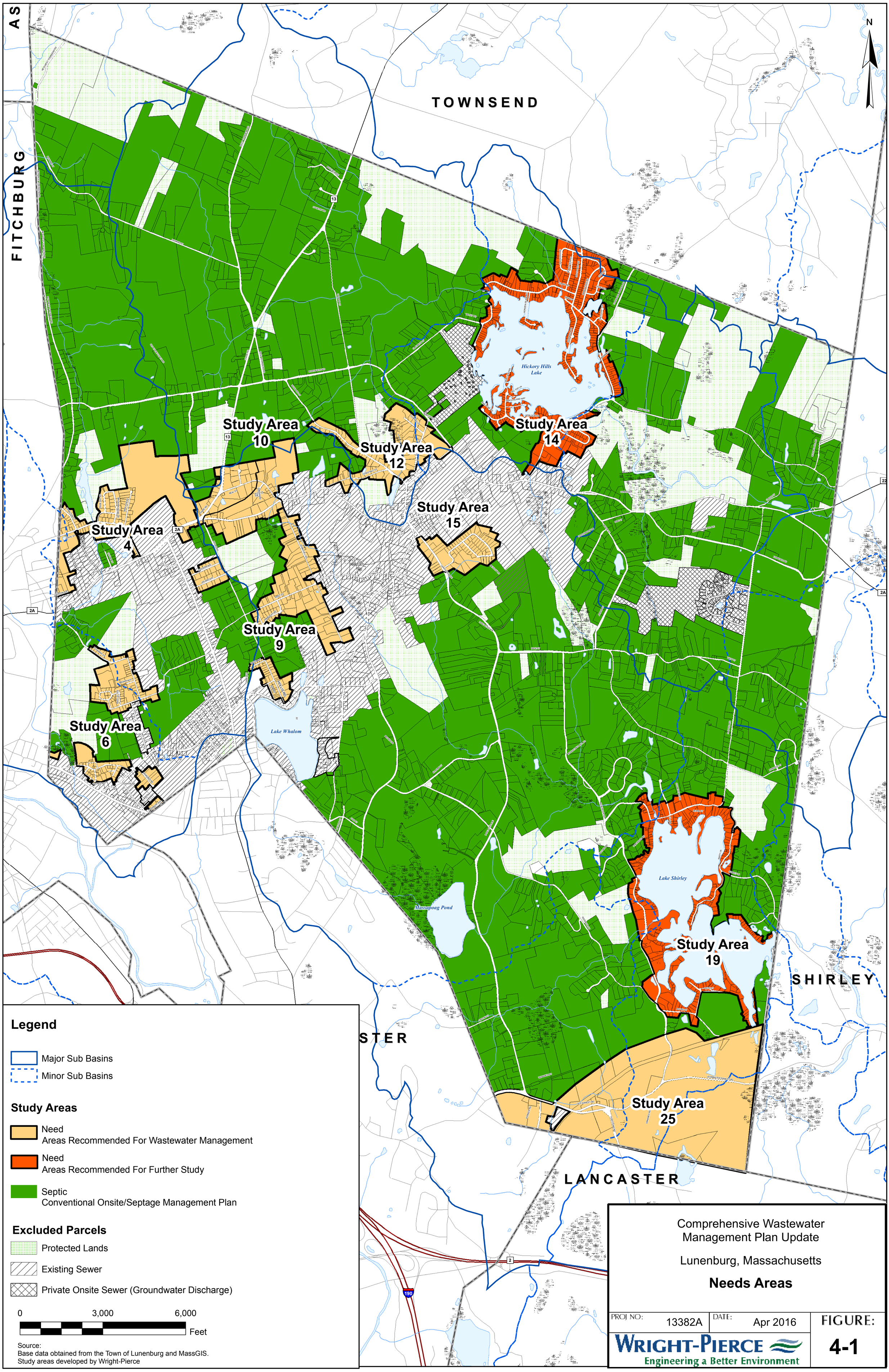
SECTION 4
RECOMMENDED WASTEWATER MANAGEMENT PLAN

The recommended wastewater management plan includes a review of potential environmental impacts, preliminary design criteria, cost estimates and financing analysis, and an implementation schedule. The recommended wastewater management plan was developed by evaluating potential environmental impacts and other factors, then "calibrating" such with an engineering analysis. Several factors were considered and evaluated to provide the most appropriate wastewater management plan in terms of public health, water supply protection, protection of surface waters, and managed growth and community character. It is important to note that economic factors are important criteria, but that they are only part of the process for recommending a wastewater management plan.

The wastewater management plan includes a combination of recommended infrastructure systems and wastewater management techniques. Mitigation measures are included to limit potential impacts from the implementation of the recommended plan. The updated final plan includes specific recommendations for wastewater collection, treatment and disposal for the town of Lunenburg. The general recommendations for each Needs Area (Sewer Service Zone) are included in Figure 4-1.

4.1 RECOMMENDED WASTEWATER MANAGEMENT TECHNIQUES

There are several management techniques included in the recommended plan. Management techniques provide for system limits, rules and regulations, water conservation, recharge, public education and wastewater flow reduction. The techniques are included as a necessary management "layer" to existing and future wastewater collection, treatment and disposal (these "techniques" do not provide additional or different types of collection, treatment or effluent disposal). These recommendations allow for the optimization of Lunenburg's current water system, municipal wastewater collection system and on-site septic systems.


TOWNSEND
FITCHBURG
LANCASTER
SHIRLEY
N
Hickory Hills Lake
Lake Whalom
Massapoag Pond
Lake Shirley
Study Area 4
Study Area 6
Study Area 9
Study Area 10
Study Area 12
Study Area 14
Study Area 15
Study Area 19
Study Area 25
Legend
Major Sub Basins
Minor Sub Basins
Study Areas
Need
Areas Recommended For Wastewater Management
Need
Areas Recommended For Further Study
Septic
Conventional Onsite/Septage Management Plan
Excluded Parcels
Protected Lands
Existing Sewer
Private Onsite Sewer (Groundwater Discharge)
0
3,000
6,000
Feet
Source:
Base data obtained from the Town of Lunenburg and MassGIS.
Study areas developed by Wright-Pierce
Comprehensive Wastewater Management Plan Update
Lunenburg, Massachusetts
Needs Areas
PROJ NO: 13382A
DATE: Apr 2016
FIGURE: 4-1
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Engineering a Better Environment

A primary goal of the CWMP is to identify wastewater management needs in areas that are not well suited for on-site systems. Potential secondary impacts from the recommended plan, such as growth management, are identified and management techniques are included in order to mitigate potential impacts. It is recommended that the Town implement specific management techniques prior to implementing the recommended plan. Potential secondary impacts should not limit the wastewater management for a given area. For example, secondary impacts associated with growth should be managed through local zoning, special legislation, sewer service area boundary development (already implemented by the Town) and Town bylaws, not by Title 5 regulations.

In order to manage and operate the proposed wastewater collection systems, the Town will need to implement institutional and other specific management procedures. The recommendations include a Sewer Service Area Management Plan, a Septage Management Plan (SMP), water conservation, stormwater management and nutrient management. These systems and procedures are described in the following sections.

4.1.1 Sewer Service Area Management Plan

A Sewer Service Area Management Plan with a defined Sewer Service Area overlay is recommended. This plan will mitigate potential impacts from future projects and mitigate potential impacts within previously sewered areas.

The Town has already adopted and implemented a Sewer Service Area Management Plan (May 2009) for the existing sewered areas and recommended the Needs Areas (Sewer Service Zones). This plan legally identifies the sewer system boundaries (Sewer Service Area Zones) and sets sewer system policies (via new sewer bylaw). This plan and new bylaw allow the Town to distinguish which properties have the right to connect to the municipal sewer system (final selection of properties that connect to the municipal system will be determined during the preliminary design phases). The updated sewer service area map was approved at the May 2014 annual town meeting. The approval is attached in Appendix F. The primary purpose of this plan is to preserve the existing wastewater infrastructure capacity for the residents and businesses located within the existing collection system area and for residents and businesses located within identified Need Areas (Sewer Service Zones).

The plan addresses issues such as:

- The number of service connections allotted to large parcels of undeveloped land that have frontage adjacent to a sewer line in a Sewer Service Zone or existing sewered area;
- Sewer service to back parcels which do not have frontage on a street that has a sewer;
- Sewer system extension outside of the Needs Areas (Sewer Service Zones).

If interested in the future, the Town could amend its new sewer bylaw by adding limitations to connections within a Sewer Service Zone. This would require special legislative changes to MGL Chapter 83. This is known as a "restrictive" Sewer Service Area Plan.

Communities which have implemented "restrictive" Sewer Service Area Plans include Lancaster, Pepperell and Essex, Massachusetts. These communities have included restrictions within their Districts, such as only allowing:

- Parcels in existence according to the registry of deeds to connect to the system;
- Vacant parcels to have one sewer unit (a three-bedroom house);
- Homeowners of one and two-bedroom homes to expand to three bedrooms, but require homeowners wishing to expand to four or more bedrooms to wait through a five-year moratorium and then apply for a capacity allocation;
- Connections for the existing number of bedrooms and assessing a betterment based on the existing number of bedrooms; and
- Approval for additional connections possible after 5 years, if approved by 2/3 Town Meeting Vote, or at the discretion of the Sewer Authority.

These "restrictions" allow for the sewer design capacity and infrastructure to be calculated based on the existing parcels.

The Town's plan allows for future development to comply with Title 5 and creates managed growth to be "growth neutral". The plan does not promote or hinder growth rather, it allows for growth to be maintained at the existing rate (i.e., implementation of sewer extensions to the Sewer Service Zones does not increase growth beyond what would otherwise be using onsite systems), thus being "growth neutral".

4.1.2 Septage Management Plan

A Septage Management Plan (SMP) with a defined septage management overlay is recommended. A SMP legally identifies the septage management boundaries and allows the Town to set on-site system management policies. A Septage Management Plan will include the areas of Town proposed for long-term on-site wastewater disposal as well as those areas proposed for future infrastructure until such time as the recommended plan is implemented in such areas. The successful long-term sustainability of on-site wastewater disposal systems is dependent on proper operation and maintenance in order to prevent adverse health and environmental impacts. The Sewer Commission must work closely with the Lunenburg Board of Health (BOH) and the Environmental Division of the Nashoba Associated Boards of Health in order to coordinate the development of a SMP. A detail of steps included in implementing a SMP and a description of several municipalities, which have implemented SMP is included in Appendix E.

4.2 CONSERVATION INITIATIVES

Conservation initiatives for the Town fall under two general categories; drinking water conservation; and stormwater management/low impact development. It is recommended that the Town, through the Water District, continue with its overall water conservation program in order to reduce the amount of water consumed and discharged into both the existing on-site wastewater

collection and disposal systems and proposed wastewater collection systems. The goals set by the Town are to promote the efficient use of water through education.

4.2.1 Drinking Water Conservation (Flow and Waste Reduction)

It is recommended that the Town, through the Water District, continue with its overall water conservation program in order to reduce the amount of water consumed and discharged into both the existing on-site wastewater disposal systems and proposed off-site wastewater systems. The goals set by the Town are to promote the efficient use of water through education.

The Town is limited by its current Inter-municipal Agreements (IMAs) regarding how much wastewater it can send to the Fitchburg and Leominster wastewater treatment facilities. The implementation of water conservation devices and programs will result in lower operational costs to each user, and also provide reserve capacity at the receiving treatment facilities should future wastewater needs be identified.

The drinking water conservation program in Luneburg is implemented by the Water District. As stated in the Phase I report, the District has taken several steps to conserve water by initiating a meter replacement program, conducting leak detection surveys and an increasing block rate billing structure. By replacing old water meters, the District will be able to account for a more accurate amount of water used by consumers. Leaks in the water mains are inevitable, but by determining where they occur, the District can ensure that water loss is minimized. Utilizing an increasing block rate billing structure encourages the consumer to minimize water use by increasing the unit price for water as the volume consumed increases. Prices are set for each block of water use.

The Water Supply Assessment Study, prepared for the Lunenburg Water District (District) dated January 2007 reiterates the following suggestions by the MA DEP that the District emphasize the following water conservation techniques:

- Public education;
- Leak detection and water audits;
- Metering;
- Price schedule; and
- Municipal water use.

It is recommended that the Lunenburg Sewer Commission, Department of Public Works, and other applicable entities work in conjunction with the Water District work to promote a water conservation and public education program in order to achieve maximum benefits of the conservation program. The Town should continue to work with the Water District to locate a water withdrawal well outside of the Catacunamaug subbasin. Water supplies should be distributed evenly and throughout the separate subbasins in order to allow the Water District to vary the "stresses" on adjacent aquifers.

4.2.2 Stormwater Management/Low Impact Development

The recommendations for stormwater management include a review of low impact development requirements and reduce the amount of disturbance that triggers required stormwater pollution prevention plan. Stormwater is often a significant component of the water budget and can influence the amount of water transported away from a subbasin. As recommended in the DEP Water Policy, communities, such as Lunenburg, should reduce the amount of impervious surface in new development and use Low Impact Development (LID) techniques to control nutrient impacts, stormwater runoff and increase recharge.

4.2.2.1 Stormwater Management Plan

The Town is currently working to maintain compliance with the 5 year stormwater program outlined by the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination Program (NPDES) Phase II Stormwater Program for Municipal Separate Storm Sewer Systems (MS4).

In July 2003, Lunenburg filed a Stormwater Management Plan (SWMP) with the MA DEP and EPA. Subsequently, the Town filed annual reports to update the plan as required. The last of the required annual reports was scheduled to be filed by May 1, 2008.

This is a program for municipalities that requires:

- Public Education;
- Public Participation;
- Illicit Discharge Detection - (Including a Town regulation/bylaw that prohibits non-stormwater discharges);
- Construction Controls - (Including a bylaw to ensure contractors follow stormwater statutes outlined by the Town. Several Towns outline explicit Low Impact Development (LID) controls in this bylaw);
- Post Construction Controls - (Including a bylaw to ensure that the construction controls are maintained); and
- Good Housekeeping.

The Town was scheduled to be in compliance with the EPA NPDES Stormwater General Permit by May 1, 2008. The Town has already completed several of the required best management practices (BMPs).

In addition, stormwater management should review the amount of water that is used for maintaining landscapes and lawns and ensure that it is used in a manner that minimizes such use through the implementation of sound water conservation and water efficiency practices. The town of Lunenburg is working with the Lake Shirley Improvement Corporation (LSIC) through the MA DEP Section 319 NPS Pollution Grant Program to address run off, fertilizer application, LID techniques and watershed education in the area surrounding Lake Shirley. Lake Shirley has had elevated levels of phosphorus and stormwater/runoff management will help to limit phosphorus discharge to Lake Shirley. For example, the LSIC provides the opportunity for

residents to purchase zero/low phosphorous lawn fertilizer. Improvements to stormwater/LID practices will have the greatest impact on the quality of Lake Shirley in the shortest duration of time.

The Town should continue to work on stormwater and LID practices and review expanding the techniques identified for the Lake Shirley region to the rest of the Town.

4.2.3 Stormwater Bylaw

The Town voted to incorporate two new bylaws at the December 5, 2007 Special Town Meeting to comply with the EPA Phase II Municipal Separate Storm Sewer System (MS4) National Pollution and Discharge and Elimination System (NPDES). The approved bylaws are a part of the mandated five year program. There are two bylaws which address new construction and re-construction and existing illicit discharges into the MS4.

The construction and post-construction bylaw addresses stormwater runoff from any activity that disturbs an acre or more (such as land clearing, development, paving or other change in surface material, construction of a new drainage system or any other activity altering the surface area). The bylaw also includes exemptions (such as normal maintenance of town owned roads, agricultural or forestry land, repair of septic systems, existing landscaping and lawn area, construction of fencing and activities that have received an Order of Conditions from the Conservation Commission). The bylaw outlines permitting procedures, including an application for a Stormwater Management Permit, Stormwater Management Plan, Public Hearings, issuance of a permit by approval and inspections and monitoring, and issuance of Certificate of Compliance. The bylaw also includes the required enforcement procedures, such as requiring Cease and Desist orders from land disturbing activity; maintenance, installation or repair erosion control measures; ongoing monitoring and reporting to the Town; remediation of damage resulting from erosion or sedimentation, non-criminal and criminal penalties when necessary.

The illicit discharge bylaw prevents pollutants from entering the storm drain and prohibits illicit connections and unauthorized discharges to the storm drain system. The bylaw addresses existing and future illicit discharges (dumping or discharging of any pollutant or non-stormwater material), illicit connections (that is directly connected to the storm sewer system) and obstruction or interference (that is directly connected to the storm sewer system). The bylaw includes exempt activities (such as firefighting activities, water line flushing, springs, natural flow from riparian habitats and wetlands, landscape, irrigation or lawn watering, uncontaminated ground water, water from exterior foundation drains, and conditioning condensation or sump pumps and others). The bylaw includes permitting procedures (such as an application for a municipal storm drain connection). The bylaw defines the procedures for inspection and notification of spills and the required enforcement.

4.2.4 Low Impact Development (LID)

It is recommended that the Town consider including low impact development requirements and reduce the amount of disturbance that requires a stormwater pollution prevention plan. Currently, stormwater runoff is managed through a stormwater pollution prevention plan filed

with the Town for construction projects over one acre in area. There are several municipalities in Massachusetts that have reduced the amount of area that triggers the SWPPP process. The Town is concerned with runoff and impacts from stormwater and should review a broader range of construction projects. The stormwater bylaws should be reviewed to include LID standards and nutrient management.

4.3 RECOMMENDATIONS FOR WASTEWATER COLLECTION, TREATMENT AND DISPOSAL

The Town reviewed wastewater needs and numerous wastewater management alternatives as part of the CWMP process. The final recommended plan includes recommendations for wastewater collection, treatment, and disposal. The plan includes revising the existing IMA with Leominster. The following details these recommendations and the potential impacts due to economic, environmental and institutional factors.

4.3.1 Regional Solution to Leominster

4.3.1.1 Leominster

The town of Lunenburg and the city of Leominster have an established IMA for the treatment and effluent disposal of up to 500,000 gpd. Also, the infrastructure between Leominster and Lunenburg was designed based on a minimum 500,000 gpd of flow capacity. The wastewater management plan includes a regional wastewater collection system and discharge to Leominster. The Leominster regional wastewater solution is included in Figure 4-2. This regional solution to Leominster includes Area 4 – Lower Massachusetts Avenue, Area 6 - Baker Station, Area 9 - Lake Whalom, Area 10 - Massachusetts Avenue and Beal Street, Area 12 - Highland Street, Area 15 - Rolling Acres Road, and GMD Area 25 - Pioneer Drive.

4.3.1.2 Collection

The recommended regional wastewater system to Leominster is shown schematically and detailed in this section. Estimated lengths of sewer piping for each Needs Area (Sewer Service Zone) were subcategorized into low pressure pipe, gravity sewer pipe and force main piping. The number and location of pump stations required for conventional sewer systems are also shown for each Needs Area. These estimated quantities are shown in Table 4-1. These quantities will be reviewed and finalized during the preliminary design phase and will be based on actual number of existing developed parcels to be sewered, results of soil test borings and field survey results. The proposed sewer extension layouts for Areas 4, 6, 9, 10, 12, 15 and 25 are included in Figures 4-3 through 4-9, respectively.

N

Sewer Service Zone 4

Sewer Service Zone 10

Sewer Service Zone 12

Sewer Service Zone 15

Sewer Service Zone 9

Sewer Service Zone 6

Sewer Service Zone 25

LEOMINSTER

LANCASTER

Hickory Hills Lake

Lake Whalom

Massapoag Pond

Lake Shirley

NEW WEST TOWNSEND RD
OLD STAGE COACH RD
CHASE RD
WEST TOWNSEND RD
HOLMAN ST
NORTHFIELD RD
HIGHLAND ST
GILCHRIST ST
VALLEY RD
HORIZEN ISLAND RD
ISLAND RD
SOUTH RD
SANDY COVE RD
COVE RD
COVE TER
PARK ST
PENINSULA DR
CRESCENT TER
TOWNSEND HARBOR RD
UNNAMED RD
HEMLOCK TER
HILL TOP LN
BIRCH ISLAND WAY
PINE ACRE RD
HEMLOCK DR
WOODLAND DR
MULPUS RD
CUSHING LN
TURKEY HILL RD
CHESTNUT ST
BEAL ST
SKYLARK LN
PAGE HILL RD
CHARLTON ST
WHITE ST
LAWTON AVE
HOLLIS RD
EASTERN AVE
UPLAND AVE
SUNNYHILL RD
WEST ST
RANGELEY RD
CRESTAVE
CARR AVE
POND ST
KIMBALL ST
CROSS RD
PLEASANT ST
BROWN AVE
WEST ST
GRATTON
YOUNGS RD
RAMGREEN RD
SAW MEW AVE
PIEDMONT AVE
BROWN DR
KILBURN ST
LINCOLN ST
FISH ST
LANCASTER AVE
MEADOW LN
CANTERBURY DR
PINE ST
CROSS ST
ELMWOOD RD
ARBOR ST
PAGE ST
WATT ST
FLAT HILL RD
BURRAGE ST
HOUGHTONS MILL RD
RESERVOIR RD
STONEFENCE RD
PEARL ST
MATT'S
PINE RIDGE RD
AUTUMN RD
PARTY LN
SUNSET LN
GOODRICH ST
GIBSON ST
RUTH ST
ROUND ST
UNNAMED RD
LEOMINSTER SHIRLEY RD
COLD SHIRLEY RD
PIONEER RD
FORT POND RD
UNNAMED RD
VILLAGE AT FLAT HILL
WOODLANDS VILLAGE @ HICKORY HILLS LAKE
TWIN CITY PLAZA PUMP STA.
WEST ST PUMP STA.
MONUMENT ST. PUMP STA.
JAMES AVE. PUMP STA. #2
WASHBURN PUMP STA. #2
PUMP STA. #1
13
2A
2
12
190

Legend

- PS — Exisiting Pump Stations
- Existing Sewer Mains
- Existing Force Mains
- Proposed Manhole
- PS — Proposed Pump Station
- Proposed Force Main
- Proposed Gravity Main
- Proposed Low Pressure Main
- Existing Low Pressure Main
- Sewer Service Zones
- Parcels
- Subbasins
- Drainage Basins
- Town Boundaries
- Surface Water
- Stream

0 1,200 2,400 3,600 4,800 Feet

Note: Pump stations & force mains are approximate locations based on preliminary elevation estimates.
Source:
Study areas & proposed wastewater infrastructure digitzed by Wright-Pierce.
All other data obtained from the Town of Lunenburg and MassGIS EOEA.

Comprehensive Wastewater Management Plan Update

Lunenburg, Massachusetts

Regional Alternative to Leominster Sewer Service Zones 4, 6, 9, 10, 12, 15, & 25

PROJ NO:	DATE:	FIGURE:
13382A	Apr 2016	4-2

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Sewer Service Zone 4

N

TOWNSEND STREET
NEW WEST TOWNSEND ROAD
CHARLTON ST
CHARLTON STREET
WHITE STREET
WHITE ST
PEARL STREET
THORNDIKE STREET
LAWTON AVE
MONTROSE STREET
PAGE HILL RD
BROADMEADOW DRIVE
PEARL BROOK ROAD
MAPLE PARKWAY
CHASE ROAD
BEAL STREET
BEAL S
PS
2A
TILTON AVENUE
MASSACHUSETTS AVENUE
ANDREW TERRACE
FITCH VIEW AVENUE
HOLLIS RD
HOLLIS ROAD
EASTERN AVE
EASTERN AVENUE
UPLAND AVE
UPLAND AVENUE
Sewer S
Zone
EASANT STREET
WEST ACRES DRIVE
BROWN AVENUE
PRATT STREET
WEST STREET
BUTTONWOOD PLACE
ELECTRIC

Legend

- PS — Proposed Pump Station
- PS — Existing Pump Station
- Proposed Force Main
- Proposed Gravity Main
- Proposed Low Pressure Main
- Existing Low Pressure Main
- Existing Gravity Main
- Existing Force Main
- Revised Sewer Service Zone 4
- Subbasins
- Drainage Basins
- Town Boundaries
- Surface Water
- Wetland
- Stream
- Parcels

Note: Pump stations & force mains are approximate locations based on preliminary elevation estimates.
Source:
Study areas & proposed wastewater infrastructure digitzed by Wright-Pierce.
All other data obtained from the Town of Lunenburg and MassGIS EOEA.

0 300 600 900 1,200
Feet

Path: W:\GIS_Development\Projects\MA\Lunenburg\13382_CWMP\MXDs\Fig4-3_24x36.mxd

Comprehensive Wastewater Management Plan Update
Lunenburg, Massachusetts

Regional Alternative to Leominster Sewer Service Zone 4

PROJ NO: 13382A | DATE: Apr 2016

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FIGURE: 4-3

Sewer Service Zone 6

Sewer Service Zone 6

N

PS

PS

PS

To Fitchburg

To Leominster

JOHN FITCH HIGHWAY

PLEASANT STREET

WEST ACRES DRIVE

RENNIE STREET

PRATT STREET

WEST STREET

BUTTONWOOD PLACE

ELECTRIC AVENUE

JOHN STREET

DANA STREET

NATICK STREET

BURKE STREET

HAMLIN STREET

OTIS STREET

JOSLIN STREET

ELIZABETH STREET

WALLIS PARK

FLORENCE STREET

THE CLEARING

LEISURE AVENUE

WHALOM ROAD

EAST STREET

YOUNGS ROAD

POPLAR STREET

WEATHERBEE STREET

BAKER STREET

KINGMAN STREET

BOUTWELL STREET

RAMGREN ROAD

GRAHAM STREET

SUMMER STREET

PLEASANT VIEW AVENUE

PIEDMONT AVENUE

PIERCE AVENUE

STUART AVENUE

RAVEN STREET

LOURDES DRIVE

STUART COURT

KING AVENUE

F AND L RAILROAD LINE

WOODSOME AVENUE

SARGENT AVENUE

WESTMINSTER AVENUE

GREENWICH AVENUE

NORTH STREET

LAKE STREET

MORNINGSIDE STREET

CULLEN AVENUE

MCKINLEY STREET

AMY AVENUE

HOBSON STREET

SCHILEY STREET

STARR STREET

CRAWFORD STREET

BLUEBERRY LANE

COBBLER DRIVE

Legend

- Proposed Pump Station (PS)
- Existing Pump Station (PS)
- Proposed Force Main
- Proposed Gravity Main
- Proposed Low Pressure Main
- Existing Low Pressure Main
- Existing Gravity Main
- Existing Force Main
- Sewer Service Zone 6
- Subbasins
- Drainage Basins
- Surface Water
- Wetland
- Stream
- Parcels

Note: Pump stations & force mains are approximate locations based on preliminary elevation estimates.
Source:
Study areas & proposed wastewater infrastructure digitzed by Wright-Pierce.
All other data obtained from the Town of Lunenburg and MassGIS EOEA.

0 300 600 900 1,200 Feet

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Comprehensive Wastewater Management Plan Update

Lunenburg, Massachusetts

Regional Alternative to Leominster Sewer Service Zone 6

PROJ NO: 13382A | DATE: Apr 2016

WRIGHT-PIERCE
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FIGURE: 4-4

Sewer Service Zone 9

N

MASSACHUSETTS AVENUE
SUNNYHILL ROAD
PS
TYLER DRIVE
EASTERN AVENUE
UPLAND AVENUE
WEST STREET
REDWOOD ROAD
CLIFTON ROAD
RANGELEY ROAD
HOLLIS ROAD
FAIRVIEW ROAD
LEOMINSTER ROAD
CREST AVENUE
ELM STREET
ELECTRIC AVENUE
CARR AVENUE
KIMBALL STREET
PROSPECT STREET
LAUREL LANE
CROSS ROAD
PINE GROVE ROAD
BROWN DRIVE
SAVAGE DRIVE
LAKEVIEW AVENUE
LAKESIDE AVENUE
WILDERWOOD AVENUE
MAIN STREET
WILDER ROAD
CROCKER AVENUE
VALLEYVIEW ROAD
NORMON ROAD
WILDER LANE

Legend

- Proposed Pump Station
- Existing Pump Station
- Proposed Force Main
- Proposed Gravity Main
- Proposed Low Pressure Main
- Existing Low Pressure Main
- Existing Gravity Main
- Existing Force Main
- Sewer Service Zone 9
- Subbasins
- Drainage Basins
- Town Boundaries
- Surface Water
- Wetland
- Stream
- Parcels

Note: Pump stations & force mains are approximate locations based on preliminary elevation estimates.
Source:
Study areas & proposed wastewater infrastructure digitzed by Wright-Pierce.
All other data obtained from the Town of Lunenburg and MassGIS EOEA.

0 300 600 900 1,200
Feet

Comprehensive Wastewater Management Plan Update

Lunenburg, Massachusetts

Regional Alternative to Leominster Sewer Service Zone 9

PROJ NO: 13382A | DATE: Apr 2016

WRIGHT-PIERCE
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FIGURE: 4-5

Sewer Service Zone 10

N

NORTHFIELD ROAD
CHASE ROAD
HIGHLAND STREET
HOLMAN STREET
WINDWARD TERRACE
BEAL STREET
SKYLARK LANE
CHESTNUT STREET
MASSACHUSETTS AVENUE
ELECTRIC AVENUE
SUNNYHILL ROAD
WEST STREET
REDWOOD ROAD
CLIFTON ROAD
RANGELEY ROAD
HOLLIS ROAD
CARR AVENUE
CREST AVENUE

PS

Legend

- Proposed Pump Station
- Existing Pump Station
- Proposed Force Main
- Proposed Gravity Main
- Proposed Low Pressure Main
- Existing Low Pressure Main
- Existing Gravity Main
- Existing Force Main
- Sewer Service Zone 10
- Subbasins
- Drainage Basins
- Town Boundaries
- Surface Water
- Wetland
- Stream
- Parcels

Note: Pump stations & force mains are approximate locations based on preliminary elevation estimates.
Source:
Study areas & proposed wastewater infrastructure digitzed by Wright-Pierce.
All other data obtained from the Town of Lunenburg and MassGIS EOEA.

0 300 600 900 1,200
Feet

Comprehensive Wastewater Management Plan Update
Lunenburg, Massachusetts

Regional Alternative to Leominster Sewer Service Zone 10

PROJ NO:	DATE:	FIGURE:
13382A	Apr 2016	4-6

WRIGHT-PIERCE
Engineering a Better Environment

Sewer Service Zone 12

N

GILCHRIST STREET

NORTHFIELD ROAD

HOLMAN STREET

CUSHING LANE

TURKEYHILL ROAD

HIGHLAND STREET

CHESTNUT STREET

OAK AVENUE

MASSACHUSETTS AVENUE

PS

MAIN STREET

HILLSIDE DRIVE

MEMORIAL DRIVE

WHITING STREET

TYLER DRIVE

SCHOOL STREET

LEOMINSTER ROAD

LANCASTER AVENUE

ROLLING ACRES ROAD

WEST STREET

STEVENS STREET

FRANCIS AVENUE

FAIRVIEW ROAD

Legend

- PS — Proposed Pump Station
- PS — Existing Pump Station
- Proposed Force Main
- Proposed Gravity Main
- Proposed Low Pressure Main
- Existing Gravity Main
- Existing Force Main
- Sewer Service Zone 12
- Subbasins
- Drainage Basins
- Town Boundaries
- Surface Water
- Wetland
- Stream
- Parcels

Note: Pump stations & force mains are approximate locations based on preliminary elevation estimates.
Source:
Study areas & proposed wastewater infrastructure digitzed by Wright-Pierce.
All other data obtained from the Town of Lunenburg and MassGIS EOEA.

0 300 600 900 1,200 Feet

Comprehensive Wastewater Management Plan Update

Lunenburg, Massachusetts

Regional Alternative to Leominster Sewer Service Zone 12

PROJ NO: 13382A | DATE: Apr 2016

WRIGHT-PIERCE
Engineering a Better Environment

FIGURE: 4-7

Sewer Service Zone 15

N

HIGHLAND STREET
CHESTNUT STREET
TURKEY HILL ROAD
OAK AVENUE
NORTHFIELD ROAD
TOWNSEND HARBOR ROAD
MAIN STREET
HILLSIDE DRIVE
PS
MEMORIAL DRIVE
MASSACHUSETTS AVENUE
WHITING STREET
TYLER DRIVE
SCHOOL STREET
LEOMINSTER ROAD
MEADOW LANE
ROLLING ACRES ROAD
WEST STREET
STEVENS STREET
FRANCIS AVENUE
FAIRVIEW ROAD
PAGE STREET
LANCASTER AVENUE

Legend

- PS — Proposed Pump Station
- PS — Existing Pump Station
- Proposed Force Main
- Proposed Gravity Main
- Proposed Low Pressure Main
- Existing Gravity Main
- Existing Force Main
- Sewer Service Zone 15
- Subbasins
- Drainage Basins
- Town Boundaries
- Surface Water
- Wetland
- Stream
- Parcels

Note: Pump stations & force mains are approximate locations based on preliminary elevation estimates.
Source:
Study areas & proposed wastewater infrastructure digitzed by Wright-Pierce.
All other data obtained from the Town of Lunenburg and MassGIS EOEA.

0 300 600 900 1,200
Feet

Comprehensive Wastewater Management Plan Update
Lunenburg, Massachusetts

Regional Alternative to Leominster Sewer Service Zone 15

PROJ NO: 13382A | DATE: Apr 2016

WRIGHT-PIERCE
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FIGURE: 4-8

Lake Shirley

N

GOODRICH STREET

RESERVOIR ROAD

BROOK TRAIL

JOHNSON STREET

RUTH STREET

PARMENTER STREET

ROUND STREET

GIBSON ST

LANCASTER AVENUE

PS

LEOMINSTER ROAD

PAGE AVENUE

PROSPECT STREET

BROWN AVENUE

LEOMINSTER SHIRLEY ROAD

OLD SHIRLEY ROAD

PIONEER ROAD

FORT POND ROAD

Sewer Service Zone 25

To Leominster

KALEVA ROAD

PERRY ROAD

LANCASTER

OLD LUNENBURG ROAD

OLD TURNPIKE ROAD

ROUTE 2

LUNENBURG ROAD

Legend

- PS — Proposed Pump Station
- PS — Existing Pump Station
- Proposed Force Main
- Proposed Gravity Main
- Proposed Low Pressure Main
- Existing Gravity Main
- Existing Force Main
- Sewer Service Zone 25
- Subbasins
- Drainage Basins
- Town Boundaries
- Surface Water
- Wetland
- Stream
- Parcels

Note: Pump stations & force mains are approximate locations based on preliminary elevation estimates.
Source:
Study areas & proposed wastewater infrastructure digitzed by Wright-Pierce.
All other data obtained from the Town of Lunenburg and MassGIS EOEA.

0 500 1,000 1,500 2,000 Feet

Comprehensive Wastewater Management Plan Update

Lunenburg, Massachusetts

Regional Alternative to Leominster Sewer Service Zone 25

PROJ NO: 13382A | DATE: Apr 2016

WRIGHT-PIERCE
Engineering a Better Environment

FIGURE: 4-9

TABLE 4-1
ESTIMATED QUANTITIES OF SEWER PIPING AND PUMP STATIONS
REGIONAL SOLUTION TO LEOMINSTER

NEEDS AREA	LOW PRESSURE PIPE (LF)	GRAVITY PIPE (LF)	FORCE MAIN PIPE (LF)	GRAVITY PIPE AND FORCE MAIN IN SAME TRENCH	PUMP STATIONS
Area 4A	-	11,460	-	800	1
Area 4B (rerouting)	-	-	4,100	-	3 (1 new, 2 upgrades)
Area 6	11,310	940	-	-	-
Area 9	3,160	6,800	380	2,900	1
Area 10A	550	6,600	100	1,390	1
Area 10B (rerouting)	-	-	-	-	3 (upgrades)
Area 12	2,820	5,700	250	300	1
Area 15	-	4,150	250	1,620	1
Area 25	-	4,200	400	6,100	3
Total	**17,840**	**39,850**	**5,480**	**13,110**	**14**

4.3.1.3 Treatment and Disposal

Wastewater treatment and effluent disposal will be managed by the city of Leominster at the Leominster WWTF. The estimated wastewater flow for existing infrastructure in 2036 is 322,000 gpd and the existing IMA with Leominster is currently capped at 500,000 gpd. This allows for an additional flow of 195,000 gpd. The proposed flows are included in Table 4-2. The estimated flow in 2036 is lower than the original Phase IV estimated flow in 2016 because the projected growth was reduced from 32% to 10%.

The flows from the existing infrastructure and the Needs Areas will exceed the existing IMA with Leominster. Hence, the town of Lunenburg will need to negotiate an amendment to the current IMA with the city of Leominster. The total estimated flows for 2036 are 822,000 gpd. We recommend that the Town request additional capacity for planning "flow capacity contingency" of approximate 20 percent. Therefore, the total IMA amended capacity recommended is 1.0 MGD.

TABLE 4-2
ESTIMATED AVERAGE DAILY FLOWS (2036)
REGIONAL SOLUTION TO LEOMINSTER

NEEDS AREA	ESTIMATED AVERAGE DAILY FLOW (GPD)
Area 4	54,000
Area 6	81,000
Area 9	84,000
Area 10	72,000
Area 12	39,000
Area 15	33,000
Area 25	127,000
Total Proposed Needs Area Flow	**490,000**
Flow Projection for Existing Infrastructure	**332,000**
Total Estimated Flow	**822,000**

The flows above in Table 4-2 contain new and proposed development, I/I, residential build-out, and non-residential build-out estimations.

4.3.2 Regional Alternative to Fitchburg

The updated wastewater management plan eliminates the new regional wastewater collection system and discharge to Fitchburg by re-routing the previous areas to the Leominster system. The areas included in the re-routing are Area 4 - Lower Mass Avenue and Area 10 - portion of Massachusetts Avenue/Beal Street.

4.3.2.1 Fitchburg

The town of Lunenburg and the city of Fitchburg currently have a new IMA for the treatment and effluent disposal of 151,000 gpd. New projections for the existing infrastructure that discharges flow to Fitchburg is 116,000 gpd. This is within the IMA limits, and re-negotiation should not be needed.

4.3.2.2 Treatment and Disposal

Treatment and effluent disposal will be managed by the city of Fitchburg at the Fitchburg East WWTF. The estimated wastewater flows for the existing infrastructure to Fitchburg in 2036 are 116,000 gpd. The estimated flows are included in Table 4-3.

TABLE 4-3
ESTIMATED AVERAGE DAILY FLOWS (2036)
REGIONAL SOLUTION TO FITCHBURG

FLOW PROJECTIONS	ESTIMATED AVERAGE DAILY FLOW (GPD)
Build-out of Existing Infrastructure Flow Projection	**67,500**
Flow Projection for Existing Infrastructure	**48,500**
Total Estimated Flow	**116,000**

4.4 ENVIRONMENTAL IMPACTS

The final recommended plan was reviewed for potential direct and indirect environmental impacts. The environmental analysis was based on factors from the DEP CWMP Guidelines and the town of Lunenburg. The factors reviewed are:

- Surface and Groundwater Quality;
- Drinking Water Quality;
- Ability to Retain Water in Watershed;
- Odors, Air Quality and Noise Impacts;
- Wetlands, Flood Plain, and Agricultural Impacts;
- Effects on Endangered and Protected Species;
- Solid/Hazardous Waste Generation including Septage or Residuals Disposal;
- Changes in Development and Land Use Patterns;
- Pollution Stemming from Changes in Land Use;
- Socioeconomic Pressure for Expansion;
- Damage to Sensitive Ecosystems;
- Open Space and Recreation;
- Growth and Development Consideration; and
- Aesthetic Compatibility of the System with the Surrounding Environment and Potential Neighbor Impacts.

Potential impacts to the described direct and indirect impacts were evaluated for the recommended wastewater management plan. The following describes potential direct and indirect impacts.

4.4.1 Direct Impacts

4.4.1.1 Surface and Groundwater Quality

The recommended plan will improve surface and groundwater quality. The recommended plan includes recommendations for additional treatment in areas determined not to be well suited for on-site wastewater disposal systems. The recommended plan includes treatment at monitored and permitted facilities with high quality wastewater effluent (the existing Leominster and Fitchburg WWTFs). This allows for consistent treatment in Needs Areas that are known to have variable site conditions for on-site wastewater disposal systems. Since several Needs Areas have close proximities to water resources, including surface water, groundwater and Zone IIs, wastewater disposal options that achieve the highest practicable levels of treatment should be favored to reduce the current levels of pollution and to curb the threat to natural resources.
The recommended plan will provide benefit to potential degradation or pollution of surface and/or groundwater resources in Lunenburg and bordering towns. The recommended plan will provide better effluent quality in areas determined to have need. Treatment levels, wastewater effluent quality, and nutrient removal will be improved with the removal and/or repair of inadequate and failing on-site wastewater disposal systems, and potential direct and indirect wastewater discharges to surface waters. Indirect discharges potentially contain pollutants and contaminants, which have the potential to cause health and environmental problems.

On-site systems require proper siting to treat wastewater to the regulated standards and on-site systems are only inspected and potentially replaced with an updated system when there is a real estate transfer at an individual property.

A regional treatment facility is manned and monitored daily and provides high level of wastewater treatment and is required to meet daily effluent standards. Wastewater treatment quality for effluent discharged from the Leominster and Fitchburg East WWTFs will be in compliance with the EPA NPDES discharge permits.

4.4.1.2 Drinking Water Quality and Supply

The recommended plan will improve water supplies and drinking water (public and private) quality. The recommended plan includes recommendations for additional treatment in areas determined not to be well suited for on-site wastewater disposal systems. The recommended plan includes treatment at monitored and permitted facilities with high quality wastewater effluent. This allows for consistent treatment in areas that are currently served by private wells and proximate to public drinking water supply Zone II areas of contribution. In addition, the recommended plan provides for groundwater recharge in subbasins that are currently and projected to be stressed subbasins of the Nashua River.

As discussed previously, groundwater resources are potentially threatened by the presence of failing on-site systems. Therefore, wastewater collection system construction would have a net beneficial long-term effect on groundwater quality. Septage management planning would also have a net positive effect on groundwater quality in the town, but the possibility of future system failures would not be eliminated.

Drinking water quality may be negatively affected by poorly sited on-site systems within the zones of contribution for the Town's drinking water wells or proximate to private drinking water wells. Consistent treatment is essential in these areas. On-site systems require proper siting to treat wastewater to the regulated standards. When on-site systems are not properly sited, effluent may not be treated to regulated standards and impact drinking water sources. In areas with private drinking water wells, nutrient loading from on-site disposal systems in densely populated areas may impact water quality even if the system is sited properly. Regional solutions allows for collected wastewater from individual properties within a Needs Area to be treated to a higher level. The regional treatment solutions include effluent discharge outside of Lunenburg public and private drinking water sources.

4.4.1.3 Ability to Retain Water in the Watershed

One of the goals of this CWMP is to recommend a plan that is consistent with DEP's watershed initiative by striving to maintain a water balance within the drainage basin. On-site systems provide for groundwater disposal within the same sub-basin; and the regional wastewater solutions will also discharge to the Nashua River Basin.

4.4.1.4 Odor, Air Quality and Noise Levels

There will be some temporary construction impacts associated with the recommended wastewater management plan. Limiting the hours and days of construction, and setting routes for truck traffic, will mitigate construction impacts. Employing noise and odor control measures in the final design of pumping stations will mitigate these potential impacts. Such measures may consist of locating noise causing equipment, such as standby power generators, inside a sound attenuation enclosure (for exterior installations) or inside of the pump station building. The air from any potential odor generating processes (pump station wetwells) can be directed through odor control equipment prior to discharge to the ambient atmosphere.

The major impacts to air quality and noise would be short-term due to construction and the operation of construction equipment. The extent of impact is dependent on the type of construction and the access roads used by the construction equipment. Sensitive air quality and noise receptor sites, such as residential areas, neighborhoods, schools and elderly housing areas will be identified. Limiting the hours and the days of construction will mitigate the construction noise impacts. Any temporary impacts will be mitigated in the final design.

4.4.1.5 Wetlands, Floodplains and Agricultural Impacts

There is potential for temporary impacts to the 100-foot wetland buffer zone when the recommended wastewater management plan is implemented. The impacts will be temporary and

will be mitigated by erosion, dewatering and sediment control measures during construction. The Conservation Commission and DEP will review all erosion control measures during the Notice-of-Intent (NOI) process. Requirements issued in the Order-of-Conditions (OOC) will be included as contractor requirements in the final plans and specifications.

The regional solutions will include construction along a significant distance. This construction would go through an increased amount of wetland buffer zone areas.

Potential impacts from on-site systems on wetlands should be positive with regard to groundwater discharge. Temporary wetland impacts associated with wastewater system construction will be considered during preliminary and final design. The final recommendations may include several water crossings. The crossings, as well as work in the wetland buffer zones, will be identified under a Notice-of-Intent to provide for DEP and local Conservation Commission input. Mitigation measures and wetland restoration techniques will be used in these areas to eliminate long term impacts. The recommended wastewater management plan has no known impacts to conservation or agricultural lands. The majority of the project is located within existing roadway right-of-ways.

There is potential for impacts to floodplains. The Federal Emergency Management Agency (FEMA) has prepared a Flood Insurance Rate Map (FIRM) and the flood plains are identified in the Phase I report. The areas within the flood plains are included in the Figures for the recommended plan. One hundred-year flood zones primarily occur in the low-lying areas adjacent to stream systems wetlands and waterbodies. Any potential impacts will be mitigated during the final design and permitting process for the recommended plan.

4.4.1.6 Effects on Endangered and Protected Species

A portion of the recommended wastewater management plan is within a priority habitat. Any potential impacts will be mitigated through communication with the Massachusetts Natural Heritage and Endangered Species program. Potential impacts will be temporary and the site will be restored to existing conditions.

On-site wastewater disposal systems may negatively impact the sensitive ecosystems of the areas determined to be of need. On-site systems do not treat wastewater to as high of a level of treatment as centralized or decentralized wastewater treatment facilities. Careful attention during the preliminary and final design stages and specific limits and methods for the contractor to follow during construction will lessen potential impacts to endangered and protect species. To minimize potential impacts, the use of existing roadways and previously disturbed right-of-ways for the installation of pipelines will be maximized.

4.4.1.7 Solid/Hazardous Waste Generation including Septage or Residuals Disposal

Wastewater treatment systems, whether they are on-site septic systems or centralized or decentralized wastewater treatment facilities, treat wastewater and, as a result, generate concentrated residuals in various forms. The concentrated residuals for on-site and decentralized facilities are pumped from the individual properties and transported to a regional treatment

facility. Regional treatment facilities (such as the Leominster and Fitchburg WWTFs) treat and dispose of the residuals at the treatment facility or transport the products to other treatment facilities. On-site systems under a Septage Management Plan or with an I/A system are typically pumped out every two years. Increased maintenance would be required at each individual property and potentially impact the homeowner and surrounding parcels. The recommended solution to extend sewers to regional facilities includes additional wastewater disposal outside of the town of Lunenburg. However, the estimated flows are proportionally small and will not significantly increase septage or residuals at the Leominster and Fitchburg treatment facilities, therefore, only having a relatively minor impact.

4.4.2 Changes in Development and Land Use Patterns

The recommended regional sewer extensions design and layout will be based on wastewater flow estimates from existing developed parcels and those parcels designated as buildable in the future according to the current state land use codes and local zoning. In order to prevent changes in development and land use patterns, the Town will need to continue to regulate potential changes and sewer connections through management techniques, such as the new Sewer Service Area Plan and bylaw, Sewer Connection Policies, Connection Moratoriums (if necessary) and other Town policies (such as Zoning Regulations). A goal of the recommended wastewater management plan is to manage wastewater issues with existing development and existing environmental concerns, while at the same time not serving to promote unmanaged sprawl or unchecked development (secondary growth).

4.4.3 Pollution Stemming from Changes in Land Use

Pollution may arise temporarily while constructing residential, commercial and industrial infrastructure and buildings. Potential changes in development and land use may also cause impact to Town resources and water resources. In order to prevent environmental impacts from changes in land use, it is recommended that the Town regulate potential changes through management techniques and Town policy.

4.4.4 Socioeconomic Pressures for Expansion

Connecting the Needs Areas to existing wastewater infrastructure via additional regional sewer extensions may affect socioeconomics. Construction of the recommended plan can cause pressure to extend the sewer system to areas that does may not have the "need" for sewer service. This can cause additional development and need for increased budget need for school systems, maintenance of roadways, fire protection and other Town services. While introduction of wastewater infrastructure in itself does not serve to promote or deny development, the Town should continue to control the extent to which the wastewater system is extended through management techniques. Accordingly, the Town has already implemented a Sewer Service Area Plan and bylaw, which is intended to manage the Town's municipal sewer system to address specific wastewater management needs for its residents and businesses. The Town should also implement and enforces other management techniques such as Sewer Connection Policies, Connection Moratoriums (if necessary), and Town policies (such as Zoning Regulations).

4.4.5 Damage to Sensitive Ecosystems

Construction of the recommended plan will infringe on wetland buffer zone and priority habitat areas. These impacts will be temporary and project sites will be restored to existing conditions. Any impacts will be mitigated by erosion control measures during construction. The Conservation Commission and DEP will review all erosion control measures during the Notice-of-Intent process. Any potential impacts to species habitat will be mitigated through the Massachusetts Natural Heritage and Endangered Species program.

4.4.6 Open Space, Recreation and Surface Water Impacts

There will be positive long-term impacts on the recreational areas around surface water bodies due to improved water quality. Conditions for swimming, boating, fishing and other water contact activities are expected to improve as part of implementing the recommended plan. Some minor short-term adverse impacts to water quality may result from construction however. Recreational impacts will be temporary in nature, due to the construction noise, traffic access and air quality impacts. The temporary impacts at each site during construction will be mitigated by the requirement for siltation/erosion control systems utilized in all necessary construction areas. The long-term impact of the recommended plan will be positive due to the elimination of potential discharges from on-site wastewater disposal systems in areas identified as not well suited for on-site treatment.

4.4.7 Growth and Development Consideration

The installation of municipal wastewater systems (sewer extensions) can result in induced growth if specific management techniques are not implemented as part of the process. This growth is typically the result of the development of properties that would not be capable of installing a proper on-site wastewater disposal system and were therefore not 'buildable' prior to sewer system construction.

The Sewer Service Area Plan and bylaw implemented in 2009 will help the Town control potential growth outside the limits of the Sewer System Service Area. By limiting access to the properties within the Sewer Service Area, the development of properties outside the sewer service area will remain independent of municipal sewer system connection availability. Decentralized systems may be designed and constructed as a flow-based system, outside of the Sewer Service Area with flows limited according to the individual property land use codes (this would typically a private endeavor with its own DEP Groundwater Discharge Permit).

4.4.8 Aesthetic Compatibility of the Systems with the Surrounding Environment and Potential Neighbor Impacts

The regional solutions have the potential to cause minor temporary impacts regarding ease of access to households, businesses and services during construction. Every attempt will be made to provide access to households, businesses and services during construction. In order to minimize impacts to sensitive environmental areas, wastewater infrastructure routes lying mainly within existing streets will be maximized. Unfortunately, these alignments will equally increase the impact on vehicular traffic patterns, as well as business access in commercial districts.

Traffic impacts due to increased volume from construction vehicles will be realized and roadway construction may have some short-term effect on existing traffic patterns. To minimize these effects, construction documents should require provisions for all work on major roads to be performed so as to allow two lanes of traffic. Work on roads experiencing lesser traffic volumes should include provisions for maintenance of at least a single lane of traffic. Adequate traffic controls should also be provided.

In commercial areas, some temporary impacts during construction could be realized. In these areas such impacts should be minimized by designing pipelines for ease of installation. Such as using low pressure sewers which allow for shallower construction instead of deep, wide trenches often required for gravity sewer mains. Additionally, coordination with businesses during construction to allow continued safe vehicle and pedestrian access during business hours should be maintained.

The impact of the regional solutions on cultural resources may be reviewed by the Massachusetts Historical Commission (MHC) once the final alignments of the sewer extensions have been determined. Impacts to historical resources are expected to be minimal, as the sewer extensions are largely planned within existing roadways and outside of the historical district area.

4.5 POTENTIAL WATER BALANCE IMPACTS

A water balance is an accounting of the withdrawals and discharges of water to a watershed, also referred to as an inflow/outflow analysis. The water balance can be determined by calculating the input, output, and storage changes within surface water bodies, such as reservoirs and subsurface resources such as groundwater. Typically, the major input of water is from precipitation and the major output is evapotranspiration. Additional inputs into the watershed can result from streamflow, infiltration from septic systems and wastewater treatment facilities. Outputs can result from water supply withdrawals, streamflows, and wastewater discharges to facilities in other watersheds or subbasins.

The amount of "stress" that a subbasin may be under is determined by looking at the inflow and outflow of the watershed. The Lunenburg CWMP water balance is focused on the three (3) major subbasins in Lunenburg: Catacunamaug, Falulah-Baker and Mulpus. There are three (3) defined hydrologic stress classifications issued by the Department of Environmental Management (DEM, currently known as the Department of Conservation and Recreation - DCR) guidelines, as described in the draft memorandum: *Stressed Basins in Massachusetts*[1]. The three (3) classifications are:

- High-Stress: net average August outflow equals or exceeds estimated average natural (Virgin) August flow
- Medium-Stress: net 7Q10[2] outflow equals or exceeds estimated natural 7Q10 flow. 7Q10 is the lowest consecutive 7 day stream flow that is likely to occur in a ten year period in a particular river segment.

[1] Office of Water Resources, February 26, 2001.
[2] Glossary.

- Low-stress: no net loss to the subbasin.

The Lunenburg CWMP water balance updates the Nashua River Watershed model (NRW model), which was used for the "*Hydrologic Assessment, Nashua River Watershed"*, dated March 2002 and prepared for the DCR-Office of Water Resources. The NRW model is setup for users to input additional flow increases and decreases using year 2000 as the baseline. Specifically, this CWMP water balance update is prepared for the town of Lunenburg for the planning period of 2016 through 2036. The water balance update includes an analysis of the watershed portion within the Town borders.

4.5.1 Wastewater Collection and Discharges - 2006 and 2036 for the Recommended Plan

Wastewater collection and discharge was estimated for each subbasin in years 2006 (original phase IV CWMP) and 2036 (current update 2016), and are included in Table 4-4. The wastewater collection system estimates are calculated as a negative to the water balance, while the wastewater discharges are included in the water balance as a gain to the subbasin where the discharge is located. In some cases, this discharge is to subbasins outside of Lunenburg.

The existing municipal wastewater is discharged to either the Fitchburg or the Leominster wastewater treatment facilities (WWTFs), which are located in the North Nashua River subbasin. The recommended plan includes wastewater discharges to regional treatment systems (Fitchburg and Leominster).

TABLE 4-4
WASTEWATER COLLECTION AND DISCHARGE
FLOWS 2036

Area	Subbasins Wastewater Collection Flows (-)			Subbasin Wastewater Discharge Flows (+)
	Catacunemaug Brook	Mulpus Brook	Falulah/ Baker Brook	North Nashua River
4			54,000	54,000
6			81,000	81,000
9	84,000			84,000
10	72,000			72,000
12		39,000		39,000
15	33,000			33,000
25	127,000			127,000
TOTAL	316,000	39,000	135,000	490,000

4.5.2 Water Balance Summary - 2016 and 2036 for the Recommended Plan

The water balance was calculated using the wastewater flow estimates for the Needs Areas included in the recommended wastewater management plan. The water balance includes

estimated impacts based on the current water balance conditions and the estimated water balance conditions resulting from the recommended plan for 2016 and 2036. The water balance calculations for the recommended plan indicate that the stress levels for each subbasin will remain the same.

4.5.3 Existing Sewer System Capacity Evaluation for the Recommended Plan

A preliminary capacity evaluation was performed on the existing collection system to ascertain if the existing infrastructure (gravity sewers, force mains and pumping station facilities) have the capacity to collect and convey the additional wastewater flows estimated for the recommended plan. The primary focus was the estimated flow to Leominster as the majority of flow estimated will be tributary to the city of Leominster.

We considered existing and proposed flows for each area and reviewed specific "nodes" within the existing collection system for available capacity. The results indicate that five existing pumping stations will need to be upgraded at some time during the implementation of the regional solution to Leominster. The Massachusetts Avenue Pump Stations 2 and 3 and the Dana Street pumping station will require a capacity upgrade. We have assumed that the wetwell sizing will be adequate for each station and that the upgrades will include new pumps, motors, controls and associated electrical upgrades (wiring, generator, etc.). We have included a cost estimate of $110,000 for each upgrade in the capital cost estimate for each affected project to account for potential upgrades.

As a result of the re-routing of Need Areas 4 to Leominster, the Electric Avenue and Twin City Pump stations will need to be replaced or upgraded to allow for the increased flow. The forcemain at Twin City will also need to be replaced with a larger size pipe, and the Electric Avenue force main will need to be rerouted. We have included a cost estimate of $400,000 each for new pump stations and a cost of $588,000 for the new force mains (approximately 2,100 feet at $280/LF).

As part of the preliminary design of each project, the Town should review the capacity again with the more specific design information at that time. This will ultimately decide the potential for upgrades to any piping or pump stations.

4.6 PROJECT COSTS AND FINANCING PLAN

The financial requirements necessary for implementation of the recommended wastewater management plan have been estimated. The plan includes an estimate of the costs and a discussion of the availability of any federal, state, local or private funding/financing assistance.

4.6.1 Estimated Project Costs

The planning level cost estimates were calculated for the recommended plan (regional solutions to Leominster). The estimates include capital costs (such as construction, engineering services, and land acquisition), and operation and maintenance (O&M) costs (such as labor, energy,

chemicals, sludge disposal, etc.). The O&M costs were calculated as a present worth over the entire planning period (20 years). The estimated unit costs for pipes have increased in the last six years more than the estimated 17% increase using ENR cost index. The estimated unit costs are close to final construction costs, but are still intended to be used as a planning level tool and guide for the Town to make decisions regarding how and when to implement each specific sewer extension. Final design level costs estimates should be based on soil test borings and field survey information gathered and evaluated during preliminary design phase of each sewer extension project.

4.6.2 Regional Wastewater Solutions

The regional solutions include cost estimates for a collection system extension and the Town's share of treatment and effluent disposal at a regional treatment facility. In 2016, the annual sewer charge rate is $4.57 per 100 cubic foot of wastewater discharged to Leominster. The 2016 sewer charge rate is $7.30 per 100 cubic foot of wastewater discharged to Fitchburg. It is assumed that both Leominster's and Fitchburg's sewer rates will increase over the 20-year planning period. At this time, it is not feasible to estimate the percent increase in both sewer rates by 2036.

4.6.3 Wastewater Collection System

Construction costs for wastewater collection systems include costs for conventional sewer systems and costs for low pressure systems (not including individual grinder pumps, this cost will be placed on the property owner). For this CWMP, the estimated costs for conventional systems are further separated into three categories; 8"-12" PVC gravity pipe and 4"-6" DI force main pipe in separate trenches, and situations where gravity and force main piping can be installed in common trench. The estimated costs include costs for excavation, pavement restoration, installing manholes and all other site work and appurtenances resulting from the installation of the pipe.

Wastewater pump station costs were estimated using similar bid prices for typical pump stations with suction-lift or submersible type pumps. Typically, the required footprint for a pump station is approximately ¼ acre. This estimate was used to determine the amount of land needed for all pump stations. The cost estimates for sewer connections include gravity or low pressure sewer stubs; but do not include some private property costs such as necessary changes to the interior/exterior plumbing, septic system abandonment, and grinder pumps.

Construction costs for low pressure sewers include costs for excavation, pavement restoration, installation of air release valves and all other appurtenances. The estimated cost is an average cost for 1-1/2"-3" low pressure PVC pipe. The costs for grinder pump installation will be placed on the property owner in this update to reflect recent construction, unlike previous reports, which had the costs placed on the Town. Low pressure sewer single family grinder pump units were assumed to be installed for each developed lot and a cost was estimated from vendor cost information, and typical installation rates for each pump unit. The cost for the grinder pump units includes the pump, electrical panel and hookup, and overall installation. Table 4-5 shows a summary of the estimated unit costs utilized in the estimating process. The unit cost for pipes in MassDOT's right-of-ways are higher than pipes in Town right-of-ways because of the

MassDOT's requirements for working in their right-of-way including requiring thicker pavement restoration.

The estimated project costs are based on the recommended plan. The project costs are estimated in today's dollars (i.e., present cost). This allows for a review of potential impacts associated with the project cost. Although the CWMP covers a 20 year planning period, project costs should be adjusted as the specific sewer extensions are implemented. Adjusting the cost at the time a specific project is implemented allows for the proper cost adjustment due to cost changes in construction materials, equipment, and inflation (estimated to be 4%).

TABLE 4-5
COLLECTION SYSTEM UNIT CONSTRUCTION COSTS

DESCRIPTION	UNIT	UNIT COST
8"-12" PVC Gravity Sewer Pipe	LF	$250
8"-12" PVC Gravity Sewer Pipe in MassDOT right-of-way	LF	$350
4"-6" DI Force Main Pipe	LF	$180
4"-6" DI Force Main Pipe in MassDOT right-of-way	LF	$280
Common Trench Installation (cost for both types of pipe)	LF	$275
Typical Pump Station	EA	$400,000
Land Acquisition	Acre	$175,000
1-1/2"-3" PVC Low Pressure	LF	$175
Grinder Pump Unit	EA	$12,000

4.6.3.1 Costs - Leominster Regional Solution

The Leominster regional solution is broken down into four distinct projects as follows:

Project A – Area 6 - Baker Station & Area 9 - Lake Whalom
Project B – Area 4 – Lower Massachusetts Avenue
Project C – Area 10 - Mass Ave/Beal St, Area 12 - Highland St, & Area 15 -Rolling Acres Road
Project D – GMD Area 25 - Pioneer Drive

The estimated capital cost, total present worth cost are as follows: the engineer's opinion of probable construction costs, total present worth cost, and unit cost for this regional solution presented herein is based on the level of project understanding as of the date of this report. The costs are based upon projects of similar nature and do not include work beyond the limits of the analysis. It is recommended that preliminary engineering be conducted prior to establishing a specific budget for appropriation by the authorities in the community. Also, the costs provided do not take into account potential conditions that are not known at this time some potential items

that would increase project costs may include contaminated soils, adverse sub-surface conditions, or ledge.

A detailed breakdown of the total present day cost, capital costs, O&M costs, and unit cost (cost per parcel) for each Needs Area is included in Tables 4-7 through 4-13, respectively. It must be noted that Project D is the GMD Pioneer Drive Area and is largely commercial/industrial zoned. Hence, it currently has a very small number of parcels (28) associated with it and as such a high unit cost (cost per parcel) results. Accordingly, a unit cost has not been shown.

Unit costs are estimated by dividing the capital cost by the number of units. O&M costs are not included in the unit cost estimates.

TABLE 4-6
COLLECTION SYSTEM PROJECT COSTS

PROJECT DESIGNATION	CAPITAL COST[1]	TOTAL PRESENT WORTH COST
Project A (Areas 6 & 9) Baker Station/Whalom	$7,786,000	$10,491,000
Project B (Area 4A) White St area	$4,750,000	$6,083,000
Project C (Areas 10A, 12 &15) Beal/ Highland / Rolling Acre	$10,368,000	$12,537,000
Project D (Area 25) Pioneer/ Commercial	$5,532,000	$6,342,000
Sewer Pipe Rerouting and Pump Stations Upgrades for Area 4 (i.e. Area 4B)[2]	$3,302,000	$3,302,000
Pump Stations Upgrades for Area 10 (i.e. Area 10B)[2]	$446,000	$446,000

1. Cost estimates were from February 2016 at an ENR cost index of 10,181.
2. Area 4B and Area 10B do not have any O&M costs associated with the project as there no new sewers users as a result of the work in those areas.

4.6.5 Financing Plan

An equitable means of recovering these costs would be to recover the cost of any portion of the project that provides a general benefit to the entire community through municipal property taxes; and to recover the cost of public improvements, which are of specific benefit to a particular area in the community by betterments. Lunenburg must arrive at a financing solution that is fair, equitable and politically acceptable for the regional solutions. A cost recovery plan will need to be formulated, reviewed, and adopted by the Town prior to the implementation of each Project. Currently, the town uses a 100% betterment method.

Massachusetts General Law, Chapters 80 and 83, describes the general procedure for allocation of costs of specific facilities (as opposed to the costs of general facilities) among property owners through a system of betterments (betterment assessments). If necessary, these betterment assessment schemes may be tailored to address particular needs of a community through the

TABLE 4-7
REGIONAL ALTERNATIVE TO LEOMINSTER - AREA 4 (PROJECT B)

Construction Costs

		LPS			Gravity Sewer											
					Pump Station			Gravity Pipe			Force Main Pipe			Combined Trench Pipe			
	No. Users	LF	$/LF	cost, $	P.S.	$/P.S.	cost, $	LF	$/LF	cost, $	LF	$/LF	cost	LF	$/LF	cost, $	Total Cost, $
Area 4A - New Sewers	144	0	$175	$0	1	$400,000	$400,000	11,460	$250	$2,865,000	0	$180	$0	800	$275	$220,000	$3,485,000
Area 4B - Re-routing Existing Sewers[1,2]	-	0	$275	$0	3	$400,000	$1,200,000	0	$350	$0	4,100	$280	$1,148,000	0	$375	$0	$2,348,000
Subtotal		0		$0	4		$1,600,000	11,460		$2,865,000	4,100		$1,148,000	800		$220,000	$5,833,000

[1] Re-routing sewers are on state-owned highways and there are additional costs for working in a state highway.
[2] Area 4B is not part of the betterment cost for Area 4

	Total cost, $
Construction Cost Subtotal:	**$5,833,000**

Engineering Design and Construction Oversight

	%	cost, $
Area 4A - % of construction costs	25%	$872,000
Area 4B - % of construction costs	25%	$587,000
Subtotal		$1,459,000

Land Costs

	Acres	$/Acre	cost, $
Area 4A - Land for PS	0.25	$175,000	$44,000
Area 4B - Land for PS	0.75	$175,000	$132,000
Subtotal			$176,000

Contingencies

	%	cost, $
Area 4A - % of construction costs	10%	$349,000
Area 4B - % of construction costs	10%	$235,000
Subtotal		$584,000

Summary of Direct Costs

	Total cost, $
Construction	$5,833,000
Engineering Design and Construction Oversight	$1,459,000
Land Costs	$176,000
Contingencies	$584,000
Subtotal - Area 4A Direct Costs	$4,750,000
Subtotal - Area 4B Direct Costs	$3,302,000
Total of Direct Costs:	$8,052,000
Betterment Cost	
Area 4A Direct Costs	$4,750,000
For only Area 4A	$33,000

TOTAL ALTERNATE COST

	Total cost, $
Area 4A Direct Cost	$4,750,000
Area 4A O&M Cost	$1,333,000
Area 4A Present Worth Cost	**$6,083,000**
Area 4B Direct Cost	$3,302,000
Area 4B O&M Cost	$0
Area 4B Present Worth Cost	**$3,302,000**
TOTAL PRESENT WORTH COST	**$9,385,000**

O&M Costs

Category		cost, $
O&M		$58,330
Treatment	Average flow, gpd	
total	21,800	2016 flows
$4.57/100cu.ft		$49,000

O&M Subtotal: **$107,000**

Annual to Present Worth Cost

Present Worth Factor @ 4%, 20 yr	
13.59	$1,454,000
Present Worth Factor @ 5%, 20 yr	
12.462	$1,333,000
Present Worth Factor @ 6%, 20 yr	
11.47	$1,227,000

TABLE 4-8
REGIONAL ALTERNATIVE TO LEOMINSTER - AREA 6 (PART OF PROJECT A)

Construction Costs

		LPS			Gravity Sewer											
					Pump Station			Gravity Pipe			Force Main Pipe			Combined Trench Pipe			
	No. Users	LF	$/LF	cost, $	P.S.	$/P.S.	cost, $	LF	$/LF	cost, $	LF	$/LF	cost	LF	$/LF	cost, $	Total Cost, $
Area 6	166	11,310	$175	$1,979,250	0	$400,000	$0	940	$250	$235,000	0	$180	$0	0	$275	$0	$2,215,000
Subtotal		11,310		$1,979,250	0		$0	940		$235,000	0		$0	0		$0	$2,215,000

	Total cost, $
Construction Cost Subtotal:	**$2,215,000**

Engineering Design and Construction Oversight

	%	cost, $
% of construction costs	25%	$554,000
Subtotal		$554,000

Land Costs

	Acres	$/Acre	cost, $
Land for PS	0.00	$175,000	$0
Subtotal			$0

Contingencies

	%	cost, $
% of construction costs	10%	$222,000
Subtotal		$222,000

Summary of Direct Costs

	Total cost, $
Construction	$2,215,000
Engineering Design and Construction Oversight	$554,000
Land Costs	$0
Contingencies	$222,000
Total of Direct Costs:	$2,991,000
Betterment Cost	$19,000

TOTAL ALTERNATE COST

	Total cost, $
Direct Cost	**$2,991,000**
O&M Cost	$1,309,000
TOTAL PRESENT WORTH COST	**$4,300,000**

O&M Costs

Category		cost, $
O&M		$22,150
Treatment	Average flow, gpd	
total	37,300	2016 flows
$4.57/100cu.ft		$83,000

O&M Subtotal: **$105,000**

Annual to Present Worth Cost

Present Worth Factor @ 4%, 20 yr	
13.59	$1,427,000
Present Worth Factor @ 5%, 20 yr	
12.462	$1,309,000
Present Worth Factor @ 6%, 20 yr	
11.47	$1,204,000

TABLE 4-9
REGIONAL ALTERNATIVE TO LEOMINSTER - AREA 9 (PART OF PROJECT A)

Construction Costs

		LPS			Pump Station			Gravity Pipe			Force Main Pipe			Combined Trench Pipe			
	No. Users	LF	$/LF	cost, $	P.S.	$/P.S.	cost, $	LF	$/LF	cost, $	LF	$/LF	cost	LF	$/LF	cost, $	Total Cost, $
Area 9	150	3,160	$175	$553,000	1	$400,000	$400,000	6,800	$250	$1,700,000	380	$180	$68,400	2,900	$275	$797,500	$3,519,000
Subtotal		3,160		$553,000	1		$400,000	6,800		$1,700,000	380		$68,400	2,900		$797,500	$3,519,000

	Total cost, $
Construction Cost Subtotal:	**$3,519,000**

Engineering Design and Construction Oversight

	%	cost, $
% of construction costs	25%	$880,000
Subtotal		$880,000

Land Costs

	Acres	$/Acre	cost, $
Land for PS	0.25	$175,000	$44,000
Subtotal			$44,000

Contingencies

	%	cost, $
% of construction costs	10%	$352,000
Subtotal		$352,000

Summary of Direct Costs

	Total cost, $
Construction	$3,519,000
Engineering Design and Construction Oversight	$880,000
Land Costs	$44,000
Contingencies	$352,000
Total of Direct Costs:	$4,795,000
Betterment Cost	$32,000

TOTAL ALTERNATE COST

	Total cost, $
Direct Cost	**$4,795,000**
O&M Cost	$1,396,000
TOTAL PRESENT WORTH COST	**$6,191,000**

O&M Costs

Category		cost, $
O&M		$35,190
Treatment	Average flow, gpd	
total	34,400	2016 flows
$4.57/100cu.ft		$77,000

O&M Subtotal:	**$112,000**

Annual to Present Worth Cost

Present Worth Factor @ 4%, 20 yr	
13.59	$1,522,000
Present Worth Factor @ 5%, 20 yr	
12.462	$1,396,000
Present Worth Factor @ 6%, 20 yr	
11.47	$1,285,000

TABLE 4-10
REGIONAL ALTERNATIVE TO LEOMINSTER - AREA 10 (PART OF PROJECT C)

Construction Costs

		LPS			Gravity Sewer												
					Pump Station			Gravity Pipe			Force Main Pipe			Combined Trench Pipe			
	No. Users	LF	$/LF	cost, $	P.S.	$/P.S.	cost, $	LF	$/LF	cost, $	LF	$/LF	cost	LF	$/LF	cost, $	Total Cost, $
Area 10[1]	74	550	$175	$96,250	1	$400,000	$400,000	6,600	$350	$2,310,000	100	$180	$18,000	1,390	$275	$382,250	$3,207,000
PS Upgrades[2]		0	$175	$0	3	$110,000	$330,000	0	$250	$0	0	$180	$0	0	$275	$0	$330,000
Subtotal		550		$96,250	4		$730,000	6,600		$2,310,000	100		$18,000	1,390		$382,250	$3,537,000

1 Re-routing sewers are on state-owned highways and there are additional costs for working in a state highway.

[2] Area 10B is not part of the betterment cost for Area 10

	Total cost, $
Construction Cost Subtotal:	**$3,537,000**

Engineering Design and Construction Oversight

	%	cost, $
Area 10A - % of construction costs	25%	$802,000
Area 10B - % of construction costs	25%	$83,000
Subtotal		$885,000

Land Costs

	Acres	$/Acre	cost, $
Area 10A - Land for PS	0.25	$ 175,000	$44,000
Area 10B - Land for PS	0.00	$ 175,000	$0
Subtotal			$44,000

Contingencies

	%	cost, $
Area 10A - % of construction costs	10%	$321,000
Area 10B - % of construction costs	10%	$33,000
Subtotal		$354,000

Summary of Direct Costs

		Total cost, $
Construction	$	3,537,000.00
Engineering Design and Construction Oversight		$885,000
Land Costs		$44,000
Contingencies		$354,000
Subtotal Area 10A Direct Costs		$4,374,000
Subtotal Area 10B Direct Costs		$446,000
Total of Direct Costs:	$	4,820,000
Betterment Cost		
Area 10A Direct Costs		$4,374,000
For only Area 10A		$60,000

TOTAL ALTERNATE COST

		Total cost, $
Area 10A Direct Cost	$	4,374,000
Area 10A O&M Cost		$798,000
Area 10A Present Worth Cost	**$**	**5,172,000**
Area 10B Direct Cost	*$*	*446,000*
Area 10B O&M Cost	*$*	-
Area 10B Present Worth Cost	**$**	**446,000**
TOTAL PRESENT WORTH COST	**$**	**5,618,000**

O&M Costs

Category		cost, $
O&M		$35,370
Treatment	Average flow, gpd	
total	13,100	2016 flows
$4.57/100cu.ft		$29,000
O&M Subtotal:		**$64,000**

Annual to Present Worth Cost

Present Worth Factor @ 4%, 20 yr
13.59 $870,000

Present Worth Factor @ 5%, 20 yr
12.462 $798,000

Present Worth Factor @ 6%, 20 yr
11.47 $734,000

TABLE 4-11
REGIONAL ALTERNATIVE TO LEOMINSTER - AREA 12 (PART OF PROJECT C)

Construction Costs

		LPS			Gravity Sewer										
					Pump Station			Gravity Pipe			Force Main Pipe			Combined Trench Pipe			
	No. Users	LF	$/LF	cost, $	P.S.	$/P.S.	cost, $	LF	$/LF	cost, $	LF	$/LF	cost	LF	$/LF	cost, $	Total Cost, $
Area 12	97	2,820	$175	$493,500	1	$400,000	$400,000	5,700	$250	$1,425,000	250	$180	$45,000	300	$275	$82,500	$2,446,000
Subtotal		2,820		$493,500	1		$400,000	5,700		$1,425,000	250		$45,000	300		$82,500	$2,446,000

	Total cost, $
Construction Cost Subtotal:	**$2,446,000**

Engineering Design and Construction Oversight

	%	cost, $
% of construction costs	25%	$612,000
Subtotal		$612,000

Land Costs

	Acres	$/Acre	cost, $
Land for PS	0.25	$175,000	$44,000
Subtotal			$44,000

Contingencies

	%	cost, $
% of construction costs	10%	$245,000
Subtotal		$245,000

Summary of Direct Costs

	Total cost, $
Construction	$2,446,000
Engineering Design and Construction Oversight	$612,000
Land Costs	$44,000
Contingencies	$245,000
Total of Direct Costs:	$3,347,000
Betterment Cost	$35,000

TOTAL ALTERNATE COST

	Total cost, $
Direct Cost	**$3,347,000**
O&M Cost	$735,000
TOTAL PRESENT WORTH COST	**$4,082,000**

O&M Costs

Category		cost, $
O&M		$24,460
Treatment	Average flow, gpd	
total	15,900	2016 flows
$4.57/100cu.ft		$35,000

O&M Subtotal: **$59,000**

Annual to Present Worth Cost

Present Worth Factor @ 4%, 20 yr
13.59 $802,000

Present Worth Factor @ 5%, 20 yr
12.462 $735,000

Present Worth Factor @ 6%, 20 yr
11.47 $677,000

TABLE 4-12
REGIONAL ALTERNATIVE TO LEOMINSTER - AREA 15 (PART OF PROJECT C)

Construction Costs

		LPS			Gravity Sewer										
					Pump Station			Gravity Pipe			Force Main Pipe			Combined Trench Pipe			
	No. Users	LF	$/LF	cost, $	P.S.	$/P.S.	cost, $	LF	$/LF	cost, $	LF	$/LF	cost	LF	$/LF	cost, $	Total Cost, $
Area 15	77	0	$175	$0	1	$400,000	$400,000	4,150	$250	$1,037,500	250	$180	$45,000	1,620	$275	$445,500	$1,928,000
Subtotal		0		$0	1		$400,000	4,150		$1,037,500	250		$45,000	1,620		$445,500	$1,928,000

	Total cost, $
Construction Cost Subtotal:	**$1,928,000**

Engineering Design and Construction Oversight

	%	cost, $
% of construction costs	25%	$482,000
Subtotal		$482,000

Land Costs

	Acres	$/Acre	cost, $
Land for PS	0.25	$175,000	$44,000
Subtotal			$44,000

Contingencies

	%	cost, $
% of construction costs	10%	$193,000
Subtotal		$193,000

Summary of Direct Costs

	Total cost, $
Construction	$1,928,000
Engineering Design and Construction Oversight	$482,000
Land Costs	$44,000
Contingencies	$193,000
Total of Direct Costs:	$2,647,000
Betterment Cost	$35,000

TOTAL ALTERNATE COST

	Total cost, $
Direct Cost	**$2,647,000**
O&M Cost	$636,000
TOTAL PRESENT WORTH COST	**$3,283,000**

O&M Costs

Category		cost, $
O&M		$19,280
Treatment	Average flow, gpd	
total	14,300	2016 flows
$4.57/100cu.ft		$32,000

O&M Subtotal: **$51,000**

Annual to Present Worth Cost

Present Worth Factor @ 4%, 20 yr	
13.59	$693,000
Present Worth Factor @ 5%, 20 yr	
12.462	$636,000
Present Worth Factor @ 6%, 20 yr	
11.47	$585,000

TABLE 4-13
REGIONAL ALTERNATIVE TO LEOMINSTER - AREA 25 (PROJECT D)

Construction Costs

		LPS			Gravity Sewer											
					Pump Station			Gravity Pipe			Force Main Pipe			Combined Trench Pipe			
	No. Users	LF	$/LF	cost, $	P.S.	$/P.S.	cost, $	LF	$/LF	cost, $	LF	$/LF	cost	LF	$/LF	cost, $	Total Cost, $
Area 25	28	0	$175	$0	3	$400,000	$1,200,000	4,200	$250	$1,050,000	400	$180	$72,000	6,100	$275	$1,677,500	$4,000,000
Subtotal		0		$0	3		$1,200,000	4,200		$1,050,000	400		$72,000	6,100		$1,677,500	$4,000,000

	Total cost, $
Construction Cost Subtotal:	**$4,000,000**

Engineering Design and Construction Oversight

	%	cost, $
% of construction costs	25%	$1,000,000
Subtotal		$1,000,000

Land Costs

	Acres	$/Acre	cost, $
Land for PS	0.75	$175,000	$132,000
Subtotal			$132,000

Contingencies

	%	cost, $
% of construction costs	10%	$400,000
Subtotal		$400,000

Summary of Direct Costs

	Total cost, $
Construction	$4,000,000
Engineering Design and Construction Oversight	$1,000,000
Land Costs	$132,000
Contingencies	$400,000
Total of Direct Costs:	$5,532,000
Betterment Cost	n/a

TOTAL ALTERNATE COST

	Total cost, $
Direct Cost	**$5,532,000**
O&M Cost	$810,000
TOTAL PRESENT WORTH COST	**$6,342,000**

O&M Costs

Category		cost, $
O&M		$40,000
Treatment	Average flow, gpd	
total	11,400	2016 flows
$4.57/100cu.ft		$25,000

O&M Subtotal: **$65,000**

Annual to Present Worth Cost

Present Worth Factor @ 4%, 20 yr	
13.59	$883,000
Present Worth Factor @ 5%, 20 yr	
12.462	$810,000
Present Worth Factor @ 6%, 20 yr	
11.47	$746,000

passage of special acts of the Legislature. When considering adoption of such special legislation, however, a municipality must take care to observe the principles of fairness and equity amongst property owners, to avoid challenges to the assessments. Lunenburg has experience with betterments for its first phase of sewer extensions (Contracts 1 and 2 of Phase 1), sewer extensions in 2015, and should draw from this experience going forward with its implementation plan these regional solutions. A betterment plan/cost recovery program must be developed in order to recover the capital costs of any future wastewater infrastructure projects. In developing such a plan, Lunenburg must address the problem of how to equitably apportion the capital costs among its system's new users. A summary of the betterments for each Sewer Service Area is shown in Table 4-14. The estimated betterments range from $19,000/user in Area 6 to $60,000/user in Area 10. Two reasons why the estimated betterment for Area 10 is high are because the area is not as dense compared to other areas and there are two MassDOT state highways within Area 10. It is more expensive to install sewer pipes in state highways.

As previously noted, the Town has utilized 100% betterments as a cost recovery method for sewer projects in the recent past. The Town used the Uniform Unit Method which is based wholly upon "sewer units". One single-family residence constitutes one "sewer unit". Lands used for use other than single-family residences are converted to "sewer units" on the basis of "single family residential equivalents" based usually on water consumption in accordance with an adopted system.

The cost recovery for the design, construction and implementation of the recommended plan could be paid by a combination of property taxes and betterments. An equitable means of recovering these costs would be to recover the cost of any portion of the project that provides a general benefit to the entire community through municipal property taxes, and to recover the cost of public improvements that are of specific benefit to a particular Needs Area in the community by betterments, or a combination thereof. The town of Lunenburg must arrive at a financing solution that is fair, equitable, and politically acceptable, and codify it through a favorable Town Meeting Vote.

A number of cost recovery decisions need to be made by the Town. To assist with the decision-making process, several cost recovery scenarios have been developed based on projects that are similar to the recommended plan. The scenarios are also based on choices most often made by municipal officials.

TABLE 4-14
ESTIMATED CONSTRUCTION COST BY SEWER SERVICE AREA

PROJECT DESIGNATION	PROJECT	CAPITAL COST[1]	No. UNITS	BETTERMENT COSTS ($/UNIT)
Area 4A – White St area	B	$ 4,750,000	144	$ 33,000
Area 4B - Sewer Pipe Rerouting and Pump Stations Upgrades	B	$ 3,302,000	n/a	n/a
Area 6 – Baker Station	A	$ 2,991,000	166	$ 19,000
Area 9 – Whalom	A	$ 4,795,000	150	$ 32,000
Area 10A – Beal	C	$ 4,374,000	74	$ 60,000
Area 10B – Pump Stations Upgrades	C	$ 446,000	n/a	n/a
Area 12 –Highland	C	$ 3,347,000	97	$ 35,000
Area 15 – Rolling Acre	C	$ 2,647,000	77	$ 35,000
Area 25 – Pioneer/ Commercial	D	$ 5,532,000	28	n/a
Total Betterment		$ 28,436,000	736	-
Total Project Costs[2]		$ 32,184,000	736	-

1. Cost estimates were from February 2016 at an ENR cost index of 10,181.
2. Total Project Costs is equal to the Total Betterment plus the capital costs of Area 4B and Area 10B.

4.6.6 Cost Recovery – User Costs

In addition to betterments and taxes, a user charge will also be assessed to each existing and new sewer customer. The user charge will offset annual operations and maintenance costs. The Town currently has a user cost system already in place and will continue to review, adjust and utilize this cost recovery method going forward as the additional sewer extensions are implemented. The current sewer use fee annually is approximately $950.

Other charges for new sewer connections are as follows:

1) Sewer connection fee: $2,250, residential 3 bedroom
2) I/I fee: $660 (3 bedroom at $230/bedroom)
3) Reserve capacity fee: $617 (3 bedroom at $1.87/gallon for 110 gpd/bedroom)

4.6.6.1 Costs per Equivalent Residential User

The estimated unit costs (cost per parcel) are shown above. Again, these are capital costs per parcel and could be analogous to an average betterment fee if 100 percent of the project cost is to be recovered through the individual parcel owners that receive the opportunity to connect to Town sewer.

The unit costs shown do not include some private property costs and do not include user fees for operation and maintenance of the system. Private property costs and users fees are very project and lot specific and hence cannot be accurately estimated at the planning level. The Town must recognize that these costs exist and develop such costs specifically for each project moving forward. Additional capacity at both Leominster and Fitchburg will likely include the Town paying for I/I removal.

4.6.7 Estimated Private Property Owner Costs

The property owner is responsible for providing sewer piping from the building to the sewer pipe within the roadway or easement. For properties that require a grinder pump station to connect to the municipal-owned sewer pipes, the costs include gravity pipes from the building to the grinder pump station, low pressure force main from the pump station to the Town-owned sewer pipe. There is also costs to install the electrical components for the grinder pump station. It is estimated in 2016 that the costs are approximately $12,000. For parcels that can connect via gravity sewers, the estimated cost in 2016 for the gravity sewer pipes is $7,500. Thus, the property owners' costs to connect to the sewer range from $11,000 to $15,500, which includes the pipe costs and the three Town sewer fees.

In addition to betterments and taxes, a user charge will also be assessed to each existing and new sewer customer. The user charge will offset annual operations and maintenance costs. The Town currently has a user cost system already in place and will continue to review, adjust and utilize this cost recovery method going forward as the additional sewer extensions are implemented. The current sewer use fee annually is approximately $950.

4.7 INSTITUTIONAL ANALYSIS

The Town revised their bylaws in 2006, and created a Sewer Commission. A Sewer Commission was appointed in September 2006. This Commission administers sewer regulations and sets rates and fees for the Town-owned wastewater infrastructure system. At present, the Town does not own nor operate a municipal wastewater treatment facility. The Town does, however, operate a municipal sewer system that currently collects and discharges wastewater through Intermunicipal Agreements (IMAs) with both the Cities of Leominster and Fitchburg.

All areas of the town presently not connected to the municipal system rely on individual on-site wastewater disposal systems, which are under the jurisdiction of the local Board of Health and state Title 5 rules and regulations (310 CMR 15.000 - The State Environmental Code, Title 5: Standard Requirements for the Siting, Construction, Inspection, Upgrade and Expansion of On-Site Sewage Treatment and Disposal Systems and for the Transport and Disposal of Septage, Effective 3/31/95.)

In order to manage and operate the proposed wastewater collection, transmission and treatment facilities, the Town must implement institutional and system management procedures, which are described in the following paragraphs.

4.8 IMPLEMENTATION PLAN

Projects the size of the Lunenburg recommended wastewater management plan must be implemented over a significant period of time and involve multiple construction phases. That is why the regional solutions are broken down into four specific projects as noted previously.

It is best to group construction phases in order of priority. That is, higher priority construction should be completed first, followed successively by lower priority phases of the recommended plan, taking into consideration geographical location and relative proximity of priority Needs Areas. The following construction phasing order is recommended:

1. Project A – (Areas 6 & 9) Baker Station/Whalom
2. Project B – (Area 4) White Street area
3. Project C – (Areas 10, 12 &15) Beal/Highland/Rolling Acre
4. Project D – (Area 25) Pioneer/Commercial

The construction phasing indicated herein is a guide only. The Town and Sewer Commission should review and revise the recommended sequencing and phasing plan based on the specific needs and preferences of the citizens. Sewer Commission's current policy is to wait until residents in a Needs Area request sewer. Town Meeting vote will ultimately decide how and when the implementation of each project occurs.

The following implementation plan should be used by the Town as a guide to execute the projects. A proposed implementation schedule is included in Table 4-15 The recommended implementation plan going forward generally includes the following tasks:

- Secure Funding for the Project
- Town Meeting Approval
- Preliminary and Final Project Design
- Permits
- Bidding of Projects
- Construction of Projects

4.8.1 Secure Funding for the Project

The completion of the CWMP will provide assistance in gaining funding from the DEP, State Revolving Fund (SRF) loan program for the construction phase of the projects. Accordingly, the Town should consider pursuit of SRF loan assistance to fund the eligible portions of the recommended plan.

As was the case for this CWMP, the SRF process begins with the submittal of a Project Evaluation Form (PEF). The PEF consists of a series of environmental categories and other topics that document wastewater "need". Point scores are provided based on how complete the answers are; the extent to which needs are documented; and the extent to which the project will address public health and environmental concerns. All PEFs submitted in a particular year are then ranked based on the individual point scores.

Lunenburg will have an approved CWMP thus allowing the recommended wastewater management plan to score and rank more favorably. However, each year there are usually many more projects than funds available, so receipt of a loan is never guaranteed. Projects with the highest point scores are put on a list called the Intended Use Plan or IUP. Such projects will receive SRF funding provided a satisfactory loan application is submitted and other requirements are met, such as favorable Town Meeting action to appropriate funds. In recent years, eligible portions of approved projects have received a 2 percent low interest loan. In general, most aspects of construction are eligible, however, design and permitting costs are not eligible for SRF funds.

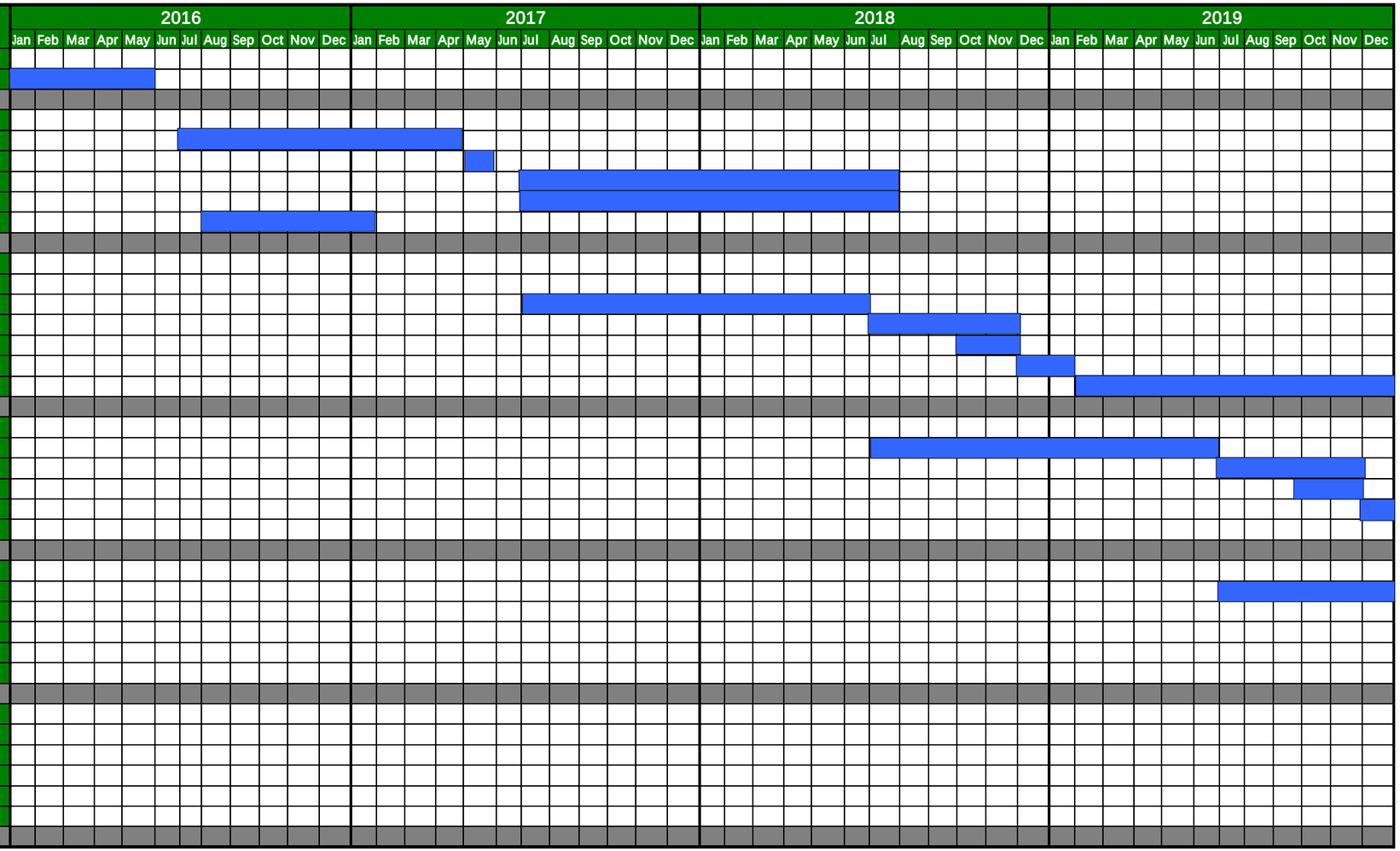
4.8.2 Town Meeting Approvals

There are a variety of items that require Town Meeting approval in order to implement the recommended wastewater management plan, including:

- Approval of a Septage Management Plan;
- Approval to make amendments to MGL Chapter 83 (if so desired by the Town);
- Approval to Borrow Funds From the SRF Loan Program;
- Selection of Cost Recovery and Betterment Program; and
- Appropriation of Funding for Design, Bidding and Construction.

TABLE 4-15
PROPOSED IMPLEMENTATION SCHEDULE
LUNENBURG, MA

Task	Duration
CWMP Completion	
CWMP Phase IV Update	1/16-5/16
Management Planning Techniques	
Establish Septage Management Plan	6/16-4/17
Town Meeting Vote to Approve Septage Management Plan	5/17
Coordinate Plan with Stormwater Management Plan	7/17-7/18
Coordinate Plan with Water District Management Plan	7/17-7/18
Amend IMA with City of Leominster	8/16-1/17
Regional Alternative to Leominster	
Project A: Remaining portions of Area 6 - Baker Station & Area 9 - Lake Whalom	
Preliminary Design Report	7/17-6/18
Final Engineering and Design	7/18-11/18
Impact specific permits (MassHighway, NOI, etc.)	12/18-1/19
Bid Construction Project	2/19-3/19
Construction	4/19-7/20
Project B: Area 4 - Lower Massachusetts Avenue	
Preliminary Design Report	7/18-6/19
Final Engineering and Design	7/19-11/19
Impact specific permits (MassHighway, NOI, etc.)	12/19-1/20
Bid Construction Project	2/20-3/20
Construction	4/20-7/21
Project C - Area 10- Mass Ave/Beal, Area 12-Rolling Acres Rd, & Area 15-Highland St	
Preliminary Design Report	7/19-6/20
Final Engineering and Design	7/20-11/20
Impact specific permits (MassHighway, NOI, etc.)	12/20-1/21
Bid Construction Project	2/21-3/21
Construction	4/21-7/22
Project D: Growth Management District - Area 25 Pioneer Drive	
Preliminary Report	7/20-6/21
Final Engineering and Design	7/21-11/21
Impact specific permits (MassHighway, NOI, etc.)	12/21-1/22
Bid Construction Project	2/22-3/22
Construction	4/22-7/23



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Final Engineering and Design	7/19-11/19
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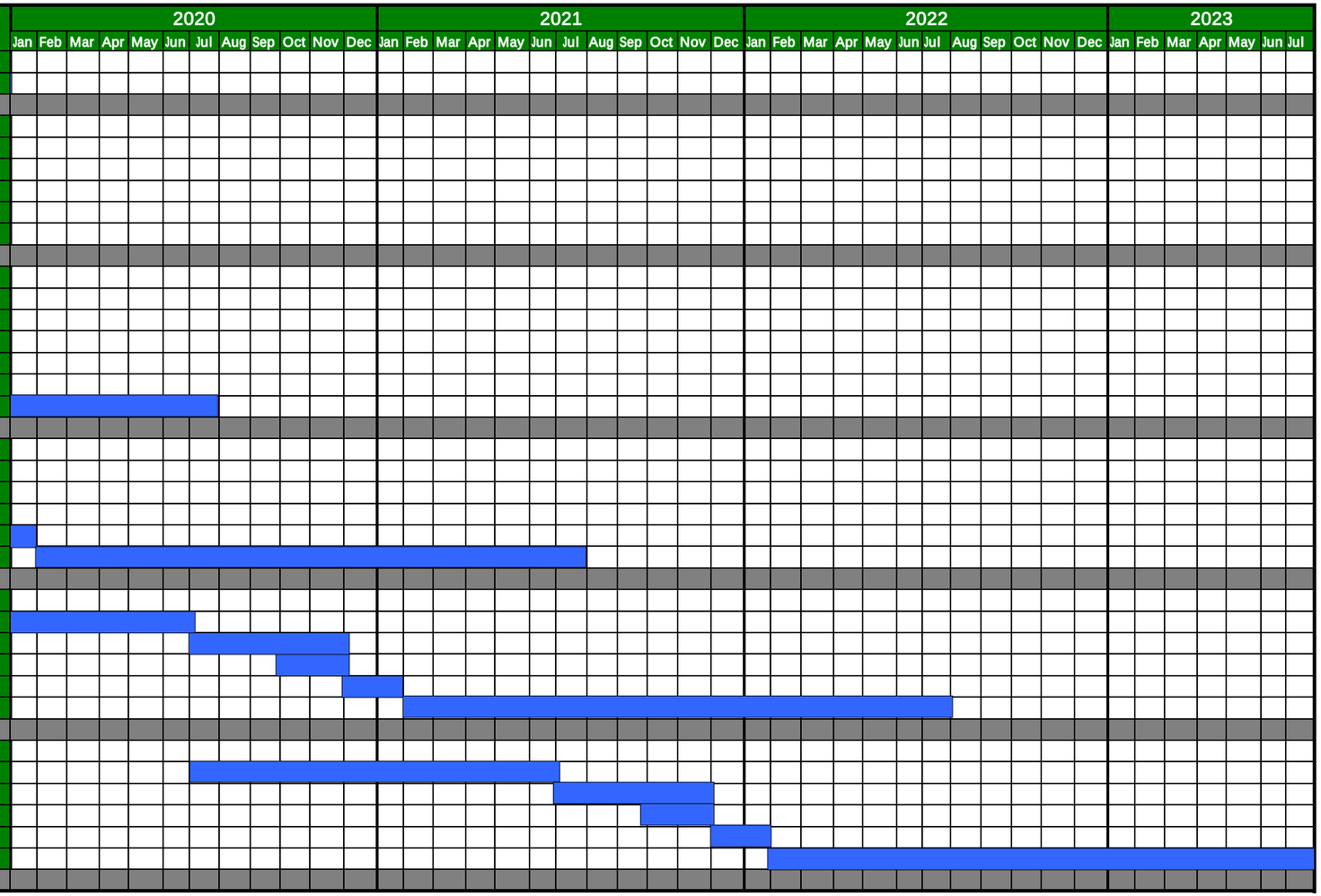
Bid Construction Project	2/20-3/20
Construction	4/20-7/21
Project C - Area 10- Mass Ave/Beal, Area 12-Rolling Acres Rd, & Area 15-Highland St	
Preliminary Design Report	7/19-6/20
Final Engineering and Design	7/20-11/20
Impact specific permits (MassHighway, NOI, etc.)	12/20-1/21
Bid Construction Project	2/21-3/21
Construction	4/21-7/22
Project D: Growth Management District - Area 25 Pioneer Drive	
Preliminary Report	7/20-6/21
Final Engineering and Design	7/21-11/21
Impact specific permits (MassHighway, NOI, etc.)	12/21-1/22
Bid Construction Project	2/22-3/22
Construction	4/22-7/23



4.8.3 Special Legislation

Special legislative action may be necessary for some items and possibly for establishing betterment policies. If necessary, the Town will need to consult with Town Counsel and state representatives to draft proper legislation to affect these provisions.

4.8.4 Permits

In addition to the environmental controls that will be associated with the wastewater management plan, other specific controls and mitigation techniques may be required by some permitting agencies. Such permits may consist of, but not be limited to:

- MEPA Environnemental Impact Report (EIR);
- Step 1 Archaeological/Historical Reconnaissance Survey;
- Conservation Commission Notice-of-Intent;

4.8.5 Historical/Archaeological Impacts

The Massachusetts Historical Commission (MHC) is the state historic preservation office and is authorized by M.G.L. Chapter 9, Section 26-27C to identify, evaluate and protect the Commonwealth's important historic and archaeological resources. A request for review was filed with the Commission during the MEPA review process for potential resources in the project construction areas, so that the Commission could provide information on any relevant locations that should be avoided or protected. There are no codified time limits on project reviews by the Commission.

4.8.6 Notice-of-Intent

The Notice-of-Intent (NOI), submitted to both the local Conservation Commission and to DEP, serves to notify the Conservation Commission of the details of a project involving potential impacts on a wetland resource area. Following receipt of an NOI, the Conservation Commission has 21 days to hold a public hearing, followed by another 21 days from the close of hearing to issue a decision. Regardless of the timing of the public the hearing, the Conservation Commission cannot issue an Order of Conditions (OOC) less than 30 days after the NOI is filed.

4.9 FACILITIES ANALYSIS

The selection of the recommended plan included a careful review and evaluation of all proposed facilities. The final recommendations include phased construction, reliability and flexibility of the regional solutions.

4.9.1 Phased Construction

Phased construction is recommended for the implementation of the recommended plan. A phased construction will allow the Town to spread out the cost of design, bidding and

construction, and implementation of each project throughout the planning period. In addition, the recommended plan will be reviewed by the Town departments and committees, such as the Department of Public Works, Board of Selectmen and Finance Committee to determine the financial impacts of the recommended sewer extension projects along with any other Town infrastructure improvement projects, such as roadway improvements and schools. The Town will review the financing methods necessary to implement any recommendations.

The CWMP is a long-term planning document. The Town has the opportunity and flexibility to incorporate any additional information that is developed by Federal, State and/or Local authorities and/or private entities prior to the implementation of the recommendations and adjust the phased construction as appropriate.

4.9.2 Flexibility and Reliability

The sewer extension projects will be designed to be flexible and reliable so that any unforeseen circumstances can be dealt with in a timely manner. All infrastructure systems will be designed in accordance with the New England Interstate Water Pollution Control Commission's (TR-16) "Guide for the Design of Wastewater Treatment Works." The design and layout of the systems should consider not only near term needs, but longer term needs as well.

Facilities will be designed and constructed with the following project goals: (1) Ensure Community Acceptance; (2) Utilization of the Site; (3) Capture and Treat Odors, if necessary; (4) Low Maintenance; and (5) Operate with a Limited Use of Chemicals.

4.10 INSTITUTIONAL ARRANGEMENTS

The recommended wastewater management plan includes several institutional steps the Town will need to have in place prior to implementing additional wastewater infrastructure projects. The institutional arrangements recommended for implementation are as follows:

4.10.1 Establish Sewer Service Areas

The Town has implemented a Sewer Service Area Plan with Sewer Service Zones.

4.10.2 Current Sewer Use Rules

In addition to the new bylaw associated with the Sewer Service Area Plan, the Town updated its Sewer Use Rules and Regulations in order to set the minimum requirements for all users of the Town's wastewater collection system. This enabled the Town to continue to comply with all applicable state and federal laws as well as the requirements of the receiving treatment facilities. Included in these regulations were the provisions for sewer connections and extensions, building sewers, infiltration/inflow, construction requirements, regulation of wastewater discharges, pretreatment of industrial wastewater, permit applications and issuance, reporting requirements, compliance monitoring, enforcement proceedings, service charges and fees. The main purpose of these regulations is to prevent the introduction of undesirable pollutants and to provide

standard requirements for all users discharging into the sewer system. Included in this category would be all issues relating to intermunicipal and private flow agreements.

4.10.3 Develop a Cost Recovery Plan

A Cost Recovery Program is recommended in order to recover the capital costs of the proposed new sewer extensions. The Town will need to address the problem of how to equitably apportion the capital costs among its system's users. The cost recovery for the design, bidding and construction of sewer system extensions could include a combination of property taxes and betterments. An equitable means of recovering these costs could be: to recover the cost of any portion of the project that provides a general benefit to the entire community through municipal property taxes; and to recover the cost of public improvements which are of specific benefit to a particular Needs Area in the community by betterments. A cost recovery plan will need to be formulated, reviewed, and adopted by the Town prior to the start of construction of the recommended wastewater management plan.

4.10.4 Current Sewer User Charge System

Sewer user charges are necessary for the Town to recover the annual costs of operation and maintenance associated with the recommended wastewater management plan. Among other things, the system is recommended to be updated to current standards, billing categories and rate structure. Any changes adopted by the Town must meet state regulations for recovery of costs to operate, maintain and repair as necessary the wastewater collection system. The current annual wastewater user cost is approximately $950 in Lunenburg.

4.10.5 Develop a Formal Septage Management Plan

A Septage Management Plan (SMP) with a defined septage management overlay is recommended. A SMP legally identifies the septage management boundaries and allows the Town to set on-site system management policies. This will allow the Town to distinguish which properties will be managed under a Septage Management Plan. A Septage Management Plan will include the areas of Town proposed for long-term on-site wastewater disposal as well as those areas proposed for sewer extension until such time as the recommended plan is implemented. The successful long-term sustainability of on-site wastewater disposal systems is dependent on proper operation and maintenance in order to prevent adverse health and environmental impacts.

4.10.6 Update Current Water Conservation Program

It is recommended that the Town, and the Water District, continue with its overall water conservation program in order to reduce the amount of water consumed and discharged into both the existing on-site wastewater disposal systems and proposed sewer extensions.

4.10.7 Sewer System Expansion Control Policy

This has been completed by the Town.

4.10.8 Sewer Commission Staffing and Operations Plan

A review of the current and projected Sewer Commission Staffing and Operations Plan is recommended. This plan will review and estimate the current and proposed tasks, responsibilities and staffing requirements for each aspect of the operation and maintenance of the current and proposed wastewater collection system. The relative merits to Town staff versus contract operations should also be evaluated.

4.10.9 Wastewater System Construction Standards

This should be reviewed and changes implemented to allow the Town to maintain standards consistency for all new infrastructure construction projects. There should be a review, discussion and revisions to construction standards as necessary prior to any new construction projects. Spare parts, redundancy, general O & M items and manhole design standards are just a few examples of important construction standards.

4.10.10 Sewer Use Rules and Regulations

Properties which are connected to the town of Lunenburg's wastewater collection system are governed by the Town's "Sewer Use Regulations". These regulations were based largely on the city of Fitchburg's Sewer Use Regulations, and were adopted at the May 7, 2005 Annual Town Meeting. The regulations contain many requirements and limitations on the characteristics of the wastewater which is discharged into the system. These requirements include provisions to allow the wastewater to be effectively treated at the Fitchburg East Wastewater Treatment Facility, such as temperature, as well as limiting the amount of potentially hazardous materials present in the WWTF influent, such as volatile hydrocarbons and heavy metals.

It appears that the Sewer Use Regulations adopted by the town of Lunenburg are more suited to minimize impact from industrial-type wastes. While these types of regulations are necessary for a city like Fitchburg, with significant industrial contributors, to govern its wastewater contributors, many of the requirements do not affect much of the activities of the residential and commercial development in Lunenburg. Given that the responsibility for inspection and approval of sewer extensions has largely shifted from DEP to the municipal level, it is important that the Town have in place regulations to administer sewer extension permits. At a minimum, the Town should adopt the New England Interstate Water Pollution Control Commission's *Guides for the Design of Wastewater Treatment Works* standards, commonly referred to as "TR-16". This guide contains specific minimum criteria for design and construction of wastewater collection systems, including pipe material, slope, and capacity. Additionally, the Town should review the details and methods of construction used on the Phase 1 sewer projects and apply "lessons learned" from those projects. Details, materials and methods which served the project well could be written into the Sewer Use Regulations. Conversely, specific details for the design or construction of the sewer system which did not perform as desired could be prohibited.

Section 5

WRIGHT-PIERCE
Engineering a Better Environment

SECTION 5

PUBLIC PARTICIPATION

5.1 RELATIONSHIP BETWEEN PROPONENT AND PUBLIC

A public participation plan was developed for outreach strategies and activities. As part of this task, key contacts, such as municipal officials and representatives of regulatory agencies, were interviewed to identify short and long-term goals, gain an understanding of the issues and concerns related to the project, and gauge the level of knowledge and interest about the issues and the project within the community.

One of the most important considerations of the CWMP process has been, and will continue to be, to assure that all interested parties are given the opportunity to be included in the decision-making process. Communication between town officials, business owners, residents, utility companies and state agencies is critical. The public participation approach was designed to solicit input from stakeholders and to identify technical and environmental issues, as well as cost savings measures early on and throughout the process.

5.2 REQUIREMENTS FOR PUBLIC MEETINGS

Public meetings were planned for specific project milestone dates. A public meeting was held on May 17, 2007 at the Town Hall to present and discuss the results of Phase I. It was broadcast on the Town's public access cable channel and attended by several town citizens and board members. A copy of the presentation is included in Appendix G.

Town board meetings were open to the public during Phases I, Phase II, Phase III and Phase IV. Wright-Pierce routinely met with the Sewer Commission, Board of Health, and Planning Board at Town Land Board Workshops and attended other meetings as necessary throughout the process. Notices for all public meetings are posted and citizens are always welcome.

The Town held a public hearing on April 28, 2009 to present and discuss the findings of the Phase IV Final Recommended Plan. The presentation and discussion included the final recommended wastewater management and implementation plan. A copy of the minutes, including questions and answers is included in Appendix H.

The summary of the updates to the Phase IV Final Recommended Plan were presented at the April 26, 2016 televised Sewer Commission Meeting. The summary of the updates will also take place at the Annual Town Meeting in May 2016.

5.3 MEPA PUBLIC COMMENTS

A Notice-of-Project-Change (NPC) was submitted to the Massachusetts Environmental Policy Act (MEPA) Office on March 31, 2008. The NPC included the Phase III Draft Recommended Plan. MEPA noticed the project in the Environmental Monitor, April 9, 2008. The MEPA process for an NPC includes a twenty day comment period and comments were received until April 29, 2008. The Town received the EOEEA Secretary's Certificate from MEPA on May 9, 2008. The copy of the certificate and the comment letters received are included in the Appendices.

5.4 SUMMARY OF PUBLIC PARTICIPATION

Wright-Pierce continues to work closely with the Town, through the Sewer Commission and other town boards to administer public outreach that is intended to build consensus for the recommended plan.

The Town has established three permanent information depositories for project information to be viewed by the public. These depositories are located at:

1. The Selectmen's Office in Town Hall
2. The Sewer Commission Office in DPW Building
3. The Public Library

APPENDIX A

MEPA Certificate, March 18, 2002

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
251 Causeway Street, Suite 900
Boston, MA 02114-2119

JANE SWIFT
GOVERNOR

BOB DURAND
SECRETARY

Tel. (617) 626-1000
Fax (617) 626-1181
http://www.magnet.state.ma.us/envir

March 18, 2002

CERTIFICATE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS
ON THE
FINAL ENVIRONMENTAL IMPACT REPORT

PROJECT NAME	: Lunenburg Comprehensive Wastewater ManagementPlan
PROJECT MUNICIPALITY	: Lunenburg
PROJECT WATERSHED	: Nashua River
EOEA NUMBER	: 12160
PROJECT PROPONENT	: Town of Lunenburg
DATE NOTICED IN MONITOR	: April 8, 2000

As Secretary of Environmental Affairs, I hereby determine that the Single Environmental Impact Report (SEIR) submitted on this project **adequately and properly complies** with the Massachusetts Environmental Policy Act (M.G.L. c. 30, ss. 61-62H) and with its implementing regulations (301 CMR 11.00).

The project involves the construction, in three phases, of a wastewater collection system over a 20-year planning period. The proposed system will serve an estimated 9000 residents generating an average 734,600 gallons per day (gpd) of wastewater (2,720,000 gpd peak). All wastewater will be treated at either the Leominster or Fitchburg wastewater treatment facilities. The Town of Lunenburg has inter-municipal agreements with both cities for treatment of up to 500,000 gpd. The project's proposed full build flow estimates are 485,000 gpd to Leominster and 249,000 to Fitchburg.

As described in the Single EIR, the Phase I service area, consisting of the Town center, a new public school, the proposed new public safety building, and the Whalom area, has the greatest potential to significantly impact groundwater quality. I granted the proponent a Phase I Waiver for the construction of 62,000 feet of new sewers and three sewage pumping stations on May 26, 2000.

The Phase II service area, located in the southwestern section of Lunenburg, will include lower Massachusetts Avenue and Baker Station. Phase III will service the lakefront areas of Hickory Hills and Lake Shirley, located in northern and southeastern Lunenburg respectively.

The project involves the construction of more than 10 miles of new sewer and is therefore subject to the Mandatory Environmental Impact Report provisions of the MEPA regulations pursuant to Section 11.03 (1). The project requires a Sewer Extension Permit from the Department of Environmental Protection (DEP). The project involves financial assistance from the Commonwealth, and therefore, MEPA jurisdiction extends to all aspects of the project that might have a significant impact on the environment.

The scope of the Single EIR, established in the Expanded ENF Certificate issued May 26, 2000, requested the Single EIR to include an analysis of impacts from all Phases of the project. In particular, the Single EIR was required to address the project's potential impacts on Lunenburg's agricultural lands, the potential for additional project-stimulated growth within the areas to be sewered and local hydrology. The Single EIR also required the proponent to provide responses to issues raised in the comment letters received on the Expanded ENF. I find that the Single EIR has fulfilled that requirement and that the proposed Section 61 Findings provide sufficient mitigation to minimize potential impacts.

Impacts on Lunenburg's Agricultural Lands. In response to the comments received from the Massachusetts Department of Food and Agriculture (DFA), the proponent has identified existing agricultural lands located within the proposed areas to be sewered, including the town-owned Woodruff parcel, that enjoy some measure of protection from development. In addition to parcels permanently protected from development through a state administered permanent agricultural preservation restriction (APR) and town-owned land areas that are generally considered as open space and not at risk for development, the proponent offers Lunnenburg's demonstrated history of exercising its option to acquire available Chapter 61 lands as an effective means of addressing growth pressures to agricultural lands within the proposed areas to be sewered.

According to comments received from DFA, the Town has agreed to work with DFA to apply for an APR on the Woodruff farm and to use the funds received to purchase other agricultural lands as they become available. I note that any future conversion to non-agricultural uses, or any loss of the existing agricultural lands that are identified in this EIR as being located within the proposed project area, would be subject to the mitigation requirements of Executive Order 193. Furthermore, the conversion to non-agricultural use or loss of existing agricultural lands located within the areas to be sewered would constitute a change in the project, requiring the filing of a Notice of Project Change. I also encourage the Town of Lunnenburg to work with local and regional land trust organizations and the Department of Food and Agriculture to develop an effective cooperative program for acquiring Chapter 61 lands as they may become available in the future.

Impacts on New Growth in Sewered Areas. With respect to Executive Order #385 (Planning for Growth) the Town of Lunnenburg has in place a number of tools for managing growth resulting from the project. The Town has determined that the *Phased Growth* provision of its By-Laws (Article 4.11) limiting new building permits to 45 per year, coupled with its decision to maintain the current 1 and 2 acre zoning requirements for single family residential lot size in areas to be sewered, will mitigate the adverse impacts of new development that is likely to be stimulated by sewers. I expect that the Town will continue its efforts to enact additional controls. I suggest that the Town consult with the Montachusett Regional Planning Commission and other communities regarding specific language for control measures and experiences in enacting and using these control measures.

Additional control measures can be included in the Final Facilities Plan and during the design and permit review process leading to the issuance of Sewer Extension Permits. The Town should note the attached comments and should attempt to incorporate suggestions contained in those comments into final design of the project where they are appropriate.

Finally, the proponent should be aware that if the project should change, a Notice of Project Change must be filed so that I may determine if further environmental review is needed.

March 18, 2002
DATE

Bob Durand

Comments received:

1/25/02	Massachusetts Department of Food and Agriculture (MDFA)
1/31/02	Town of Lunenburg
2/4/02	Town of Lunenburg
2/1/02	Town of Lunenburg
2/11/02	Massachusetts Department of Environmental Protection (DEP)
3/11/02	Massachusetts Department of Food and Agriculture (MDFA)
3/13/02	Town of Lunenburg

JW/NCZ/ncz

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central Regional Office, 627 Main Street, Worcester, MA 01608

JANE SWIFT
Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

N2

February 11, 2002

Secretary Robert Durand
Executive Office of Environmental Affairs
251 Causeway Street, Suite 900
Boston, MA 02114

Attention: MEPA Unit –Richard Foster

Re: Single EIR
Comprehensive Wastewater Management Plan
Lunenburg, MA
EOEA # 12160

Dear Secretary Durand,

The Department of Environmental Protection (the Department) Central Regional Office offers the following comments on the SEIR for the Town of Lunenburg Comprehensive Wastewater Management Plan (CWMP). The report recommends a phased construction of a wastewater collection system during a 20 year planning period to serve an estimated 9,000 residents contributing an average of 733,400 gallons per day (gpd) of wastewater (2,720,000 gpd peak). The areas of town to be sewered are Whalom/Town Center, Lake Shirley and Hickory Hills. All wastewater will be treated at either the Leominster or Fitchburg East wastewater treatment facilities. The Town of Lunenburg has current inter-municipal agreements with both cities for 500,000 gpd. Current full build out estimates of flow are 249,600 gpd to Fitchburg and 485,000 gpd to Leominster.

A Phase I Waiver was issued in 2001 for a small section of sewer to serve Pioneer Park Industrial complex. These sewers will be connected to existing municipal sewer systems in Leominster.

The total project will result in a net transport of water resources from the Mulpus, Catacoonamug and Falulah Sub-basins. The report applied a hydrologic inflow/outflow water balance model for these sub-basins developed by CDM, Inc. The results of this model evaluation concluded that the additional stress created by the project falls within acceptable limits.

However, the SEIR recommends that the hydrologic impacts in the Catacoonamaug Sub-basin be re-evaluated prior to proceeding with Phase III (Lake Shirley). This office concurs that a more detailed evaluation of a neighborhood wastewater collection and treatment system for Lake Shirley be performed.

The DEP Central Regional Office appreciates the opportunity to comment on this proposed project and finds the SEIR to be adequate. If you have any questions regarding these comments, please do not hesitate to contact me at (508) 792-7650 *4033.

Sincerely,

Mary Gardner

Mary Gardner
Acting Deputy Regional Director

cc: Robert W. Golledge Jr., Regional Director, CERO
Paul Anderson, Municipal Coordinator, CERO
Dave Murphy, DEP, Boston

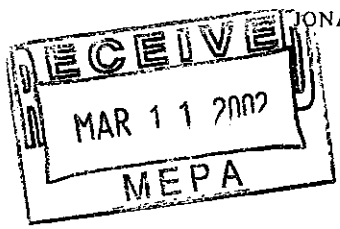
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF FOOD AND AGRICULTURE
LANCASTER FIELD OFFICE
142 OLD COMMON ROAD, LANCASTER, MA 01523 (508) 792-7711 FAX: (978) 365-2131

JANE SWIFT
Governor

BOB DURAND
Secretary

JONATHAN L. HEALY
Commissioner

MEMORANDUM



To: Bob Durand, Secretary
Executive Office of Environmental Affairs

Attn: Nicholas Zavolas, MEPA Office

From: Marcia Starkey MS

Re: EOEA #12160 SEIR Comprehensive Wastewater Management Plan Lunenburg

Date: 11 March 2002

The extended comment period for this Final Environmental Impact Report has provided an opportunity for further discussion with the proponent on potential impacts to agricultural land and the possibility of mitigating those impacts through an agricultural preservation restriction (APR) on the town-owned Woodruff farmland.

According to the FEIR, the extension of sewer along Leominster Road is proposed as a means to provide service to the largest number of properties, rather than as an area targeted for growth. This route will unintentionally increase development pressure on approximately 150 acres of agricultural land. In addition, approximately 50 acres will be similarly impacted by other proposed lines. Executive Order 193 and the Agricultural Lands Mitigation Policy would apply to these lands insuring permanent protection of equivalent agricultural lands, or a financial contribution of $10,000. per impacted acre to be used for such protection.

Town officials have pledged to continue agricultural leasing of the 128 acre Woodruff farm for the forseeable future. As this commitment is limited to present town officers, the Department has accepted the Town's proposal to apply for an APR on the Woodruff farm at this time, and to use the funds received to purchase other land. We expect the Town to send a letter of intention to the MEPA office within the next several days.

If completed, the Town's plan and an APR on the Woodruff farmland could provide advance mitigation for private lands taken out of agricultural use along the sewer routes, thereby greatly reducing and possibly eliminating agricultural mitigation in the future. If the APR is not completed, full mitigation as described above will be required.

C/Stanley D. Elkerton, Elkerton, Guertin & Associates, Inc.
Town of Lunenburg
DEP/CERO

Bill Gustus, Town Manager.

APPENDIX B

DEP Approved
Scope of Work for CWMP

APPENDIX B

TOWN OF LUNENBURG, MASSACHUSETTS
COMPREHENSIVE WASTEWATER MANAGEMENT PLAN (CWMP)
SCOPE OF SERVICES

Task No. 1

1 PUBIC INVOLVEMENT PROGRAM, PROJECT MANAGEMENT/ADMINISTRATION AND REGULATORY COORDINATION

1.1 Assist the Town in the establishment of a Project Advisory Committee (PAC).

1.1.1 The comprehensive and complex nature of the CWMP for Lunenburg will incorporate the involvement of many varied stakeholders. Stakeholders may include: the Lunenburg Board of Selectmen, Board of Health, Finance Committee, Conservation Commission, and Planning Board; Lake Shirley Association and Hickory Hills Landowners; Citizens of Lunenburg; Massachusetts Department of Environmental Protection (DEP,) Department of Environmental Management (DEM,) Department of Fish and Wildlife (DFW) Natural Heritage Program, Water Resources Commission (WRC,) and the MEPA-Unit; the Nashua River Watershed Association (NRWA), Montachusset Regional Planning Commission (MRPC), and officials from neighboring communities (Fitchburg and Leominster in particular). All stakeholders, including governmental agencies, will have representation on the PAC, and members will be responsible for conveying information to and from their constituents. The PAC will offer technical input and general advice in the planning process.

1.2 Conduct two (2) public information meetings and one (1) public hearing. Public meetings to be held at specific project milestone dates after completion of CWMP Phase I and CWMP Phase III. Public Hearing to be held at completion of the CWMP Phase IV - Draft CWMP.

1.3 Prepare and submit a detailed Scope of Services (Plan of Study) to DEP for review and approval at the project outset. This is a requirement of the SRF Loan program. Intent is to have the Scope of Services that is included in the Agreement with the Town be similar to the document that is submitted to DEP for review and approval. Any changes to the Scope of Services by DEP that are not included in the Agreement Scope of Services between the Town and Wright-Pierce will be subject to an associated amendment to the fee for the project.

1.4 Prepare and submit SRF Loan Application and assist Town in obtaining SRF funding approval for the project.

1.5 Regulatory Coordination: Contact MEPA to review Town's options regarding "syncing" this planning effort with the previous CWMP/EIR. *It is anticipated that a new Environmental Notification Form will be required for this planning. Preparation of a*

ENF is included in the Scope of Services. A MEPA EIR is not included in this Scope of Services.

1.6 Prepare and submit monthly invoices and, include a one page monthly progress report with each invoice.

1.7 Attend monthly project meetings with the PAC and/or Lunenburg officials.

Task No. 2

2 PHASE I – EXISTING CONDITIONS, FUTURE REQUIREMENTS AND PROBLEM IDENTIFICATION/NEEDS ASSESSMENT

2.1 Assemble and review relevant prior studies of Lunenburg wastewater and master planning issues prepared by consultants and other organizations and use all relevant and current information and, create a project library for use during this CWMP project. It is assumed that Town staff will assemble and provide the necessary prior studies and relevant information to WP. The fundamental studies that will be used as the primary basis for this plan include:

- Wastewater Management Plan by Universal Engineering Corporation - June 1999;
- Single EIR for Comprehensive Wastewater Management Plan by Guertin Elkerton & Associates, Inc. - December 2001;
- Interim Wastewater Management Planning Work by SEA – 2005.
- Water Supply Assessment Study by Dufresne-Henry - 2006

The intent in this section is to reuse all relevant and accurate information from the above noted studies and update the available relevant information via critical evaluation of the data used and the interpretation of such, and collect, evaluate and properly interpret all relevant new data available specific to existing wastewater management systems.

2.2 General Environmental Conditions in and around Lunenburg (Town staff to assist in this task)

2.2.1 Description of Basin-Wide Initiatives and Other Facilities Plans for Town's Watershed Basin.

2.2.1.1 Compile a bibliography of existing reports, plans and initiatives that impact the use and conditions of Lunenburg and the watershed basin. NRWA, MRPC, DEM, DEP, EPA, and other entities may all recommend plans for inclusion in the bibliography.

2.2.1.2 Identify important components of other plans that may impact Lunenburg's wastewater management plans.

2.2.1.3 Compile information for the three Lunenburg Nashua River sub-watersheds, Catacunamaug, Mulpus (medium-stressed) and Falulah.

2.2.2 Description of the Town's built/human environment [desktop study]

2.2.2.1 Review and integrate relevant information presented in the previous CWMP, Facilities Plans, the Town's Master Plan, census data, zoning regulations and currently planned and future large scale developments to describe the current population and land uses within the Town.

2.2.2.2 Meet with the Lunenburg Conservation Commission and Planning Board to describe recent and anticipated development trends, both residential and commercial, and to describe any conservation or open space efforts, including any wetlands conservation by-laws.

2.2.2.3 Indicate locations of conservation land on base map. It is understood and agreed that the base map will be created based exclusively on data layers available from Mass GIS.

2.2.3 Description of the natural environmental systems**,** with Tasks 2.2.3.3 through 2.2.3.10 based on reviewing and summarizing information compiled in previous studies.

2.2.3.1 Meet with NRWA and MRPC to identify issues and locations of critical environmental concern.

2.2.3.2 Meet with the Lunenburg Conservation Commission to identify issues and locations of critical environmental concern.

2.2.3.3 Describe the regional climate conditions using available recent NOAA data.

2.2.3.4 Describe the soils in Lunenburg using current NRCS soils conditions reports and maps as informational sources. BOH database information on soils, perc rates and groundwater information will also be used. The BOH Agent will be interviewed to gather specific field observations and experiences regarding Lunenburg soils information. Indicate areas containing soils that are poorly suited to onsite disposal on the base map.

2.2.3.5 Describe the regional hydrologic conditions using current reports published by USGS, DEM, NRWA, or other agencies as informational sources.

2.2.3.6 Describe the regional hydrogeologic conditions using previous reports published by USGS, DEM, NRWA, MRPC or other agencies, and reports prepared for the Town's wells as informational sources.

2.2.3.7 Describe the regional water quality conditions using the latest reports from the BOH summer water quality testing for Lake Whalom and Hickory Hills and the Lake Shirley Shady Point beach area water quality testing (from the Park Owner) and other reports as published by USGS, DEM, DEP, EPA,

NRWA, MRPC or other agencies as informational sources. Indicate the locations of any historically troubled surface water bodies on the base map.

2.2.3.8 Describe the wetlands or species habitats in Lunenburg using latest reports published by the Conservation Commission, DEM, Natural Heritage, NRWA, MRPC or other agencies as informational sources. Indicate these locations on the base map.

2.2.3.9 Describe the flood plain locations in Lunenburg using current FEMA maps as informational sources. Indicate these locations on the base map.

2.2.3.10 Describe the regional air quality and noise conditions using current DEP, EPA and other available informational sources.

2.2.4 Compile the information from Task 2.2 into a draft of Chapter 1 of the CWMP Phase I submittal.

2.3 Water Demand Projections and Supply Sources

2.3.1 It is our understanding that the Lunenburg Water District has contracted with a consultant to perform a Water Supply Assessment Study and this Study is slated for completion in April 2006. Wright-Pierce will summarize the results of this study into Chapter 2 of the CWMP Phase I submittal, emphasizing the following items:

2.3.1.1 A brief description of the Town's water system;

2.3.1.2 A determination of water use trends and future water demands, A summary of future well sites;

2.3.1.3 A review of past water conservation efforts and estimate the potential for further demand reduction. (Note if this is not addressed in the Water Supply Assessment Study, a desktop study will be completed by ENGINEER).

2.3.1.4 *A description of Lunenburg's permit conditions under the Water Management Act as compared to the future water demands*;

2.4 Current Wastewater Management System and Determination of Wastewater Needs

2.4.1 Description of the Town's Wastewater system [desktop study]

2.4.1.1 Description of the Town's wastewater facilities including the existing collection system, as described in previous studies and upgraded as necessary.

2.4.1.2 Determine if any currently operational private package wastewater treatment facilities, that exist in or near Lunenburg, have additional capacity.

2.4.1.3 Describe Town's current agreements with existing facilities receiving septage pumped from Lunenburg's septic systems.

2.4.1.4 Research the current permit conditions of, physical conditions of, and plans to upgrade or modify existing wastewater treatment facilities in Fitchburg and Leominster.

2.4.1.5 Meet with the Board of Health to collect available relevant information and discuss the current situation of the Town's onsite subsurface wastewater disposal systems. Describe the Board of Health septic system regulations and procedures. Septage disposal, pumping records, new system installation, and repair procedures will all be explained.

2.4.2 Division of the Town into Study Areas.

2.4.2.1 Create distinctive Study Areas for which needs can be assessed and solutions analyzed. To maintain consistency with the 2001 CWMP, Study Areas will be "synced" with the 2001 CWMP Study Area delineations and existing neighborhood schemes, such as the Baker Station, Lower Massachusetts Avenue and Whalom areas. Areas outside of the original six "needs" areas previously defined will be delineated and included in the town-wide CWMP. The size of the individual Study Areas should be small enough so that customized solutions may be developed. Should significantly different natural conditions be found within existing neighborhoods, Areas may be subdivided to reflect specific characteristics. We will consider and make other revisions to the Study Areas as necessary for this CWMP. Study Areas should also include open land that has been targeted for development in the Master Plan.

2.4.3 Summarize existing conditions and problems for each Study Area.

2.4.3.1 Streamline the "Needs Survey" for the project and build from the previous studies. Categorize the Study Area "needs" into broad groupings. Examples of these groupings are; Public Health; Water Supply Protection; Protection of Surface Waters (from nutrient enrichment for example); enabling smart growth/other desired/required development (Chapter 40B or 40R projects for example); and Preserving Community Character. We will short list the Study Areas down to a strategic and manageable number so that the analysis can be focused and cost-effective. We will review water quality data collected in previous studies and updated as appropriate (specifically looking for area near bacteria impacted ponds or receiving waters), query the available GIS system information (specifically looking for areas with high unit water use) and review BOH variances collected in previous studies and updated as appropriate. We will then summarize the focused needs areas into groupings that will range from the favorable scenario of the area being capable handling current and expanded use with onsite systems to the least favorable scenario of the areas simply not being adequate for onsite disposal (offsite solution or tight tanking required).

This final grouping will establish a baseline for the Areas to be considered in CWMP Phase II.

2.4.3.2 Needs assessment will be Town-wide and build from previous studies. Early focus will be given to known "needs areas" as defined and refined by the Town as part of previous studies. These areas are assumed to be; 1) Baker Station; 2) Lower Massachusetts Avenue: and 3) specific Whalom areas. These areas will be reviewed and updated as appropriate to "align" them within the same overall town-wide "needs assessment" approach.

2.4.3.3 Perform brief visual survey to determine overall characteristics of each Area. Survey will: identify natural characteristics surrounding the Area, such as the presence of woodlands, water bodies, floodplain or wetlands; comment on the development characteristics of the neighborhood such as density of development, note the presence or absence of trees or ledge outcroppings; describe the overall topography of the Area, including the severity and direction of street grades, and if houses are significantly higher or lower than street elevations; identify signs of failed on-site systems; identify, characterize and list by street address any commercial properties. This survey will be "drive-by with appropriate stops" in nature, as opposed to a lot by lot review.

2.4.3.4 Compile recent Board of Health records for the Areas, including: septage pumping records; sites that have failed Title 5 inspections; sites that have been issued system repair or replacement permits; properties that have applied for financial assistance for system repairs. Locate system problems on base map.

2.4.3.5 Identify current lot sizes and zoning regulations within each Area. Consult assessor's maps and zoning regulations, and discuss known variances from the regulations with the Board of Health and Planning Board. It is assumed that the Assessors information necessary for these tasks will be available via electronically from the Town.

2.4.3.6 Identify the potential for subdivision of land and further development within each Area. Review the Town’s Master Plan and zoning regulations, and consult with the Planning Board. Identify and evaluate planned and potential Chapter 40B and 40R housing projects in Lunenburg. Indicate these potential developments on base map.

2.4.3.7 Identify the development potential of land adjacent to each Area. Review the Town’s Master Plan and zoning regulations, and consult with the Planning Board. Indicate potential development on base map.

2.4.3.8 Combine information on current zoning and planned growth to estimate current and future wastewater flows from each Area. Build a flow calculation spreadsheet based on the assessor's database. Spreadsheet to include information necessary to summarize current flow and projected

future flow estimates. It is assumed that the Assessors information necessary for these tasks will be available electronically from the Town.

2.4.3.9 Perform a soils evaluation to determine the characteristics of soils in each Area. The program will be pointed at assessing the feasibility of using on-site systems or groundwater discharge systems. This evaluation will consist of a review of previous studies along with available BOH records; field investigations are not included within this Scope.

2.4.3.10 Compile and analyze existing groundwater quality data as provided by previous studies and the Town. Current BOH groundwater quality data will be collected and evaluated.

2.4.4 Rank areas by need for wastewater management.

2.4.4.1 Apply a rating formula to each Area (including undeveloped lands,) and present the rating criteria and Area conditions in a decision matrix to illustrate how each Area's rating was determined.

2.4.4.2 Rank the Areas according to their respective wastewater needs as determined by the calculated rating.

2.4.4.3 Present Study Area rating information on base map.

2.4.5 Based on high rankings, recommend areas that require solutions and therefore further investigation in the CWMP.

2.4.6 Assess the suitability of continued reliance on septic systems for Areas that received low rankings, and determine if those Areas should be further studied in the CWMP.

2.4.7 Review and evaluate water balance. The water balance should distinguish between groundwater reservoirs and surface water reservoirs. Groundwater sources and losses including: storm water infiltration, on-site disposal systems, and well withdrawals. Surface water sources include: stormwater runoff, WWTF discharges (of water withdrawn from groundwater sources,) inter-basin transfers of water and wastewater. The structure should allow for modification so that alternatives explored in CWMP Phase III may be evaluated. Previous water balance efforts will form the basis of this evaluation. *Efforts will be made to employ the water balance evaluation techniques used in the Nashua River Watershed Association's March 2002 Hydrologic Assessment.* [desktop study]

2.4.8 *Evaluate alternatives for legal and/or zoning regulations which control the number of tie-ins to existing and future sewers.*

2.4.9 *Evaluate the Town's current Sewer Regulations and recommend revisions (if necessary) to provide minimum design criteria for private sewer connections in anticipation of the transfer of authority for such issues from DEP to the local level.*

2.5 Prepare CWMP Phase I Report/Submittal

2.5.1 Compile the conclusions of Chapters 1 through 3, and produce the CWMP Phase I submittal.

2.6 Facilitate the CWMP Phase I public review process

2.6.1 Distribute the CWMP Phase I submittal to all applicable stakeholders.

2.6.2 Prepare materials, including summary sheets, maps and graphics, for a public meeting.

2.6.3 Attend a public meeting.

2.6.4 Compile a Public Comments Summary of comments received from stakeholders during the public review process. (Assume one round of review comments.)

2.7 Revise CWMP Phase I report for inclusion in Draft CWMP.

Task No. 3

3 PHASE II – MANAGEMENT TECHNIQUES AND ALTERNATIVES IDENTIFICATION AND SCREENING

3.1 Determination of Potential Site Locations for Satellite Treatment Facilities

3.1.1 Review previously developed siting criteria and update as appropriate.

3.1.2 Compile a list of Potential Sites for construction of satellite wastewater treatment facilities and groundwater discharge points.

3.1.2.1 Using assessor's information, identify undeveloped parcels with sufficient acreage, proximity to need areas, and distance from environmentally sensitive areas to develop a list of Potential Sites.

3.1.2.2 Perform a visual inspection of each Site to describe topography and ground cover.

3.1.2.3 Perform a literature search to determine the general soils and groundwater conditions of each Site.

3.1.2.4 Using the selection criteria and information in the above tasks, screen the identified sites to form a short list of Potential Sites.

3.1.2.5 Perform a desktop hydrogeologic evaluation of identified potential Sites to determine the feasibility of constructing a treated effluent disposal system on those sites.

3.1.2.6 Rank the Potential Sites according to the desktop hydrogeologic evaluation and the evaluation criteria.

3.1.2.7 Update the base map to reflect the locations of the Potential Sites.

3.1.3 Prepare a technical memorandum describing the selection criteria and the list of Potential Sites. Distribute to the PAC for review, and incorporate any suggested revisions into Chapter 1 of the CWMP Phase II submittal.

3.2 Overview of Wastewater Management Techniques and Technologies

3.2.1 Review technical, operational and permitting considerations of potential on-site solutions as appropriate

3.2.1.1 Technical considerations.

3.2.1.1.1 Identify ideal, adequate and prohibitive soil types.

3.2.1.1.2 Identify preferred and prohibitive groundwater separations as set forth in applicable regulations.

3.2.1.1.3 Identify spatial constraints such as lot size, proximate to property lines, proximity to wells, etc.

3.2.1.1.4 Identify other facilities, such as septic tanks, leaching fields or electricity that must be present for any proposed technology to work or be feasible and approved.

3.2.1.1.5 Describe any other conditions that are required for a proposed system to work, and any other conditions that prohibit the system's use.

3.2.1.1.6 Develop generic preliminary capital and operations and maintenance cost estimates.

3.2.1.2 Operational considerations

3.2.1.2.1 Describe the maintenance required to sustain a proposed system's operation.

3.2.1.2.2 Describe conditions that may cause the system to operate ineffectively.

3.2.1.2.3 Identify the residuals produced by the process.

3.2.1.2.4 Identify the residuals/septage disposal requirements.

3.2.1.3 Describe the overall advantages and disadvantages of potential on-site systems with regard to the:

3.2.1.3.1 disposal of wastewater;

3.2.1.3.2 continued limitations on growth;

3.2.1.3.3 capital and O & M costs;

3.2.1.3.4 pollution potential from failing or improperly maintained systems;

3.2.1.3.5 odors;

3.2.1.3.6 reliability;

3.2.1.3.7 redundancy;

3.2.1.3.8 phasing considerations;

3.2.1.3.9 environmental impacts.

3.2.1.4 Group the technologies into similar categories, and assess the general permitting and regulatory requirements for the on-site systems, such as:

3.2.1.4.1 Board of Health approval;

3.2.1.4.2 DEP approval for some I/A technologies;

3.2.1.4.3 Other applicable permitting and regulatory requirements.

3.2.2 Review technical, operational and permitting considerations of potential satellite solutions as appropriate.

3.2.2.1 Technical considerations.

3.2.2.1.1 Describe the wastewater loading rates and characteristics that are well suited and poorly suited for the technology.

3.2.2.1.2 Describe site conditions, including climate, soils, and groundwater elevation, that promote efficient treatment.

3.2.2.1.3 Describe the conditions that hinder operations.

3.2.2.1.4 Identify other treatment trains that must be paired with the technology to gain regulatory approval or adequate effluent quality.

3.2.2.1.5 Estimate the required land area for a sub-regional facility.

3.2.2.1.6 Develop generic, preliminary cost estimates for capital and operations and maintenance costs.

3.2.2.2 Operational considerations

3.2.2.2.1 Describe the staffing and training requirements to operate the facility.

3.2.2.2.2 Identify the materials/chemicals required to operate the system.

3.2.2.2.3 Identify the residuals produced by the process, and the requirements for residuals disposal.

3.2.2.2.4 Describe required maintenance schedules and procedures.

3.2.2.3 Describe the overall advantages and disadvantages of the potential satellite solutions with regard to:

3.2.2.3.1 the non-centralized disposal of wastewater;

3.2.2.3.2 the limitation of growth;

3.2.2.3.3 locating treatment facilities;

3.2.2.3.4 additional odor control;

3.2.2.3.5 the technology's reliability;

3.2.2.3.6 the technology's performance;

3.2.2.3.7 any significant environmental impacts such as odors;

3.2.2.3.8 potentially higher capital and operations costs.

3.2.2.4 Assess the general permitting/regulatory requirements of each potential satellite solution, including:

3.2.2.4.1 Possible Board of Health approval;

3.2.2.4.2 Possible Conservation Commission approval;

3.2.2.4.3 Possible Army Corps of Engineers 404 permit;

3.2.2.4.4 Possible DEP 401 Water Quality Certification;

3.2.2.4.5 DEP groundwater discharge permits;

3.2.2.4.6 DEP approval for some I/A technologies;

3.2.2.4.7 Other applicable permitting and regulatory requirements.

3.2.3 Description of <u>centralized/regional</u> wastewater solutions.

3.2.3.1 Review options available to provide wastewater treatment capacity at area treatment facilities while avoiding interbasin transfer of wastewater, as appropriate. Evaluate sub-basin impacts for alternatives as well.

3.2.3.2 Review previously described technical considerations associated with the different wastewater collection system alternatives available**,** and update as appropriate:

3.2.3.2.1 Gravity sewers;

3.2.3.2.2 Low pressure sewers;

3.2.3.2.3 Pump stations and force mains;

3.2.3.2.4 Vacuum sewers;

3.2.3.2.5 Small diameter gravity sewers;

3.2.3.2.6 STEP systems.

3.2.3.3 Describe the operational considerations associated with the different wastewater collection system components, such as:

3.2.3.3.1 Odor control;

3.2.3.3.2 lower O&M on gravity;

3.2.3.3.3 higher O&M on low pressure and pump stations.

3.2.3.4 Describe the overall advantages and disadvantages of a centralized/regional wastewater solution, including:

3.2.3.4.1 Management/control of facilities;

3.2.3.4.2 Capital and O&M costs;

3.2.3.4.3 WWTF effluent monitoring and control;

3.2.3.4.4 transporting water downstream to treatment facilities;

3.2.3.4.5 possible interbasin transfer;

3.2.3.4.6 promotion of growth.

3.2.3.5 Describe the overall general permit/regulatory requirements for the construction of wastewater collection systems, including:

3.2.3.5.1 possible Conservation Commission approval;

3.2.3.5.2 DEP sewer extension permit;

3.2.3.5.3 Possible interbasin transfer;

3.2.3.5.4 Easements and property takings.

3.2.4 Review previously detailed watershed-based (non-wastewater) management techniques and update as appropriate.

3.2.4.1 Review regional conservation initiatives, and briefly describe conservation issues.

3.2.5 Prepare a technical memorandum summarizing the information generated in Task 3.2. on potential technologies. To the maximum extent possible, present the information in a format that facilitates the evaluation of the technologies using the general screening criteria. This technical memorandum, with any revisions, will become Chapter 2 of the CWMP Phase II submittal.

3.3 Screening of the Potential Techniques/Technologies

3.3.1 Create a technology evaluation form based on the screening criteria.

3.3.2 Complete a technology evaluation form for each potential technology.

3.3.3 Generate a decision matrix summarizing the information on the technology evaluation forms. The matrix will consist of criteria on one axis, technologies on the other, and numerical ratings in the array.

3.3.4 Prepare a technical memorandum summarizing the screening process and recommending candidate technologies for further examination in Phase III. This technical memorandum, with any revisions, will become Chapter 3 of the CWMP Phase II submittal.

3.4 Facilitate the CWMP Phase II public review process

3.4.1 Distribute the Phase II submittal to all applicable stakeholders. Assume 20 copies will be distributed.

3.4.2 Prepare materials, including summary sheets, maps and graphics, for a public meeting.

3.4.3 Attend a public meeting.

3.4.4 Compile a Public Comments Summary of comments received from the stakeholders during the pubic review process. Assume one round of review comments.

3.5 Revise CWMP Phase II report for inclusion in Draft CWMP.

Tasks 4 and 5 are included to detail the complete Scope of Services for this project. They are not authorized for work by the ENGINEER as part of this AGREEMENT. ENGINEER shall only commence work on these tasks when authorized in writing by the CLIENT and an Amendment to this AGREEMENT is executed by the ENGINEER and CLIENT.

Task No. 4

4 PHASE III – DETAILED EVALUATION OF ALTERNATIVES AND RECOMMENDATION OF WASTEWATER MANAGEMENT PLAN

4.1 Pair candidate technologies with needs Areas to create Viable Alternatives.

4.1.1 Describe conditions present in each Area, including a summary of conditions described in Section II of CWMP Phase I, and projected wastewater flow.

4.1.2 For each Area: Identify on-site techniques that are not feasible because area conditions (e.g. soils, lot size, and groundwater) are prohibitive for the technology. Identify on-site technologies that are not preferred because area conditions are not ideal for the technology. Identify on-site technologies that are technically feasible because area conditions align with conditions that are conducive for implementation of the technology. Create a short-list of viable on-site technologies for each Area.

4.1.3 Pair study Areas with nearby Potential Sites for decentralized treatment facilities and describe the collection/conveyance system from the Area to the Site.

4.1.4 Describe the conditions present at each potential Site and create a short-list of viable satellite technologies for each.

4.1.5 Describe the viable centralized/regional options, including paired techniques to increase treatment capacity at Fitchburg and Leominster facilities.

4.1.6 Compile the Viable Alternatives into solutions for each Area and combination of Areas and potential Sites.

4.2 Prepare general conceptual designs of each Viable Option. [Note – the level of effort for this task depends on the number of Areas and the number of candidate technologies under consideration.] In the case of on-site solutions, conceptual designs will consist of selecting representative lots and representing the I/A technology on those lots. For satellite solutions, a collection system schematic in the Area and a preliminary facility layout on the Site will be developed. For the centralized solutions, a schematic wastewater collection system layout indicating the destination of the wastewater will be completed.

4.2.1 For each Viable Alternative, identify the associated general environmental impacts:

4.2.1.1 water quality and quantity including the amount of groundwater recharge vs. surface water discharge associated with the option;

4.2.1.2 solid/hazardous waste generation (including Septage or residuals disposal);

4.2.1.3 odors, air and noise;

4.2.1.4 visual, historical, open space and recreation impacts;

4.2.1.5 wetlands, habitat and flood plain impacts;

4.2.1.6 growth and development consideration;

4.2.1.7 aesthetic compatibility of the system with the surrounding environment.

4.2.2 For each Viable Alternative, prepare a preliminary *present worth cost analysis* for construction and operation of systems in each Area or Site.

4.2.2.1 Establish budgetary costs for components of potential wastewater management systems.

4.2.2.2 Estimate quantities of each component for each viable technology in each Area or potential Site.

4.2.2.3 Calculate a budgetary capital cost of each viable option for each Area or potential Site, including ancillary costs to develop the solution.

4.2.2.4 Estimate the operation and maintenance cost of each viable alternative for each Area, including any unique costs such as long-term monitoring of I/A technologies.

4.2.3 Compile the conceptual designs into packages for each Area and combinations of Areas and Sites. Solutions will include schematic layouts, evaluation matrices for environmental impacts, and a present worth calculation to estimate the option's preliminary costs.

4.3 Apply the selection methodology to each of the Viable Alternative conceptual designs

4.3.1 Create a Viable Alternative evaluation form based on the selection methodology set forth. The impetus behind the form and format of the form are similar to the one developed for the technology screening process.

4.3.2 Complete an evaluation form for each Viable Alternative.

4.3.3 Generate a decision matrix summarizing the information on the evaluation forms. The matrix will consist of criteria on one axis, alternatives on the other, and numerical ratings in the array.

4.3.4 Prepare a technical memorandum summarizing the selection process and recommending a preferred technology for each Area or combination of Areas and Sites. This technical memorandum, with any revisions, will become a chapter of the CWMP Phase III submittal.

4.4 Final Wastewater Management Plan Refinement

4.4.1 Complete a conceptual summary of the recommended wastewater management systems which may include regional, on-site, satellite and centralized/regional solutions and water conservation techniques.

4.4.1.1 Prepare schematic preliminary design maps specifying wastewater collection system routes and types, and indicating the destination of wastewater.

4.4.1.2 Locate proposed pump stations and indicate the present and future design flows.

4.4.1.3 If applicable, provide a general summary of satellite treatment facilities to accommodate current and future flows.

4.4.1.4 Identify potentially impacted wetlands and estimate any required replication.

4.4.1.5 Specify conditions of inter-municipal agreements necessary with the Town of Leominster and City of Fitchburg.

4.4.1.6 Outline water conservation programs.

4.4.2 Identify and generally summarize the environmental impact of the preferred alternative.

4.4.2.1 Assess the aesthetics impacts of satellite facilities.

4.4.2.2 Assess the alternative impacts to groundwater quality, particularly in any Zone II's.

4.4.2.3 Estimate the impacts to water quality in receiving water bodies.

4.4.2.4 Estimate the quantities of residuals produced by the treatment facilities and indicate the potential disposal methods.

4.4.2.5 Indicate the potential for odor generation or air pollution.

4.4.2.6 Provide a general assessment of the net interbasin transfer resulting from the plan.

4.4.2.7 Assess the reduced risk to human health by discontinuing use of septic systems for areas that this was determined to be the best solution.

4.4.2.8 Identify any general impacts to wetlands or species habitat and indicate any mitigation measures (no wetlands delineation is included in the Scope of Services)

4.4.2.9 Estimate average power consumption by the operation of the proposed facilities.

4.4.2.10 Indicate the character and quantities of any material and chemicals required to operate the facilities.

4.4.2.11 Assess how the proposed alternatives might impact projected growth patterns.

4.4.2.12 Assess the impacts of reduced recharge on both public and private drinking water supplies (based on available information) [desktop study].

4.4.2.13 *Prepare a complete flow table for both the existing and proposed sewers for each proposed alternative.*

4.4.3 Identify the regulatory considerations and permit requirements of the preferred alternatives.

4.4.4 Prepare a planning level *present worth* cost analysis for the management plan, including both capital and O & M costs.

4.5 Compile the separate, selected components of the overall plan into a single unified Recommended Management Plan.

4.5.1 Combine the selected preliminary solutions into a single recommended plan.

4.5.2 Assess the cumulative environmental impact of the recommended plan.

4.5.3 Develop a final cost estimate for the recommended plan.

4.5.4 *Assess the "cost per household" of the recommended plan by comparing the final cost estimate to the number of households served by the recommended plan.*

4.6 Develop an Implementation Plan

4.6.1 Prepare a brief project implementation plan.

4.6.2 Review existing intermunicipal agreements with Fitchburg and Leominster and any other applicable public or private WWTFs.

4.6.3 Identify a plan for financing the project including the possible sources of funding, and repayment options.

4.6.4 Outline a proposed project schedule, including sequencing of construction contracts, permits, and project compliance.

4.7 Compile all of the CWMP Phase III efforts, as modified by the Meetings, into a unified CWMP Phase III submittal. This submittal will be the Draft version of the Comprehensive Wastewater Management Plan.

4.7.1 Facilitate the CWMP Phase III public review process

4.7.2 Distribute the CWMP Phase III submittal to all applicable stakeholders. Assume 20 copies will be distributed.

4.7.3 Prepare materials, including summary sheets, maps and graphics, for a Public Hearing.

4.7.4 Attend a public hearing.

4.7.5 Compile a Public Comments Summary of comments received from the stakeholders during the public review process.

4.8 Revise CWMP Phase III report for inclusion in Draft CWMP

4.9 *Hydrogeological Assessment of Potential Groundwater Discharge Sites [TASK 4.4 is NOT INCLUDED in this AGREEMENT. Task items are listed for information only. If a hydrogeological assessment is determined to be necessary, an amendment to the contract fee will be negotiated at that time.]*

4.9.1 *Negotiate and administer subcontract with drilling subcontractor.*
4.9.2 *Install test borings in the area of the potential groundwater discharge site. Convert test borings to monitoring wells after soils assessment.*
4.9.3 *Produce boring and well construction logs.*
4.9.4 *Assess site vertical hydraulic conductivity through double ring infiltrometer testing.*
4.9.5 *Develop base map of each site showing borings, test pit and monitoring well locations.*
4.9.6 *Perform preliminary predictive mounding analyses on the potential groundwater discharge areas for the assumed effluent loading rates.*
4.9.7 *Perform estimated hydraulic conductivity measurements on the monitoring wells.*

4.9.8 *If preliminary analysis indicates viability for groundwater discharge, install 2.5-inch diameter test wells with stainless steel screens and perform a short duration (3 - 4 hour) pumping test. Test data will provide aquifer hydraulic coefficients.*

4.9.9 *Evaluate results for groundwater discharge feasibility for each site.*

Task No. 5

5 PHASE IV – DRAFT AND FINAL CWMP PREPARATION

5.1 Draft CWMP

The final phase of planning will integrate the previous three submittals into a unified Draft CWMP. Upon the completion of each phase, Wright-Pierce in conjunction with the Town, DEP and the PAC will agree upon which comments received during the public review process to address, and how to best address them. The responses to these comments will be incorporated into the Phase IV submittal. The content of the report will be revised to reflect comments from regulatory agencies and the public. An executive summary including the conclusions and recommendations will be added to the report.

5.2 Prior to the CWMP Phase IV submittal, up to two meetings will be held with the reviewing agencies and Town officials. The purpose of these meetings will be to ensure the completeness of the Draft CWMP and thereby minimize the number of issues to address during the public review period. WP will produce and distribute 20 copies of the Draft CWMP to the stakeholders for review.

5.3 Final CWMP

The input resulting from the Draft CWMP will be incorporated into the Final CWMP for approval by DEP and ratification by the Town. It is assumed that 20 final copies will be provided for final distribution.

APPENDIX C

MEPA Certificate, May 9, 2008

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

DEVAL L. PATRICK
GOVERNOR
TIMOTHY P. MURRAY
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May 9, 2008

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
2nd NOTICE OF PROJECT CHANGE

PROJECT NAME	: Lunenburg Comprehensive Wastewater Management Plan
PROJECT MUNICIPALITY	: Lunenburg
PROJECT WATERSHED	: Nashua River
EOEA NUMBER	: 12160
PROJECT PROPONENT	: Town of Lunenburg
DATE NOTICED IN MONITOR	: April 9, 2008

Pursuant to the Massachusetts Environmental Policy Act (M.G.L. c.30, ss.61-62H) and Section 11.17 of the MEPA regulations (301 CMR 11.00), I have reviewed the Notice of Project Change (NPC) submitted on this project and hereby determine that it **requires** the preparation of a Supplemental Environmental Impact Report.

Originally proposed in an April 2000 Single Environmental Impact Report (SEIR), the Town of Lunenburg's Comprehensive Wastewater Management Plan (CWMP) was described as the construction, in three phases, of a wastewater collection system over a 20-year planning period. The proposed system will serve an estimated 9000 residents generating an average 734,600 gallons per day (gpd) of wastewater (2,720,000 gpd peak). All wastewater will be treated at either the Leominster or Fitchburg wastewater treatment facilities. The Town of Lunenburg has inter-municipal agreements with both cities for treatment of up to 500,000 gpd. The project's proposed full build wastewater flow estimates are 485,000 gpd to Leominster and 249,000 to Fitchburg.

The Phase I service area, consisting of the Town center, a new public school, the proposed new public safety building, and the Whalom area of town, has the greatest potential to significantly impact groundwater quality. The Town was granted a Phase I Waiver for the construction of 62,000 feet of new sewers and three sewage pumping stations on May 26, 2000. The Town completed construction of Phase I in June 2006. The Phase II service area, located in the southwestern section of Lunenburg, included lower Massachusetts Avenue and Baker Station. Phase III will service the lakefront areas of Hickory Hills and Lake Shirley, located in northern and southeastern Lunenburg respectively. As described by the Town, Phase II construction has been postponed to allow the Town to further review and evaluate it's wastewater management needs.

The project is undergoing review and requires a mandatory EIR pursuant to Section 11.03 (5)(a)(3) because the project involves the construction of more than 10 miles of new sewer. The project may require an Order of Conditions from the Lunenburg Conservation Commission, a 401 Water Quality Certification, a Sewer Extension Permit and a Groundwater Discharge Permit from Department of Environmental Protection (MassDEP). The project involves financial assistance from the Commonwealth, and therefore, MEPA jurisdiction extends to all aspects of the project that might have a significant impact on the environment.

1st NPC

As described in the Notice of Project Change submitted to the MEPA Office in July 2002, the Town proposed to construct an additional 5,000 linear feet of gravity sewer line, and a pump station, to serve abutting properties located along a major portion of Electric Avenue (Route 13) in Lunenburg. Although the CWMP proposed sewering a smaller segment of Electric Avenue, the Town had an opportunity to economize on the proposed construction of a larger portion of the Electric Avenue sewer project by combining it with the Town's Electric Avenue reconstruction project, which is funded separately under a Public Works Economic Development (PWED) grant from the Massachusetts Highway Department (MHD). According to the Town, the proposed sewer extension along Electric Avenue would service existing commercial and residential zoned properties whose soils are not conducive to Title V systems. The Town estimated that the proposed project change will result in an additional 23,920 gallons per day (gpd) of wastewater flow to Leominster (12,000 gpd) and Fitchburg (11,920 gpd), and will have no environmental impacts during construction.

2nd NPC

As described in this 2nd NPC, the Town is proposing to extend new sewers to two additional sewer needs areas, Needs Area 25 – Pioneer Growth Management District, Needs Area 26 – Chase Growth Management District) comprised of mainly large tracts of commercial/industrial zoned developable land. The Town is also proposing to construct two new decentralized wastewater treatment facilities to serve the Lake Shirley area and the Hickory Hills area of Lunenburg. The Town has proposed to design and implement a Sewer District Management Plan and a Septage Management Plan prior to the construction of the proposed sewer expansion. The Town estimates that the currently proposed project change will result in approximately 14 miles (35 miles total) of new sewer main, six new sewer pump stations and two new decentralized wastewater treatment facilities with groundwater discharge, and increased wastewater flows of approximately 253,315 gpd (987,915 gpd total).

While I find that the report contains a great deal of useful information, there are several issues that will require further study as part of a Supplemental Final CWMP/EIR (Supplemental EIR), so that they can be considered in the evaluation of the most feasible alternatives and a presentation of the final CWMP for the Town of Lunenburg. The Town of Lunenburg should work closely with MassDEP and the Natural Heritage and Endangered Species Program during the preparation of the Supplemental EIR document. The Supplemental EIR document should provide the information identified below.

SCOPE for Supplemental EIR

General

The Supplemental EIR should contain copies of all comments received on the 2nd Notice of Project Change. The comment letters should be indexed, with a response provided for each comment received. Copies of the Supplemental EIR should be distributed to all commenters on previous documents. To ensure full and informed public review, copies should also be distributed to the Planning Board, Conservation Commission, and Board of Selectmen and/or Town Manager for the Towns of Lunenburg, Leominster and the City of Fitchburg.

Project Permitting

The Supplemental EIR should include a detailed discussion of each state permit and approval necessary for the project as currently proposed, and should demonstrate that the project design meets applicable regulatory and performance standards.

Needs Analysis

According to the comments received by the Nashua River Watershed Association, the sewer needs analysis contained in the 2nd Notice of Project Change submittal does not adequately demonstrate the need for sewers, particularly in the Lake Shirley and Hickory Hills Lake areas. The Supplemental EIR should provide a detailed discussion of the need to sewer the Lake Shirley and Hickory Hills Lake areas. This discussion should consider the failure rate of Title 5 systems that have been inspected in these areas, the reasons for these failures, the frequency of Title 5 problems, and the upgrades required to address these failures. This section of the Supplemental EIR should explain why a Septage Management Plan could not be implemented to ensure the proper functioning of on-site Title 5 systems in these areas. I strongly encourage the Town to consult with MassDEP in completing this section of the Supplemental EIR.

Wastewater

The Town is proposing to extend new sewers to Needs Area 25 – Pioneer Growth Management District and Needs Area 26 – Chase Growth Management District which are mainly comprised of large tracts of commercial/industrially-zoned developable land. As described in the 2nd NPC submittal, the estimated future (2026) build out wastewater flows from the Pioneer Growth Management District and the Chase Growth Management District are 182,000 gpd and 74,000 gpd, respectively. As currently designed, the future build out flows from the Pioneer Growth Management District will be conveyed to the proposed new Lake Shirley WWTF for treatment and subsurface discharge. The future build out flows from the Chase Growth Management District will be conveyed to the City of Fitchburg's East WWTF for treatment and discharge.

The project change will result in an increase to the amount of wastewater flow conveyed from the Town of Lunenburg to the Town of Leominster and the City of Fitchburg for treatment and disposal. According to MassDEP, the proposed changes to the Town of Lunenburg's CWMP will require revisions to existing Inter-Municipal Agreements (IMAs) between Lunenburg and Leominster and Lunenburg and Fitchburg. The Supplemental EIR should include a detailed discussion of the required revisions to the Town's existing IMAs with the Town of Leominster and the City of Fitchburg. Specifically, this section of the Supplemental EIR should describe Lunenburg's commitments to remove infiltration and inflow (I/I) from within Fitchburg's and Leominster's sewer systems to accommodate Lunenburg's increased wastewater flows under the currently proposed project change.

The Town has identified two separate sites for the construction of two new decentralized wastewater treatment facilities (decentralized WWTFs) to serve the Lake Shirley area and the Hickory Hills area of Lunenburg. In their comments, MassDEP has indicated that the 2nd NPC submittal did not include any site-specific information, including field assessment work, to demonstrate that either of these proposed locations can support a decentralized wastewater treatment facility (WWTF). The Supplemental EIR should include a hydrological assessment for each of the two proposed decentralized WWTFs. The Town should work closely with MassDEP to develop a scope of work for conducting these site assessments. This section of the Supplemental EIR should identify any applicable permitting requirements, including a Groundwater Discharge Permit and a National Pollution Discharge Elimination System (NPDES) permit, associated with the design, construction and operation of the proposed centralized WWTFs.

Rare Species

According to the comments received from Natural Heritage and Endangered Species Program (NHESP), the proposed locations (Hickory Hills/Townsend Harbor, Lake Shirley/Reservoir Road) for the construction of two new decentralized wastewater treatment facilities are located within and adjacent to Priority and Estimated Habitat for the Blanding's Turtle (*Emydoidea blandingii*), respectively.

The Hickory Hills/Townsend Harbor project will require review by NHESP pursuant to the Massachusetts Endangered Species Act (MESA) 321 CMR 10.00. NHESP requests that the Town also maintain a significant 'no-work' buffer zone from the habitat area located adjacent to the Lake Shirley/Reservoir Road project site.

The Supplemental EIR should include a site inventory of the Hickory Hills/Townsend Harbor and Lake Shirley/Reservoir Road sites to determine if any areas within those sites constitute suitable habitat for rare species, with results presented on an appropriately scaled map. If any rare species are present, the Supplemental EIR should include sufficient information to determine if the full-build project will require a Conservation Permit pursuant to the Massachusetts Endangered Species Act. The proponent should contact NHESP to determine the appropriate survey protocols. The Supplemental EIR should include sufficient information to determine if the project will require a Conservation Permit pursuant to the Massachusetts Endangered Species Act. If necessary, the Supplemental EIR should include an alternatives analysis to evaluate methods of avoiding or minimizing impacts on rare species, and the document should fully explain any permitting implications under the Massachusetts Endangered Species Act.

Comments

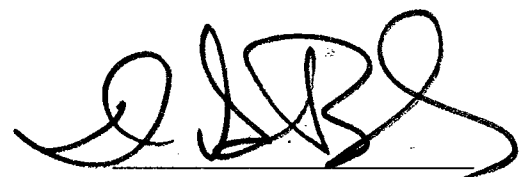
I recommend that the proponent use either an indexed response to comments format, or else direct narrative response. The Supplemental EIR should present any additional narrative or quantitative analysis necessary to respond to the comments received. I ask the Town to continue to work closely with MassDEP to design and implement a sustainable CWMP and mitigation plan for the Town of Lunenburg that will help to offset the proposed project's municipal water withdrawal and sewering impacts. The Town should continue to prepare the Supplemental EIR for the project in accordance with Section 11.07 of the MEPA regulations as modified by this Certificate. The Supplemental EIR should include a copy of this Certificate.

Mitigation/Section 61

The Supplemental EIR should include a separate chapter on mitigation measures. This chapter on mitigation should include Draft Section 61 Findings for all state agency actions. The Draft Section 61 Findings should contain a clear commitment to mitigation, an estimate of the individual costs of the proposed mitigation and the identification of the parties responsible for implementing the mitigation. A schedule for the implementation of mitigation should also be included.

Distribution

The Supplemental EIR should be circulated in compliance with Section 11.16 of the MEPA regulations and copies should also be sent to the list of "comments received" below and to the municipal officials for the Towns of Lunenburg and Leominster and the City of Fitchburg. A copy of the Supplemental EIR should be made available for public review at the public libraries for the Lunenburg and Leominster and the City of Fitchburg.



May 9, 2008
DATE

Ian A. Bowles, Secretary

Comments received:

4/25/08	Montachusett Regional Planning Commission
4/30/08	Natural Heritage and Endangered Species Program (NHESP)
5/01/08	Nashua River Watershed Association
5/06/08	Massachusetts Department of Environmental Protection (MassDEP) – CERO
5/06/08	Town of Lunenburg, Sewer Commission

2nd NPC # 12160
IAB/NCZ/ncz

502 Chase Road
Post Office Box 135
Lunenburg, MA 01462

Town of Lunenburg Sewer Commission

April 30, 2008

Abigail Charest
Kevin Olsen
Wright Pierce
200 Brickstone Square, Suite 505
Andover, MA 01810

RE: Lunenburg Comprehensive Wastewater Management Plan – Phase III Draft

Dear Abby & Kevin:

The Sewer Commission has reviewed the draft Phase III report for the Comprehensive Wastewater Plan. The development of the plan has been a long and arduous process and tremendous amount of hard work has gone in to the document. After conducting a complete review of the draft document the Commission has a number of concerns regarding some of the recommendations and offers the following comments and feedback:

Inter-municipal Agreements – Due to limited capacity and in order to mitigate impacts associated with sewer, the plan recommends the adoption of a Sewer District Management District (SDMP). The SDMP would legally identify the sewer system boundaries and allow the Commission to set policies; which would include identifying properties that are allowed to hook into the sewer system. As stated in the plan, the primary reason for the SDMP is to preserve the existing wastewater infrastructure capacity for the residents and businesses located with the existing collection areas identified as areas of need.

The plan as proposed utilizes available flow for existing properties within the needs areas with limited reserve capacity for future development; "Sewer System expansion needs to be controlled in order for the Town to maintain control of the allotted IMA flow allowances to the receiving wastewater treatment facilities" (p. 6-2). In fact the plan recommends restricted connections and a connection moratorium subsequent to construction of the recommended plan. In order to achieve this restrictive SDMP, special legislative changes to MGL Chapter 83 would be necessary.

The Commission recognizes that managing growth is important to maintain the rural character of the Community, however the restrictions recommended by the plan will

make it difficult for the expansion of existing homes and businesses within the district and place unrealistic controls for growth in the future. Managed growth is an essential component of maintaining a healthy community. It is apparent that prior to finalization of the plan the Commission must start a dialog with Leominster and Fitchburg regarding additional capacity. In order to determine the additional capacity that is needed, it is essential that the Commission completely understand the models that were used in each of the needs areas to determine flow and that a sufficient reserve/growth capacity is factored in for each of the needs areas. In the event that the Commission is successful at acquiring additional capacity, the cost of renegotiating the IMA's must be factored into the plan. Additionally, investigation/analysis of possible locations for a treatment plant within Lunenburg should be explored.

In the event that additional capacity cannot be acquired or a treatment plant is not realistic, it is essential that to ensure that the Sewer District Management Plan adopted conforms to the assumptions made for existing and future growth within each needs area. Details on how flow for existing homes and undeveloped land was calculated must be provided. A thorough review by the Commission of the current sewer use rules and regulations in regards to future planned projects will be necessary, including what type of restrictions would be implemented and criteria for connection. Prior to finalization of the plan, the Commission must determine what type of restrictions would be implemented and develop criteria for connections based on the flow model incorporated within the plan.

There are several streets within the plan that the Commission and the Board of Health question as to why they were included within the needs areas. Specifically Autumn Road, parts of Reservoir Road and the end of Townsend Harbor Road at the Townsend line. These areas can easily meet Title 5 requirements and installation of conventional systems would be a reasonable, less costly alternative. The Commission has conducted a review of the Study area Figures provided in Phase III report and has a number of questions/comments:

Figure-7-3 – Study Area 6

- The large parcel of land on Pratt Street is protected land and should be removed from the needs area.
- The needs area should be expanded to include all of Pleasant Street.
- The calculations utilized for the large parcel of land at the end of Pleasant Street should be provided, the Commission suggests that this parcel be limited to one lot/connection based on frontage.

Figure 7-4 – Study Area Study Area 9

- Several parcels that now appear within the needs area were not identified as areas of need in the previous reports. This area must be re-evaluated and refined to **areas of need**, particularly in the Hollis Road area.
- There are a number of streets within this area where it would be possible to utilize gravity sewers; why is the entire area served by low pressure mains versus gravity? From an engineering and maintenance standpoint, it is the position of the Commission that gravity sewers be utilized whenever possible.

Figure 7-5 – Study Area 12

- On Cushing Lane and Turkey Hill Road gravity sewers could be utilized and would be a better solution for these areas.

Figure 7-6 - Study Area 15

- Again the Commission questions the use of low pressure mains in this area versus gravity sewers.

Figure 7-7 - Study Areas 4,10,26

- Currently the plan directs all flow from Beal Street to Fitchburg. Recently the Sewer Commission approved a flow allocation for a development on Beal Street (Whispering Pines), this flow will be directed to Leominster. Therefore, it may be prudent to split the flow on Beal Street between Leominster and Fitchburg. The impact of Whispering Pines on flow allocation and the plan recommendation needs to be determined

Figure 7-8 - Study Area 4

- Based on past studies, Tilton Avenue is gravel and able to support on-site septic systems. Additionally, a prior survey indicates that residents in this area do not support the installation of sewer. Therefore, it may be possible to remove this area from the plan and keep the capacity in reserve.

Figures 7-9 - Study Area 10 & Figure 7- 10 - Study Area 26

- These areas include the recommended "Growth Management Districts". According to the Planning Board, due to the difficult economy it is not expected that these area will be developed for commercial/industrial uses in the near future. When the areas are developed, it is expected that a specific project will be the catalyst for the installation of sewer, and will be funded by the developer. Therefore, these areas should be placed at the bottom of the priority list.
- The Commission questions the need for a pump station at the intersection of Beal and Chase Road.
- It is expected that the Growth Management District in the Leominster Shirley Road area will include an industrial component as wells as a commercial component.
- Details on the assumptions utilized to calculate flows in these areas should be provided.
- There is a large parcel with frontage on Chase Road and Northfield Road, this land is in a protected program and should be removed from the needs area.
- The plan proposed that the "Growth Management District" on Leominster Shirley Road be served by a decentralized plant located in the Lake Shirley Area. Sewer

connection to Leominster is available at Pioneer Park and is the preferred method of wastewater disposal by the Commission for this area. a more cost effective more expedient solution to serve that area. This area will be incorporated within the Sewer District, with a Water Protection Overlay District to protect the water balance.

Figure 7-11 - Study Areas 19/25

- Autumn Road is capable of supporting on-site systems and should be removed from the needs area.
- Based on available data and Board of Health recommendations, the area on the right of Reservoir Road is gravel and capable of supporting on-site systems. Therefore the needs area should be refined.

Figure 7- 12 – Study Area 14/24

- There area several areas on Townsend Harbor Road and Cove Road that are gravel and capable of supporting on-site systems. This area should be refined.
- It appears that this area was expanded to include additional parcels along the intersection of Mulpus Road and Townsend Harbor Road. Clarification of why this area was expanded is needed.
- Currently the plan proposes the installation of a treatment plant on land owned by Marilyn Stafford. Based on previous farming, this land may not be suitable for wastewater disposal.
- The Commission suggest that Wright Pierce investigate the possibility of re-locating the plant on land commonly know as the "Szocik" site on Townsend Harbor Road, previously owned by the James River Corporation as a possible location for a decentralized plant. This property is set back from the road and may be more appropriate in this densely populated area.

Septic Management Plans – The plan recommends that a septage management plan be adopted with a defined septage management overlay. A bylaw change to include new requirements for new and replacement systems in environmentally sensitive areas is suggested. The possibility of the Board of Health requiring innovative alternative (I/A) systems is mentioned. As noted by the Board of Health Agent, innovative alternative systems are currently utilized if a traditional system cannot be sited on a property in compliance with existing state and local regulations. Economic factors are a consideration when abating a public health issue on private property. Therefore, the Commission will not support adopting a bylaw to require innovative technology if a property is capable of supporting a conventional on-site system. The plan suggests that Board of Health consider creating a septage management plan for small pockets of "needs" areas in addition to the needs areas identified. Details on specific areas should be provided.

Hickory Hills & Lake Shirley –The proposed plan recommends the installation of decentralized plants in the Hickory Hills and Lake Shirley areas. Based on the cost analysis included in the report, installation and operation of treatment plants in the Lake

areas will be expensive, particularly in the Lake Shirley area (estimated cost $25,000+ per home). Cost calculations are based on available soil data without soil borings and may be low. There are a number of steps that must be taken in order to determine if the proposed locations are in fact suitable for the treatment of wastewater, including soil testing and hydro-geological studies. The estimated cost for the hydro-geological studies is in excess of $125,000. The plan recommends that the sites be acquired in 2008/2009 and in the Lake Shirley area construction of the plant be completed in 2014-2016, in Hickory Hills completion is recommended in 2017-2019. The Commission is concerned that hydro-geologic data compiled now may have to be repeated if and when the decision is made to move forward with decentralized treatment, therefore the Commission has voted not to recommend conducting the testing at the present time.

Given the troubled economy, the Commission does not feel that the Community will support acquisition of the private property in the Hickory Hills nor will there be support for spending upwards of $125,000 for hydro-geological testing to determine if the areas are suitable. Additionally, it is unclear whether the residents in these areas will support the installation of decentralized plants. Historically, the Commission has ensured that at least 51% of the residents in an affected area support sewer prior to proceeding. Additional public involvement of residents in the lake areas is needed to determine the level of support for sewer and/or decentralized alternatives.

The intent of the Comprehensive Wastewater Management Plan is to determine those areas that may be unsuitable for traditional Wastewater Disposal and identify the best options for those areas. In the Phase II report, initially a combination of Title 5 systems, innovative alternatives and/or septage management plans were recommended in the Lake areas. Due to estimated costs associated with implementation of those plans, it was determined that decentralized plants were the best option. Given the costs associated with the hydro-geological studies, the question regarding public support and the possibility of additional MEPA review due to water balance issues, it may be advisable to re-evaluate these areas for other alternatives.

Prior to finalizing the plan, the Commission may determine that it is in the best interest of the Community to withdraw these areas from the plan.

Allocations for Proposed/Permitted Projects - Recently the Commission was advised that the 68 unit project known as "Lunenburg Estates" on Massachusetts Avenue will not proceed as planned. Therefore, the flow allocation for this property should be removed from flow projections. The Commission is considering the possibility of re-directing flow from the proposed Tri-Town project to Leominster. Prior to finalization of the plan the flow allocation/direction to Tri-Town must be determined as it may have a significant impact on the plan. Recently the Commission was advised that the proposed development on Lake Whalom (Emerald Place) may require approximately 9,000 gpd of additional capacity, bring the total gallons per day for this project to approximately 63,000 gpd.

Ranking Methodology – The ranking methodology for the recommended alternatives was based in large part on adoption of the growth management techniques and control

measures recommended by the plan, in the event that these recommendations are not implemented; the scores within the specified needs areas could change significantly. The Commission recommends that a clear statement on the dependency of the plan on implementation of the recommendations should be included in the introduction. A question has been raised as to the scoring matrix for lower Mass Avenue. The data in Table 5-1 indicates that a regional alternative to Fitchburg of 200,000 gpd received a score of 55, and the regional alternative to Fitchburg of 300,000 gpd scored a 47. However, the recommendation of the plan is to request an amendment to the existing IMA of approximately 180,000 gpd. This recommendation appears to contradict the ranking system, please clarify.

Prior to finalization of the plan, it is clear that there are a number of action items to be undertaken. The availability of capacity from Leominster and Fitchburg must be determined, the implementation of a Sewer Management district must be explored and the interest in areas slated for decentralized treatment must be determined. Additionally, clarification/discussion on various issues within the study areas is needed. At this point in time, the Commission recommends moving forward with the public comment period on the Phase III draft and holding off on the public hearing and formal submission to DEP until the plan has been finalized. The Commission appreciates the efforts of Wright Pierce in this endeavor and looks forward to working with you to finalize the Comprehensive Wastewater Management Plan for the Town of Lunenburg.

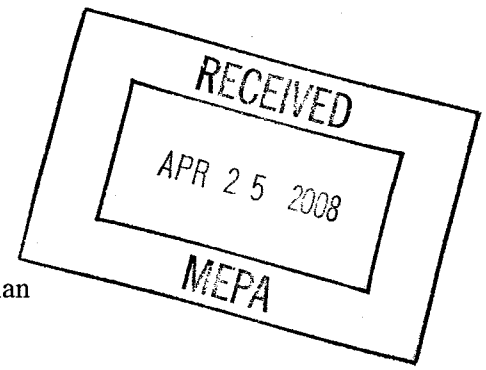
Respectfully,

William Gustus
Chairman, Lunenburg Sewer Commission

cc: Kerry Speidel, CAFO
Board of Selectmen
Jack Rodriquenz, DPW Director
Planning Board
Board of Health
Conservation Commission
Zoning Board of Appeals
Building Official
Nick Savalis, OEA-MEPA

MONTACHUSETT
REGIONAL PLANNING COMMISSION
R1427 Water Street Fitchburg, Massachusetts 01420
(978) 345-7376 FAX (978) 348-2490 Email: mrpc@mrpc.org

April 18, 2008



Secretary Ian A. Bowles, Secretary
Executive Office of Energy and Environmental Affairs
MEPA Environmental Policy Act Office
100 Cambridge Street, Suite 900
Boston, MA 02114

RE: Lunenburg Comprehensive Wastewater Management Plan
Notice of Project Change
EOEA # 12160

Dear Secretary Bowles:

The Montachusett Regional Planning Commission recently received the Notice of Project Change (NPC) for the Town of Lunenburg Comprehensive Wastewater Management Plan Project, EOEA # 12160.

The proposed Project Change Notice includes areas further identified as needs areas. These are areas that have failing or poorly performing conventional Title 5 systems. The proposed collection system maximizes low pressure sewer systems to minimize wastewater flows, reduce cost, and reduce undesirable growth and development. To help control and regulate infrastructure and on-site wastewater disposal systems, a sewer district management plan and septage management plan are recommended. These plans should be implemented prior to future infrastructure construction. The proposed changes also include a decentralized wastewater treatment facility in the Lake Shirley area and Hickory Hills area. This will allow for highly treated wastewater effluent and help to recharge the respective watershed sub-basins.

MRPC staff reviewed the Notice of Project Change and the new proposed project submitted by the Town of Lunenburg for the Comprehensive Wastewater Management Plan, and found this proposal in conformity with MRPC regional goals, policies and objectives. The project meets MRPC goals of Environmental Quality, and Individual Opportunity and Welfare.

If you have any questions or desire further information please contact George Kahale of my staff at (978) 345-7376 ext. 307.

Very truly yours,

Glenn P. Eaton
Executive Director, MRPC

C: Thomas Alonzo, Lunenburg Board of Selectmen
Emerick Bakaysa, Lunenburg Planning Board
Marion Benson, Lunenburg Planning Director

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Wayne F. MacCallum, *Director*

April 28, 2008

Secretary Ian A. Bowles
Executive Office of Environmental Affairs
Attention: MEPA Office
Nicholas Zavolas
100 Cambridge St.
Boston, Massachusetts 02114

Project Name:	**Town of Lunenburg Comprehensive Wastewater Management Plan**
Proponent:	Town of Lunenburg
Location:	Lunenburg, MA
Document Reviewed:	Notice of Project Change (NPC)
EOEEA No.	12160
NHESP Tracking No.	**01-9200**

Dear Secretary Bowles:

The Natural Heritage & Endangered Species Program (NHESP) of the MA Division of Fisheries & Wildlife has reviewed the *Notice of Project Change (NPC)* for the *Town of Lunenburg Comprehensive Wastewater Management Plan* in Lunenburg. The NPC involves the selection of two sites for the construction of decentralized wastewater treatment facilities. At this time, the NHESP would like to offer the following comments regarding state-listed rare species and their habitats.

One of the proposed project sites is located within *Priority Habitat* and *Estimated Habitat* of Rare Species as indicated in the 12th Edition of the Massachusetts Natural Heritage Atlas, while the other is located immediately adjacent to mapped habitat. The proposed work area and immediate vicinity have been mapped as habitat for the Blanding's Turtle (*Emydoidea blandingii*), a reptile that is state-listed as "Threatened." The Blanding's Turtle and its habitat are protected pursuant to the implementing regulations of MA Endangered Species Act (MESA) (321 CMR 10.00). Blanding's Turtles are heavily reliant upon wetland habitats for feeding, breeding, and overwintering. They nest within open, non-forested uplands, and migrate over long distances (thousands of feet) as they move between wetlands and nest sites, and between patches of suitable wetland habitat. In Massachusetts, Blanding's Turtle populations face major and increasing threats due to habitat fragmentation, adult mortality associated with road-crossings, and high nest failure rates.

The Hickory Hills/Townsend Harbor project site is located within *Priority* and *Estimated Habitat* and requires review through a direct filing with NHESP for compliance with the MESA. The proponent should include detailed building plans as part of their MESA filing to the NHESP.

The Lake Shirley/Reservoir Road site is directly adjacent to mapped *Priority* and *Estimated Habitat* for the Blanding's Turtle. We also note the presence of Potential Vernal Pool 13111 on the site. Vernal pools provide important breeding habitat for many species of amphibians and reptiles, including the Blanding's Turtle,

which breeds, forages, and sometimes overwinters in vernal pools. The NHESP requests that the proponent maintain a significant no-work buffer zone from the edge of both the Potential Vernal Pool and the Deep Marsh mapped on the site.

Please do not hesitate to contact Endangered Species Review Biologist Audra Valaitis at (508) 389-6386 (audra.valaitis@state.ma.us) with any questions or comments you may have. Thank you for opportunity to comment on this project.

Sincerely,

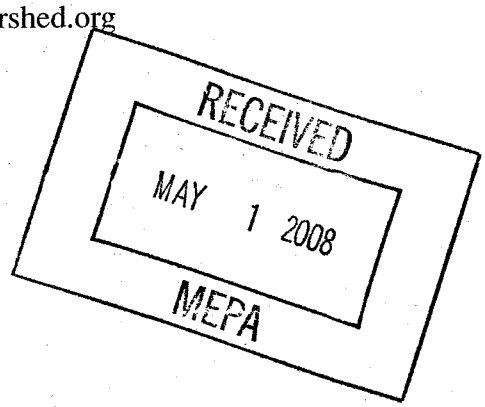
Thomas W. French

Thomas W. French, Ph.D.
Assistant Director

CC: Town of Lunenburg, Applicant
Wright-Pierce, Representative
Lunenburg Board of Selectmen
Lunenburg Conservation Commission
Lunenburg Planning Board
DEP Central Regional Office, MEPA Coordinator

Nashua River Watershed Association

592 Main Street, Groton, Massachusetts 01450-1230
Tel: 978/448-0299 Fax: 978/448-0941
www.NashuaRiverWatershed.org



April 29, 2008

Secretary Ian A. Bowles
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Attention: MEPA Unit- Nick Zavolas

Re: Town of Lunenburg Comprehensive Wastewater Management Plan
EOEEA No. 12160

Dear Secretary Bowles,

The Nashua River Watershed Association has a number of questions about the Notice of Project Change for The Town of Lunenburg Comprehensive Wastewater Management Plan. We note that the documents have only been available for review a short time. From what we have been able to review thus far, we are unclear as to what prompted this most recently proposed Project Change, and we are not convinced the significant project changes are warranted.

We have serious questions regarding the criteria used for the determination of additional identified needs areas. Did the criteria for identifying poorly performing conventional Title 5 systems include in-lake observations of pollution? We are unaware of any algae blooms on Hickory Hills Lake. We are unaware of scientific studies that have demonstrated nutrient pollution from homeowners' lakeshore failing systems – are there such studies? How many septic systems have been identified as failing? A properly maintained on-site septic system can provide adequate treatment and also recharge the local groundwater so that base flows are able to recharge the nearby surface water. Local bylaws that focus on inspections in combination with requirements that alternative systems be used in sensitive areas can be part of the approach. What are the reasons for not staying with a plan for on-site septic systems? In the absence of compelling data, it would seem best to stay with a plan for on-site septic at this time.

If there were to be sewer in these areas, construction of two decentralized wastewater treatment facilities in the Lake Shirley and Hickory Hills Lake area would seem to be a better alternative than sending the waste to a regional

facility. In consideration of the water balance, the two decentralized systems would seem to provide for better recharge in the Mulpus sub-basin (currently medium stressed) and the Catacunemaug sub-basin (estimated to become medium-stressed within 20 years) than an alternative that uses a regional facility. That having been said, it is critically important to undertake a detailed hydrologic study of the impacts of the decentralized treatment facilities on the streams and lakes *before* committing to such an alternative.

It was not clear from the documents how including the growth management district in the decentralized system zone will affect growth and density in that area. Since growth and density are topics of keen interest in Lunenburg, there could be further clarification on this point.

Have the Hickory Hills Lake and Lake Shirley lake associations reviewed and commented on the proposed Project Changes? Again, our opinion is that a proposed change of this magnitude requires careful consideration by all stakeholders.

The NRWA appreciates the opportunity to comment on the proposed Project Change. If you have any questions regarding these comments, please do not hesitate to contact me.

Sincerely,

Martha S. Morgan

Martha S. Morgan
Water Programs Director

Cc: Wright-Pierce (sent via email)

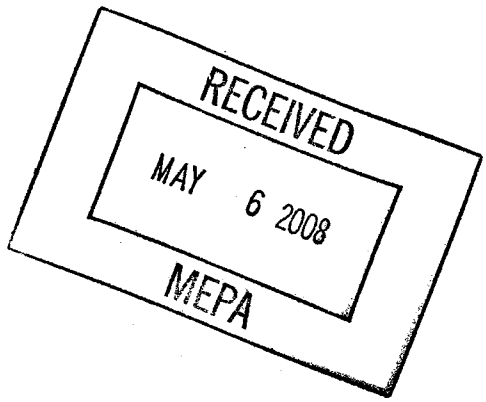
COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central Regional Office, 627 Main Street, Worcester, MA 01608

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner



April 30, 2008

Secretary Ian A. Bowles
Executive Office of Environmental Affairs
100 Cambridge Street, 9th Floor
Boston, MA 02114

Attention: MEPA Unit – Nicholas Zavolas

Re: Notice of Project Change (NPC)
Town of Lunenburg Comprehensive Wastewater Management Plan (CWMP)
Lunenburg
EOEA # 12160

Dear Secretary Bowles,

The Massachusetts Department of Environmental Protection's (MassDEP) Boston and Central Regional offices (CERO) have reviewed the NPC for the Town of Lunenburg CWMP. At the end of Phase I sewer construction (June 2006), the Town halted further phases of construction from their previous CWMP. Unforeseen impacts were observed after the completion of Phase I sewer construction and the Town chose to reassess the previous CWMP. The recommended plan from the previous CWMP consisted of constructing sewer for the identified needs areas and transporting the wastewater to regional wastewater treatment facilities located in Fitchburg and Leominster. The proposed project change includes areas further identified as needs areas. These are areas that have failing Title 5 systems. The proposed changes also include a decentralized waster water treatment facility in the Lake Shirley area and Hickory Hills area.

MassDEP offers the following comments on the NPC:

Wastewater

- The proposed project changes appear sufficiently significant to warrant the preparation of a supplemental Environmental Impact Report (EIR).

- A major recommendation of the selected plan is to provide for two decentralized wastewater treatment facilities (WWTFs) to serve the two major lake regions in town. The proposed sites to locate these WWTFs were based upon limited site information and did not include any site-specific field assessment work. If either or both of these sites are subsequently shown to be unable to support a wastewater disposal field then the larger recommendations of the plan could change significantly. As a result, the EIR should include a hydrogeological assessment of each of the proposed sites. The scope of work for the assessment should be submitted to the department for review and concurrence prior to commencement. Should the fieldwork conclude that either or both of these sites couldn't support a wastewater disposal alternate then the recommended plan should be revised to incorporate revised disposal options for these areas.

- The proposed increases in regional wastewater transport to the City of Fitchburg will require revisions to the existing Intermunicipal Agreements (IMA). The Department recommends that draft agreements be developed with each community. As indicated in Phase III, page 3-14, "the City of Fitchburg has indicated to the Town that Lunenburg would be responsible for removing four times the new proposed flow in infiltration/inflow within the Fitchburg wastewater infrastructure system." Consideration on how this would be accomplished should be described and established as a section 61 commitments.

- Table 4-6 (Phase III report, Page 4-11) contains errors on discharge permit information for Fitchburg East WWTF (BOD, TSS, Fecal) and should be corrected. The East WWTF currently does not have the capacity to fully treat wet weather flows, and the City is required to reduce I/I in its sewers and to complete the upgrade to the WWTF's headworks. The latter is scheduled to be completed by October 2009.

- Although not discussed for revision, the IMA with the City of Leominster is 500,000 gallons per day (gpd) and the total projected flow to is 500,800 gpd. As stated in Phase III, page 3-17, "According to the DPW Director, the City of Leominster is attempting to remove flow from their system by reducing I/I, and are not currently amenable to increasing the IMA flow capacity with Lunenburg at this time." This conflict should be resolved in the EIR.

- There appears to be a discrepancy in flows indicated on the following Tables: Phase I, Table 3-6 (Page 3-19), "Projected Year 2026 Flows" and Phase III, Table 2-1 (Page 2-22), "Projected Year 2026 Flows". There is also discrepancy between Phase I, Table 3-10 (Page 3-34), "Year 2006 and Projected 2026 Wastewater Collection" and Phase III, Table 4-12 (Page 4-23), "Municipal Wastewater Collection". Please ensure that consistent backup material is provided for all flow quantities through each Phase.

- The recommended plan calls for installing by 2019 six conventional sewer pump stations, two wastewater treatment facilities with groundwater discharges and a total of 35 miles

of sewer (24.5 LPS, 7.4 gravity, 3.2 FM). The project is designed to a Year 2026 total design flow of 0.48 mgd. Principal cost of the project is estimated about $56.9M.

- It is not clear how many individual grinder pumps are proposed for the area to be served by low-pressure sewer. According to the recommended plans, almost all residences in Needs Areas #6, #9, #12, #14, #15, #19, and #24 will need a grinder pump in order to get connected to the proposed sewer. The total number of grinder pumps may be greater than 1,500. A conventional sewer pumping system may more effectively serve some areas. It is also not clear who will pay for the grinder pump and its installation, and who will own and be responsible for operate/maintenance the pump.

- The EIR should discuss total buildable lots and potential connections in these areas, design criteria for the low-pressure sewer (LPS) system, the rationale for choosing LSP over a conventional pumping system, minimum design standard (alarm system, wet well storage, backup power, special prevision for systems within water supply protection zoon, etc.), and the Town's management plan proposals (e.g., public education, inspections, replacement units, emergency responses/repairs, compliance and enforcement, etc.).

- Table 4-7 (Phase III report, Page 4-12) may be revised to focus on groundwater discharge permit requirement since the CWMP does not suggest the Town to apply for a NPDES permit but does recommend two groundwater discharge facilities. For a typical groundwater discharge permit, effluent limit of 10 mg/l will be required for total nitrogen and Nitrate nitrogen, but there will be no limit for ammonia nitrogen.

- The Department's phosphorus control policy (Feb03 interim) requires that proposed groundwater discharges, either with a design flow of 50,000 gpd or within 600 feet of a sensitive receptor, such as inland surface waters, be evaluated for phosphorus controls. Should the site-specific conditions warrant phosphorus removal, the permitted discharge limit will be no greater than one (1) mg/l as total phosphorus.

- The proposed package WWTFs should be designed to handle both average and maximum day hydraulic flow and maximum organic loading. Maximum flow will be calculated in accordance with the Merrimack Curve contained in TR-16.

- In accordance with 314 CMR 7.00, new sewer extensions less than 1,000 ft and connections less than 50,000 gpd do not require the Department's approval prior to installation. We recommend that the Town establish minimum sewer design standards equivalent to TR-16 (NEIWPCC Guides for the Design of Wastewater Treatment Works). The EIR should identify any potential downstream sewer and pumping station capacity issue for the recommended CWMP plans.

- Cost analyses of the recommended plans should be provided separately for each Needs Area since they are implemented in difference schedule over 10-year period and some of them may change.

MassDEP appreciates the opportunity to comment on the proposed project. If you have any questions regarding these comments, please do not hesitate to contact Stella Tamul, MEPA Coordinator, at (508) 767-2763.

Sincerely,

Paul Anderson
Deputy Regional Director
Bureau of Resource Protection

Cc: Commissioner's Office, MassDEP
Martin Suuberg, Regional Director, CERO

Town of Lunenburg

SEWER COMMISSION
520 Chase Road
Lunenburg MA 01462

978-582-4160, FAX 978-582-4152

Office Hours Mon-Fri. - 8:00AM-4PM

May 2, 2008

RECEIVED
MAY 6 2008
MEPA

Mr. Nick Savalis
Office of Environmental Affairs - MEPA
EOEA No. 12160
100 Cambridge Street, 9th Floor, Suite 900
Boston, MA 02114

Subject - Town of Lunenburg - Comment letters

Dear Nick,

My name is Barb Lefebvre and I work for the Town of Lunenburg as the newly appointed Sewer Business Manager, working for the town's Sewer Commissioners. They had put together this list of issues that they have with the CWMP and Abby Charest explained that I should send it along with the other comment letters that we received during the public comment period to you at the MEPA.

Please let me know if there is anything else I should be providing you at this time. I can be reached at 978-582-4160 or blefebvre@lunenburgonline.com. Thanks.

Sincerely,

Barb W. Lefebvre

Enclosures (10) - Sewer Commission comment letter
- Residents' comment letters (9)

REC'D APR 29 2008
Lwlefebvre
Sewer Dept.

April 29, 2008

Chair
Sewer Commission
Town of Lunenburg, Massachusetts
520 Chase Road
Lunenburg, MA 01462

Re: Comprehensive Wastewater Management Plan

Dear Sir:

Please add the following comments to the public record (during this public comment period 4/9/08 – 4/29/08) in reference to the Town of Lunenburg Comprehensive Wastewater Management Plan, currently at Phase III – Detailed Evaluation of Alternatives and Recommendation of Wastewater Management Plan.

These comments and concerns arise not only as a resident of the Town of Lunenburg, but also as the owner of the property – 100 Townsend Harbor Road – proposed by Wright-Pierce as the location for a decentralized wastewater treatment facility to serve Study Areas 14 and 24 – Hickory Hills.

1) As a resident and taxpayer, I have concerns about the costs to install, operate, and maintain such a facility, how those costs will be borne by the town and the residents "served" by such a facility, and whether those costs exceed the benefit derived by those residents "served", especially since many of them currently have adequate, functioning Title 5 septic systems.

2) As an immediate abutter, I have concerns about odor, noise, appearance, and proximity to myself and other abutters and neighbors, and the negative impact those factors will have on our property values.

3) Were the facility to be constructed on the 100 Townsend Harbor Road property – a parcel that has been in my family for at least 80 years – I and my heirs would be deprived of any other uses currently under consideration for that property.

4) I have concerns about the proposed use of private vs. public property for a facility serving Study Areas 14 and 24, unlike the facility proposed to serve Study Areas 19 and 25 - Shirley Reservoir.

5) I have serious concerns about the environmental impacts of 89,000 gpd of effluent (max. monthly flow as calculated by Wright-Pierce and listed in Table 7-7 of the Phase III report) on a parcel that currently has seasonal drainage issues. That concern extends to the permanent impact that volume of effluent would have on neighboring wetlands and buffer zones. Additionally, as the surface drainage from that parcel currently delivers water, ultimately, directly into Hickory Hills Lake, I am concerned about the impact to water quality of that "important recreational surface water body" (as defined by Wright-Pierce in **Section 2.6.1** of the Phase III report).

6) Were the property ultimately to be acquired by the Town for the construction of such a facility, I question the calculations that yielded a total land cost of $350,000: (from **4.1.2 Off-site Decentralized Wastewater Treatment Facilities**):

"Using a straight-line fit method for the data points, it is estimated that for a 1 acre parcel it will cost approximately $125,000 per acre. It was assumed that the minimum required lot acreage for an off-site decentralized wastewater treatment facility would be 5 acres for a total l and cost of $350,000."

7) Finally, and most importantly, the facility intended to serve Study Areas 14 and 24 - Hickory Hills, and proposed for the 100 Townsend Harbor Road site (unlike the facility proposed for Study Areas 19 and 25 – Shirley Reservoir), would not reside within either Study Area it would serve. **Figures 7-12** and **7-15** of the Phase III report clearly show that a proposed treatment facility at that location actually sits outside the defined boundaries of Areas 14 and 24.

Regards,

Marilyn Stafford

Marilyn Stafford
89 Townsend Harbor Road
Lunenburg, MA 01462

REC'D APR 29 2008

Donald F. Bowen
28 Oak Ridge Road
Lunenburg, MA 01462

April 29, 2008

Sewer Commissioners
P.O. Box 135
17 Main Street
Lunenburg, MA 01462

Subject: Public comment regarding the Comprehensive Waste Water Management Plan

Dear Members of the Board,

The initial study program, in my mind was to create a rational road map to a Wastewater Management Plan. I believe this should be named a Water Management Plan since the emphasis should be placed on the water budget to insure adequate supply of this precious resource.

The plan proposed comes to an end point of acquisition of land and installment of sewer in the areas described at a time certain.

To point out one of many flaws, it is proposed to sewer Lake Shirley by a date certain at a cost that is extremely costly.

Consider the following:

1. According to the plan, septic systems are not allowed ~~wheter~~ whether or not they are new or functional.
2. The only options are to:
    a) Sewer to Devens and ship our water to the Atlantic Ocean or
    b) Put in a processing plan on Lake Shirley ~~it~~ at a cost to the individual owner that puts the fixed income and young people with a decision to eat or flush! And to what end?

Since the more restrictive Title V has been implemented and the elimination of phosphates, and contaminants has been significantly reduced, the new focus on the elimination of nitrates and nutrients become justification for a sewer processing plant.

I ask the question "Does a sewer system eliminate all of the nitrates and nutrients from the lake?" I don't think so, maybe 10% with 90% coming

from four streams, wildlife and the air or 15% vs. 85% or 20%. I don't think this has been quantified in the study.

What if we have an extreme flood event, do we dump sewerage excess back into the Lake as one point source of pollution like they do on the Merrimac?

While I might agree that some specific sites may need attention because of their location such as a peninsula. I believe that there are alternative solutions with improved technology, and this overkill as proposed is not a rational answer.

Since I am on the Lake Shirley Improvement Corporation the LSCI Committee must approve my thoughts, but time does not allow a vote on this matter. Therefore this letter reflects my thoughts only. I will bring this matter to the Board at our next meeting.

Sincerely,

Donald F. Bowen

Martin/Rzeznikiewicz
68 Townsend Harbor Rd
Lunenburg, Ma 01462
April 27, 2008

REC'D APR 28 2008

To Whom It May Concern:
Planning Board, Sewer Commission, Selectmen

We are extremely concerned about the proposed Wastewater facility that is being considered for 100 Townsend Harbor Road. We are abutters to that lot and have been property owners and taxpayers since 2001.

1. We have never directly received any information on this proposed facility and it is now in Phase III draft and 'next door'? It is by pure 'luck' that we learned about it today (4/27/08) and any written comments need to be in by April 29th! We sincerely believe that a proposal such as this should have included the abutters during all phases. The courtesy of written information mailed to us would have been greatly appreciated. It seems that the plans are trying to 'sneak' by the residents.

2. We are very concerned about this residential area having a 'municipal' building.
A.- This will lower property values that are already dropping due the current economy. And the chances of selling our homes at a later date will likely be impossible.
B.- We never would have bought this home if such a facility was even a 'thought' for the neighborhood. We only heard about the eventual sewer lines coming down the road.
C.- The stench will be awful for the entire residential community.
D.-If this plant is to service both Hickory Hills Lake and Shirley Reservoir...how about placing it within their 'association' lands? ... particularly since 'we' on the 'outside' cannot access 'their' bodies of water. Or preferably it could be built on town/commercial land elsewhere where there is less impact on town residents? Tying into alternative sites in Shirley or Devens sound very promising...please focus on this!

3. Last, but not least, this area has environmental wet lands and wonderful wildlife. We have greatly enjoyed the deer, foxes, raccoons, and turkeys that roam that lot as well as our woodlands. It is a safe environment for these animals and birds, whose habitats are being threatened everywhere.

We sincerely hope that you will make every effort to place a wastewater facility away from an area that so many homes and residents. We are anxious to talk with our State Representative and the EPA tomorrow.

Sincerely-
Bonita Martin Bonita Martin

Mark Rzeznikiewicz Mark Rzeznikiewicz

REC'D APR 29 2008

Muriel Dyas
24 Woodland Dr.
Lunenburg, MA 01462

Sewer Commission
Dept. Of Public Works
520 Chase Road
Lunenburg, MA 01462

Dear Sewer Commission,

It has come to my attention that 100 Townsend Harbor Road is in consideration for the septic system for the Hickory Hills project. Since I directly abut the proposed site, I am adamantly against this area for consideration. I moved to Lunenburg 5 years ago after inquiring about the status of 100 Townsend Harbor Road. I was assured that the owner of the property had no intentions of selling or building on the site. With that assurance, we purchased our home.

From a non-personal aspect, I feel that the location of the field is on a highly traveled and populous road. I fear the odor from such a facility would affect residents and travelers alike. I believe that there is another area, deep into the woods, that was once used as a waste disposal site. I do not understand why this location is not up for primary consideration.

My family has enjoyed our new town and its residents. I have a family of 8 deer, 11 wild turkeys, and many species of back yard feathered friends, that frequently visit my backyard. I can not imagine losing my wildlife haven to a sewer system when other locations are more practical.

Sincerely,

Muriel Dyas

Nazareno Sciotto
24 Woodland Dr.
Lunenburg, MA 01462

REC'D APR 29 2008

Sewer Commission
Dept. Of Public Works
520 Chase Road
Lunenburg, MA 01462

Dear Sewer Commission,

It has come to my attention that 100 Townsend Harbor Road is in consideration for the septic system for the Hickory Hills project. Since I directly abut the proposed site, I am adamantly against this area for consideration. I am presently a sophomore at Lunenburg High School and have been a resident of Lunenburg for five years. I have enjoyed the lake and my backyard during this time. I would be devastated if you chose the Townsend Harbor location as the site for the Hickory Hills sewer system.

From a non-personal aspect, the location of the field is on a highly traveled and populous road. I fear the odor from such a facility would affect residents and travelers alike. I believe that there is another area, deep into the woods, that was once used as a waste disposal site. I do not understand why this location is not up for primary consideration.

My family has enjoyed our new town and its residents. We have a family of 8 deer, 11 wild turkeys, and many species of back yard feathered friends, that frequently visit my backyard. I can not imagine losing my wildlife haven to a sewer system when other locations are more practical.

Sincerely,

Nazareno Sciotto

Michael Romano
24 Woodland Dr.
Lunenburg, MA 01462

REC'D APR 29 2008

Sewer Commission
Dept. Of Public Works
520 Chase Road
Lunenburg, MA 01462

Dear Sewer Commission,

It has come to my attention that 100 Townsend Harbor Road is in consideration for the septic system for the Hickory Hills project. Since I directly abut the proposed site, I am adamantly against this area for consideration. I moved to Lunenburg 5 years ago after inquiring about the status of 100 Townsend Harbor Road. I was assured that the owner of the property had no intentions of selling or building on the site. With that assurance, we purchased our home.

From a non-personal aspect, I feel that the location of the field is on a highly traveled and populous road. I fear the odor from such a facility would affect residents and travelers alike. I believe that there is another area, deep into the woods, that was once used as a waste disposal site. I do not understand why this location is not up for primary consideration.

My family has enjoyed our new town and its residents. I have a family of 8 deer, 11 wild turkeys, and many species of back yard feathered friends, that frequently visit my backyard. I can not imagine losing my wildlife haven to a sewer system when other locations are more practical.

Sincerely,

Michael Romano

REC'D APR 24 2008

53 Pleasant Street
Lunenburg, MA, 01462
April 19, 2008

Sewer Commission
520 Chase Road
Lunenburg, MA 01462

To the Commissioners:

When I looked at the Comprehensive Wastewater Management Plan Phase III Report, I saw that my neighborhood is being considered for public sewer.

I live at 53 Pleasant Street and am in the Area 6 mentioned by the plan. I and all the neighbors that I have spoken to have properly functioning septic systems. Three of my neighbors and I have had new septic systems installed within the past seven years.

What troubles me the most is that Wright-Peirce has not bothered to call a neighborhood meeting to ask us if we want public sewer. I believe that they promised to do this in many Lunenburg neighborhoods but I have not heard anything about them contacting any Lunenburg residents about their sewer needs.

I do not want to pay a betterment fee for something I will not use. Do you think it would be a good idea for me to form a petition for my neighborhood? It would be unfortunate if I had to do all the legwork that Wright-Peirce should be doing, but if that is what I have to do to let them know that a sewer line would not be welcome through my neighborhood, then I will do it.

Sincerely,

Andrea Laford

Andrea Laford
978-353-6977

Date: Tue, 29 Apr 2008 08:17:20 -0500 [09:17:20 AM EDT]
From: "kd1sm+tol@verizon.net" <kd1sm+tol@verizon.net>
To: blefebvre@lunenburgonline.com
Subject: Sewer Commission - Contact Form

Name : Ralph Swick
Email : kd1sm+tol@verizon.net
Address : 113 Townsend Harbor Rd.
City : Lunenburg
State : MA
Zip : 01462
Phone : 978.582.7351
Comments : Re: Wright-Pierce CWMP Phase III Evaluation dated March 2008

It concerns me greatly that Wright-Pierce's recommendation for the Hickory Hills area does not describe in detail the aesthetic mitigation measures that will be required for their proposed decentralized alternative. The proposed site for alternative 8 is the primary access road to the served area. This is a scenic road and the character of the community would be greatly harmed by the visible presence of a non-residential, non-agricultural facility. If the precedent of steel-fenced industrial equipment established with the current pumping stations that were sited along Mass Ave is followed, the aesthetic impact on our community will be enormous. If a Town-owned decentralized treatment facility remains the preferred alternative, a site should be chosen that does not take prime frontage along a principal scenic access road.

I am also puzzled by the 20-year O&M costs provided by Wright-Pierce for alternatives 1, 3, and 8. More detail on the precise calculation should be provided. The costs apparently include salary expenses for additional town staff, however it is inconceiveable that the operation of a Town-owned treatment facility would require the same or less staff than the monitoring of privately-owned on-site conventional or I/A systems. Particularly with critical operations such as the "manually controlled" odor mitigation measures, a significant 24x7 staffing requirement must exist.

Date & Time Sent: April 29, 2008 - 9:26:15 am Eastern
Mail Originated From: 30-6-176.wireless.csail.mit.edu (128.30.6.176)

REC'D APR 29 2008

April 27, 2008

To: The Lunenburg Sewer Commission
William Gustus, Chairman

In the last 24 hours it has been brought to our attention that the town is considering building a sewage treatment plant facility at 100 Townsend Harbor Road. We bought a brand new home at 70 Townsend Harbor Road three years ago. Our investment in this property thus far is around a half million dollars. This is the first time we have heard that we may be abutters. We are obviously upset about this potential site, as it will decrease our property value. In today's market we cannot afford to loose our investment. Also the potential for noise and smell are of great concern to us. We have seen lots of wildlife on our property often coming from the area under consideration since we moved here and feel this would further destroy their habitat. Had we been privy to this information before buying, we never would have considered this community. We also cannot understand why residents in this immediate area have to be subjected to having a treatment plant in our neighborhood to solve the problems of Hickory Hills.

Referring to Page 58 Paragraph 3.1.1 of the SWMP report, this section refers to conventional systems, alternative needs. Also referring to Page 70 Paragraph 3.13.1 makes reference to the previous discussion and consideration to tie in with Shirley and Devens. It is our understanding that this would eliminate the need for this construction in our neighborhood. We know that parts of our community have tied into sewage lines in other surrounding communities.

Considering the monetary impact this would have on our property, should this site be chosen we would expect our property be part of your eminent domain decision.

We expect to be notified of any and all further decisions regarding this project.

Sincerely,

Clifford Smith & Pamela Anzaldi

APPENDIX D

Response to Comments for MEPA Certificate Dated May 9, 2008

WRIGHT-PIERCE
Engineering a Better Environment

Water
Wastewater
Infrastructure

September 24, 2009
WP Project No. 10849E

Lunenburg Sewer Commission
Ritter Memorial Building
960 Massachusetts Avenue
Lunenburg, MA 01462

Subject: **Lunenburg Comprehensive Wastewater Management Plan**
Notice of Project Change - EOEEA Certificate and Comment Letters

Dear Commission:

The Notice of Project Change (NPC) for the draft recommended plan was filed with the Massachusetts Environmental Policy Act (MEPA) office of the Executive Office of Energy and Environmental Affairs (EOEEA) on March 30, 2008. The EOEEA issued a Certificate from the Secretary on May 9, 2008. As part of the public comment period for the NPC, the EOEEA received several public comment letters and these were reviewed and utilized in preparing the Certificate. The Certificate requires that the Town will need to prepare a Supplemental Environmental Impact Report (SEIR). The SEIR submittal is an addition to the Phase IV CWMP report.

The final recommended wastewater management plan includes responses to the comment letters on the draft recommended plan and EOEEA certificate. The response to comments are included as an appendix to the public participation section of the Phase IV report.

Notice of Project Change

May 9, 2008 Certificate of the Secretary of the EOEEA

Comment 1: *General - The SEIR should contain copies of comment letters from the NPC with Responses. The SEIR should be distributed to the EOEEA, NPC commenter's, and Town Departments.*

Response: An SEIR would be distributed to the EOEEA, NPC commenter's, and Town Departments. The SEIR would contain copies of the comment letters with responses.

200 Brickstone Square, Suite 505
Andover, MA 01810 USA
Phone 978.470.0666 | Fax 978.470.3558

Comment 2: *Project Permitting - SEIR should include a detailed discussion of any necessary state permits and approvals for the project as currently proposed and demonstrate that the project design meets applicable regulatory and performance standards.*

Response: The SEIR would include a detailed discussion of the possible state permits and approvals for any projects as currently proposed in the implementation plan and include a description of the applicable regulatory and performance standards and requirements for preliminary and final design.

Comment 3: *Needs Analysis: The SEIR should include a detailed discussion of the need to sewer the Lake Shirley and Hickory Hills area, including Title 5 failure rate, reasons for failures, Frequency of Title 5 problems, and upgrades required to address these failures. This Section of the SEIR should explain why a Septage Management Plan could not be implemented to ensure the proper functioning of the Title 5 systems. The Town should consult with MassDEP in completing this section.*

Response: The recommended plan for Lake Shirley and Hickory Hills Lake has been shifted from a decentralized wastewater collection, treatment and effluent disposal recommendation to a "need for further study" recommendation. As part of this recommendation, the Town will "further evaluate" the wastewater "needs" for these two areas. This "further study" will be done separately from this project at some indeterminate point in the future. Given the shift in recommendation for these two lakes areas, the majority of the comment is no longer applicable.

An SEIR effort would certainly include coordination between the Town and DEP.

Comment 4: *Wastewater - The SEIR should include a detailed discussion of the required revisions to the Town's existing IMAs with the Town of Leominster and the City of Fitchburg. The SEIR should also describe Lunenburg's commitments to Leominster and Fitchburg to amend the IMAs including any agreements for Infiltration/Inflow, etc.*

Response: The Town of Lunenburg is working with the Cities of Fitchburg and Leominster to discuss possible revisions to the existing IMAs. An SEIR would detail the required revisions to the Town's existing IMAs based on the recommended plan and describe Lunenburg's commitments to Leominster and Fitchburg to amend the IMAs including any agreements for Infiltration/Inflow.

Comment 5: *Wastewater - The SEIR should include a hydrological assessment for each of the two proposed decentralized WWTFs. The Town should work closely with MassDEP to develop a scope of work for conducting these site assessments. This section of the SEIR should identify any applicable permitting requirements, including a Groundwater Discharge Permit and a National Pollution Discharge Elimination System (NPDES) permit, associated with the design, construction and operation of the proposed centralized WWTFs.*

Response: As the noted in response to Comment 3 above, the two lakes areas have shifter to "areas for further study". Given that the recommended plan does not include proposed decentralized WWTFs, these comments become not applicable at this time.

Comment 6: *Rare Species: The SEIR should include a site inventory of the Hickory Hills/Townsend Harbor and Lake Shirley/Reservoir Road sites to determine if any areas within those sites constitute*

suitable habitat for rare species, with results presented on an appropriately scaled map. If any rare species are present, the SEIR should include sufficient information to determine if the projects will require a Conservation Permit pursuant to the Massachusetts Endangered Species Act (MESA). The SEIR should include sufficient information to determine if the project will require a Conservation Permit pursuant to the Massachusetts Endangered Species Act. If necessary, the SEIR should include an alternatives analysis to evaluate methods of avoiding or minimizing impacts on rare species, and the document should filly explain any permitting implications under the Massachusetts Endangered Species Act.

Response: These two lakes areas are no longer recommended for decentralized WWTFs. They are recommended for "further study". Given this shift in recommendation for these two areas, this comment becomes not applicable at this time.

Comment 7: *Comments - The SEIR should present any additional narrative or quantitative analysis necessary to respond to the comments received. I ask the Town to continue to work closely with MassDEP to design and implement a sustainable CWMP and mitigation plan for the Town of Lunenburg that will help to offset the proposed project's municipal water withdrawal and sewering impacts. The Town should continue to prepare the SEIR for the project in accordance with Section 11.07 of the MEPA regulations as modified by this Certificate. The SEIR should include a copy of the MEPA Certificate.*

Response: The Town will continue to work with MassDEP and MEPA. An SEIR would be prepared in accordance with MEPA regulations and include a copy of the MEPA certificate and responses to comments received, including those from the NPC process and public meeting.

Comment 8: *Mitigation/Section 61 - SEIR should include a separate chapter on mitigation measures. This chapter on mitigation should include Draft Section 61 Findings for all state agency actions. The Draft Section 61 Findings should contain a clear commitment to mitigation, an estimate of the individual costs of the proposed mitigation and the identification of the parties responsible for implementing the mitigation. A schedule for the implementation of mitigation should also be included*

Response: An SEIR would include a Section of Chapter 61 Findings for any necessary state agency actions. The Findings will include mitigation measures, potential cost impacts, a list of responsible parties for implementing the mitigation, and a mitigation schedule.

Comment 9: *Distribution - The SEIR should be circulated in compliance with Section 11.16 of the MEPA regulations and copies should also be sent to the list of comments received below and to the municipal officials for the Towns of Lunenburg and Leominster and the City of Fitchburg. A copy of SEIR should be made available for public review at the public libraries for the Lunenburg and Leominster and the City of Fitchburg.*

Response: The SEIR would be distributed in compliance with all MEPA regulations. In addition, copies would be sent to the authors of the NPC comment letters, and town officials from Lunenburg, and the City's of Leominster and Fitchburg. Copies would be made available for public review at the public libraries of Lunenburg, Leominster and Fitchburg.

Sewer Commission Comment Letter
Notice of Project Change (NPC)
Town of Lunenburg Comprehensive Wastewater Management Plan
(Previously distributed to the Town, July 29, 2008)

Comment 1: *Sewer District Recommendations – Due to limited capacity and in order to mitigate impacts associated with sewer, the plan recommends the adoption of a Sewer District Management District (SDMP). In the event that additional capacity cannot be acquired or a treatment plant is not realistic, it is essential that to ensure that the Sewer District Management Plan adopted conforms to the assumptions made for existing and future growth within each needs area.*

Response: A Sewer District Management Plan (SDMP) is included in the recommended plan. The Town has implemented a new Sewer Service Area Plan and bylaw (April 2009). A SDMP allows the Town to plan for future wastewater flows within the sewer service area, and establish a baseline for potential infrastructure improvements.

Comment 2: *Growth Management - The Commission recognizes that managing growth is important to maintain the rural character of the Community; however the restrictions recommended by the plan will make it difficult for the expansion of existing homes and businesses within the district and place unrealistic controls for growth in the future. Managed growth is an essential component of maintaining a healthy community.*

Response: Growth management practices are specific to each community. The "limited infrastructure" approach has been removed and the Town has implemented a Sewer Service Area and bylaw to manage growth. The Sewer Commission should also continue to work with the land boards and the Town to define the growth management practices most suitable to Lunenburg.

Comment 3: *Inter-Municipal Agreements - It is apparent that prior to finalization of the plan the Commission must start a dialog with Leominster and Fitchburg regarding additional capacity. In the event that the Commission is successful at acquiring additional capacity, the cost of renegotiating the IMAs must be factored into the plan.*

Response: Wright Pierce continues to recommend that the Town proceed with discussion with Leominster and Fitchburg regarding the IMAs. The costs for developing a new IMA were included in the cost analysis. The costs for renegotiating the IMAs is dependent on the proportion of work the Town would complete. The costs for revising the IMAs is included in the cost estimates.

Comment 4: *Wastewater Flow Estimates - Define the models that were used in each of the needs areas to determine flow and that a sufficient reserve/growth capacity for each of the needs areas. Details on how flow for existing homes and undeveloped land was calculated must be provided.*

Response: The details of the wastewater flow calculations are included in the Phase I report. The existing flows are included in Section 2, and the future flows are included in Section 3. Existing residential flows were calculated based on a rate of 57 gpd/bedroom. This rate was established based on industry standards, and Lunenburg water district water use records. The future flows are based on

Massachusetts Executive Office of Energy and Environmental Affairs (EOEEA) growth rates, current zoning, and a lot utilization factor of 84 percent.

For existing conditions, wastewater flows were estimated using assessor's data for the parcels within the existing sewered areas and each study area. For residential properties, an average wastewater generation rate of 57 gallons per day per bedroom was assumed. This number is based on recent water usage data from the Lunenburg Water District. For non-residential properties, flow estimates were developed based on guidelines for the use of the parcel.

For projected flows, the overall town growth projection was based on a study performed by the Massachusetts Executive Office of Environmental Affairs. The overall growth for the Town was pro-rated for each specific study area based on that area's capacity for future growth. In other words, study areas which are largely built-out were projected to grow less over the next 20 years than less developed areas. For flow estimating purposes, it was assumed that new residential properties would be (on average) 3.5 bedrooms.

Comment 5: *Sewer Use Rules and Regulations - A thorough review by the Commission of the current sewer use rules and regulations in regards to future planned projects will be necessary, including what type of restrictions would be implemented and criteria for connection. Prior to finalization of the plan, the Commission must determine what type of restrictions would be implemented and develop criteria for connections based on the flow model incorporated within the plan.*

Response: The CWMP Phase I report, Section 2.6, includes a review of the Sewer Use Regulations. In addition, the CWMP recommendations include a review of the current rules and regulations by the Sewer Commission.

Comment 6: *Centralized Treatment - Additionally, investigation/analysis of possible locations for a treatment plant within Lunenburg should be explored.*

Response: Centralized treatment is included as an alternative in the Phase II report. This alternative was not included in the short list of alternatives due to financial and environmental impacts, and is not recommended for reconsideration. The Town would also need to go forward with hydrogeological investigations of parcels for this alternative to be considered viable. An analysis of this alternative is included in Section 3 of the Phase III report. This alternative includes treatment and effluent disposal on the Town owned parcel east of Pratt Street, and south of West Street (Parcel 94-8).

Comment 7: *Refinement of Needs Areas - The Sewer Commission recommended several refinements to the needs areas.*

Response: The needs areas were refined as part of the final recommended plan development and will be further refined as part of the final design process. The implementation of the recommended plan will be based on soil conditions, survey, neighborhood interest and other factors.

The following addresses each refinement to date for each area:

- *Autumn Road is capable of supporting on-site systems and should be removed from the needs area* - Autumn Road was identified in the Needs Analysis due to fast percing soils, and proximity to water resources, including wetlands and high groundwater. This area has been removed from the recommended plan based on the recommendation of the Sewer Commission.

- *Based on available data and Board of Health recommendations, the area on the right of Reservoir Road is gravel and capable of supporting on-site systems. Therefore the needs area should be refined* - This area was identified as a Needs Area during the Phase I Needs Assessment. This area has been removed from the recommended plan based on the recommendation of the Sewer Commission

- *There are several areas on Townsend Harbor Road and Cove Road that are gravel and capable of supporting on-site systems. This area should be refined.* - The northern end of Townsend Harbor Road was identified in the Needs Analysis due to fasting percing soils, wetlands, and proximity to sensitive resources, such as endangered species habitat and ACEC. This area was removed from the recommended plan based on the recommendation of the Sewer Commission. Cove Road was also determined to be a Needs Area, but has been removed based on the recommendation of the Sewer Commission.

- *It appears that this area was expanded to include additional parcels along the intersection of Mulpus Road and Townsend Harbor Road. Clarification of why this area was expanded is needed.* - These parcels have been removed as a result of shifting this area to an area with "need for further study".

- *The large parcel of land on Pratt Street is protected land and should be removed from the needs area* - This area has been removed.

- *The needs area should be expanded to include all of Pleasant Street* - The recommended plan was expanded to include all of Pleasant Street.

- *The calculations utilized for the large parcel of land at the end of Pleasant Street should be provided, the Commission suggests that this parcel be limited to one lot/connection based on frontage* - The flow for the large parcel at the end of Pleasant Street has been reviewed and revised.

- *Several parcels that now appear within the needs area were not identified as areas of need in the previous reports. This area must be re-evaluated and refined to areas of need, particularly in the Hollis Road area.* - These areas were revisited and revised as necessary in concert with the Commission. The results are detailed in the Phase IV report.

- *Currently the plan directs all flow from Beal Street to Fitchburg. Recently the Sewer Commission approved a flow allocation for a development on Beal Street (Whispering Pines), this flow will be directed to Leominster. Therefore, it may be prudent to split the flow on Beal Street between Leominster and Fitchburg. The impact of Whispering Pines on flow allocation and the plan recommendation needs to be determined. The Commission questions the need for a pump station at the intersection of Beal and Chase Road.* - The design and location of pump stations will need

to be determined during preliminary design and be based on site survey. The pump station at Beal Street and Chase Road was included for the flows from Route 13. Since this area is no longer considered a growth management district, this pump station has been removed from the recommended plan. The flows from the Whispering Pines development and the east end of Beal Street have been redirected and are included in the recommended alternative to Leominster.

- *Based on past studies, Tilton Avenue is gravel and able to support on-site septic systems. Additionally, a prior survey indicates that residents in this area do not support the installation of sewer. Therefore, it may be possible to remove this area from the plan and keep the capacity in reserve* - Tilton Avenue was removed from the recommended plan based on the recommendations from the Sewer Commission and the ability to support on-site systems. Neighborhood support for sewer main infrastructure should be determined by the Town prior to implementation and construction.

- *There is a large parcel with frontage on Chase Road and Northfield Road, this land is in a protected program and should be removed from the needs area.* - This parcel has been removed.

Comment 8: *Low Pressure Sewers - There are a number of streets within this area where it would be possible to utilize gravity sewers; why is the entire area served by low pressure mains versus gravity? From an engineering and maintenance standpoint, it is the position of the Commission that gravity sewers be utilized whenever possible. On Cushing Lane and Turkey Hill Road gravity sewers could be utilized and would be a better solution for these areas.*

Response: The limited infrastructure plan has been removed and conventional sewers (gravity sewers in particular) have been maximized based on engineering planning level judgment.

Comment 9: *Growth Management Districts - The Sewer Commission recommends several refinements for the Growth Management districts.*

Response: The Phase IV report will include the following revisions based on the Sewer Commission recommendations.

- *Figures 7-9 - Study Area 10 & Figure 7- 10 - Study Area 26 - These areas include the recommended "Growth Management Districts". According to the Planning Board, due to the difficult economy it is not expected that these areas will be developed for commercial/industrial uses in the near future. When the areas are developed, it is expected that a specific project will be the catalyst for the installation of sewer, and will be funded by the developer. Therefore, these areas should be placed at the bottom of the priority list.* - Study Area 10 (Beal Street/Massachusetts Avenue) was included in the recommendations based on the wastewater needs analysis. This Study Area is included in the recommended plan and the area/flow is split to Leominster and Fitchburg based on the revisions from the Sewer Commission. GMD No. 26 has been eliminated from the planning process.

- *The Growth Management District in the Leominster Shirley Road area will include an industrial component as wells as a commercial component.* - Wright Pierce worked with the

Planning Board to develop appropriate future wastewater flows for the potential future uses in this Study area.

- *Details on the assumptions utilized to calculate flows in the Growth Management Districts should be provided.* - The assumptions and process used to calculate flows for GMD No. 25 are detailed in the Phase IV report.

- *The plan proposed that the "Growth Management District" on Leominster Shirley Road be served by a decentralized plant located in the Lake Shirley Area. Sewer connection to Leominster is available at Pioneer Park and is the preferred method of wastewater disposal by the Commission for this area. This is a more cost effective more expedient solution to serve that area. This area will be incorporated within the Sewer District, with a Water Protection Overlay District to protect the water balance.* - The Pioneer Drive Growth Management District recommendation has been revised based on the Sewer Commission's comments and flow will be routed to Leominster. The addition of this flow to the recommended plan requires additional flow going to Leominster and an IMA amendment with the City of Leominster.

Comment 10: *Effluent Disposal - Currently the plan proposes the installation of a treatment plant on land owned by Marilyn Stafford. Based on previous farming, this land may not be suitable for wastewater disposal. The Commission suggest that Wright Pierce investigate the possibility of relocating the plant on land commonly know as the "Szocik" site on Townsend Harbor Road, previously owned by the James River Corporation as a possible location for a decentralized plant. This property is set back from the road and may be more appropriate in this densely populated area.*

Response: The Hickory Hills Lake area has been shifted to an area for "further study". Hence, this comment is not applicable at this time.

Comment 11: *Septic Management Plans – The plan recommends that a septage management plan be adopted with a defined septage management overlay. A bylaw change to include new requirements for new and replacement systems in environmentally sensitive areas is suggested. The possibility of the Board of Health requiring innovative alternative (I/A) systems is mentioned. As noted by the Board of Health Agent, innovative alternative systems are currently utilized if a traditional system cannot be sited on a property in compliance with existing state and local regulations. Economic factors are a consideration when abating a public health issue on private property. Therefore, the Commission will not support adopting a bylaw to require innovative technology if a property is capable of supporting a conventional on-site system. The plan suggests that Board of Health consider creating a septage management plan for small pockets of "needs" areas in addition to the needs areas identified. Details on specific areas should be provided.*

Response: A Septage Management Plan (SMP) is recommended for all areas of Town proposed for long-term on-site wastewater disposal as well as those areas proposed for future infrastructure until such time as the recommended plan is implemented in such areas. The successful long-term sustainability of on-site wastewater disposal systems is dependent on proper on-site system operation and maintenance in order to prevent adverse health and environmental impacts. This alternative requires revisions to the BOH regulations and Town oversight. The Sewer Commission and Board of Health do not support

utilizing this alternative, and therefore, advanced on-site wastewater treatment was not utilized in the recommended plan.

Comment 12: *Hickory Hills & Lake Shirley –The proposed plan recommends the installation of decentralized plants in the Hickory Hills and Lake Shirley areas. Based on the cost analysis included in the report, installation and operation of treatment plants in the Lake areas will be expensive, particularly in the Lake Shirley area (estimated cost $25,000+ per home).*

Response: The recommended plan has been changed for these two areas. These two areas are now recommended for "further study". This results in this comment being not applicable at this time.

Comment 13: *Decentralized Treatment Cost Estimates - Cost calculations are based on available soil data without soil borings and may be low. There are a number of steps that must be taken in order to determine if the proposed locations are in fact suitable for the treatment of wastewater, including soil testing and hydro-geological studies. The estimated cost for the hydro-geological studies is in excess of $125,000. The plan recommends that the sites be acquired in 2008/2009 and in the Lake Shirley area construction of the plant be completed in 2014-2016, in Hickory Hills completion is recommended in 2017-2019. The Commission is concerned that hydro-geologic data compiled now may have to be repeated if and when the decision is made to move forward with decentralized treatment; therefore the Commission has voted not to recommend conducting the testing at the present time.*

Response: See the response to Comment 12 above.

Comment 14: *Decentralized Treatment Recommendations - Given the troubled economy, the Commission does not feel that the Community will support acquisition of the private property in the Hickory Hills nor will there be support for spending upwards of $125,000 for hydro-geological testing to determine if the areas are suitable. Additionally, it is unclear whether the residents in these areas will support the installation of decentralized plants. Historically, the Commission has ensured that at least 51% of the residents in an affected area support sewer prior to proceeding. Additional public involvement of residents in the lake areas is needed to determine the level of support for sewer and/or decentralized alternatives.*

Response: See the response to Comment 12 and 13 above.

Comment 15: *Needs Areas - Lake Shirley and Hickory Hills- The intent of the Comprehensive Wastewater Management Plan is to determine those areas that may be unsuitable for traditional Wastewater Disposal and identify the best options for those areas. In the Phase II report, initially a combination of Title 5 systems, innovative alternatives and/or septage management plans were recommended in the Lake areas. Due to estimated costs associated with implementation of those plans, it was determined that decentralized plants were the best option. Given the costs associated with the hydro-geological studies, the question regarding public support and the possibility of additional MEPA review due to water balance issues, it may be advisable to re-evaluate these areas for other alternatives. Prior to finalizing the plan, the Commission may determine that it is in the best interest of the Community to withdraw these areas from the plan.*

Response: These areas are included as areas of need for several reasons, including soils, depth to groundwater, and proximity to surface waters. The alternatives analysis reviewed several factors for the wastewater alternatives, including cost. An alternative which was reviewed was utilizing advanced on-site treatment systems with a septage management plan. This alternative included requiring I/A systems in environmentally sensitive areas and also, included expensive operations and maintenance due to the inspections and testing of the systems with enforcement through the Board of Health. This alternative was not supported by the Lunenburg Board of Health or the Sewer Commission (as stated in the Phase III Sewer Commission Comment Letter). Decentralized treatment was recommended for these areas for several reasons. A decentralized treatment facility allows for one facility for treatment, and requires operations and maintenance for only the one facility.

The two lakes areas have been shifted to areas with "need for further study". Hence, this comment becomes not applicable.

Comment 16: *Allocations for Proposed/Permitted Projects - Recently the Commission was advised that the 68 unit project known as "Lunenburg Estates" on Massachusetts Avenue will not proceed as planned. Therefore, the flow allocation for this property should be removed from flow projections. The Commission is considering the possibility of re-directing flow from the proposed Tri-Town project to Leominster. Prior to finalization of the plan the flow allocation/direction to Tri-Town must be determined as it may have a significant impact on the plan. Recently the Commission was advised that the proposed development on Lake Whalom (Emerald Place) may require approximately 9,000 gpd of additional capacity, bring the total gallons per day for this project to approximately 63,000 gpd.*

Response: The flow allocations were revised based on guidance from the Sewer Commission. The flow from the Lunenburg Estates project was removed from the proposed project flow estimates. The flow requirements for the Tri-Town project and Emerald Place were revised and are so noted in the Phase IV report.

Comment 17: *Ranking Methodology – The ranking methodology for the recommended alternatives was based in large part on adoption of the growth management techniques and control measures recommended by the plan, in the event that these recommendations are not implemented; the scores within the specified needs areas could change significantly. The Commission recommends that a clear statement on the dependency of the plan on implementation of the recommendations should be included in the introduction. Scoring matrix for lower Mass Avenue - The data in Table 5-1 indicates that a regional alternative to Fitchburg of 200,000 gpd received a score of 55, and the regional alternative to Fitchburg of 300,000 gpd scored a 47. However, the recommendation of the plan is to request an amendment to the existing IMA of approximately 180,000 gpd. This recommendation appears to contradict the ranking system, please clarify.*

Response: A ranking system is typically utilized in a CWMP process as a tool for municipalities to determine the priorities for the CWMP recommendations. After lengthy discussions with the Land Boards and Sewer Commission regarding the scoring system methodology, it was determined to remove this system from the final Phase IV report.

Comment Letters for the Notice of Project Change (NPC) for the Town of Lunenburg Comprehensive Wastewater Management Plan

April 18, 2008 letter from Glenn P. Eaton, Executive Director of the Montachusett Regional Planning Commission (MRPC).

Comment 1: *No comments; MRPC found proposal in conformity with regional goals, policies and objectives.*

Response: The CWMP existing and future conditions were analyzed based on several different sources, including planning documents and information from the MRPC.

April 28, 2008 letter from Thomas W. French, Ph.D., Assistant Director of the Natural Heritage & Endangered Species Program (NHESP) of the MA Division of Fisheries & Wildlife.

Comment 1: *The Hickory Hills/Townsend Harbor project site is located within Priority and Estimated Habitat and requires review through a direct filing with NHESP for compliance with the MESA. The proponent should include detailed building plans as part of their MESA filing to the NHESP.*

Response: This area has been shifted to an area with "need for further study" making this comment not applicable at this time.

Comment 2: *The Lake Shirley/Reservoir Road site is directly adjacent to mapped Priority and Estimated Habitat for the Blanding's Turtle. We also note the presence of Potential Vernal Pool 13111 on the site. The NHESP requests that the proponent maintain a significant no-work buffer zone from the edge of both the Potential Vernal Pool and the Deep Marsh mapped on the site.*

Response: See response to Comment 1 above.

April 29, 2008 letter from Martha S. Morgan, Water Programs Director of the Nashua River Watershed Association.

Comment 1: *Did the criteria for identifying poorly performing conventional Title 5 systems include in-lake observations of pollution?*

Response: There were several criteria for identifying poorly performing conventional Title 5 systems. The Lunenburg Board of Health assisted with the CWMP process, particularly during the Needs Analysis. The Existing Conditions and Needs Analysis are included in the Phase I CWMP report. Details on Impaired Waterbodies and Regional Water Quality are included in Section 2.4 of the Phase I CWMP report. In-lake laboratory testing was not performed as part of this CWMP. In-lake laboratory testing is not typically performed as part of a CWMP.

Comment 2: *We are unaware of scientific studies that have demonstrated nutrient pollution from homeowners' lakeshore failing systems – are there such studies?*

Response: There were three studies available for Lake Shirley. Each report was reviewed in order to gain a better understanding of any nutrient management issues within the drainage basin for Lake Shirley. The reports reviewed include:

- Geosyntec Consultants, Lake Shirley Aquatic Vegetation and Water Quality Assessment, 2006
- BSC Group, Lake Shirley Nutrient Loading/Dredging Feasibility Study, 1999
- Metcalf and Eddy (M&E), Diagnostic/Feasibility Study of Lake Shirley, Lunenburg, Massachusetts August, 1987.

We did not note that any of these three studies specifically demonstrated that nutrient pollution of Lake Shirley was being caused by homeowner's lakeshore failing septic systems.

Comment 3: *How many septic systems have been identified as failing?*

Response: Within the 24 study areas, 164 out of approximately 2,900 residential septic systems were identified as failing as part of the CWMP.

Comment 4: *What are the reasons for not staying with a plan for on-site septic systems?*

Response: A plan for staying with on-site septic systems was reviewed through the CWMP process, including Septage Management Plans and I/A systems. For the lakes areas, they will continue with on-site septic systems for now as these areas have been identified as areas with "need for further study". On the whole, the recommended plan calls for over 90 percent of the town to continue use of on-site septic systems.

Comment 5: *Undertake a detailed hydrologic study of the impacts of the decentralized treatment facilities on the streams and lakes **before** committing to such an alternative.*

Response: This comment in no longer applicable as the two lakes areas are now identified as areas with "need for further study".

Comment 6: *It was not clear from the documents how including the growth management district in the decentralized system zone will affect growth and density in that area. Since growth and density are topics of keen interest in Lunenburg, there could be further clarification on this point.*

Response: An SEIR would include details on the potential impacts of the growth management district. The growth management district was identified by the Town to encourage commercial and industrial growth.

Comment 7: *Have the Hickory Hills Lake and Lake Shirley lake associations reviewed and commented on the proposed Project Changes?*

Response: We are not aware of either of these lake associations reviewing and/or commenting on the proposed project changes.

April 20, 2008 letter from Paul Anderson, Deputy Regional Director of the Bureau of Resource Protection

Comment 1: *The proposed project changes appear sufficiently significant to warrant the preparation of a Supplemental Environmental Impact Report (SEIR).*

Response: So noted. Shifting the lakes areas to the recommendation of "need for further study", may result in a lesser need for an SEIR.

Comment 2: *The SEIR should include a hydrogeological assessment of each of the proposed sites proposed for decentralized treatment. The scope of work for the assessment should be submitted to the department for review and concurrence prior to commencement. Should the fieldwork conclude that either or both of these sites couldn't support a wastewater disposal alternative then the recommended plan should be revised to incorporate revised disposal options for these areas.*

Response: The two lakes areas have been shifted to areas with "need for further study". This results in no current need for decentralized treatment for these areas and no need for hydrogeological studies.

Comment 3: *The proposed increases in regional wastewater transport to the City of Fitchburg will require revisions to the existing Intermunicipal Agreements (IMA). The Department recommends that draft agreements be developed with each community. As indicated in Phase III, page 3-14, "the City of Fitchburg has indicated to the Town that Lunenburg would be responsible for removing four times the new proposed flow in infiltration/inflow within the Fitchburg wastewater infrastructure system." Consideration on how this would be accomplished should be described and established as a section 61 commitments.*

Response: Town of Lunenburg is working with the Cities of Fitchburg and Leominster to discuss possible revisions to the existing IMAs. An SEIR would detail the required revisions to the Town's existing IMAs based on the recommended plan and describe Lunenburg's commitments to Leominster and Fitchburg to amend the IMAs including any agreements for Infiltration/Inflow. The state agency actions and mitigation measures would be included in a section on Chapter 61 findings.

Comment 4: *Table 4-6 (Phase III report, Page 4-11) contains errors on discharge permit information for Fitchburg East WWTF (BOD, TSS, Fecal) and should be corrected. The East WWTF currently does not have the capacity to fully treat wet weather flows, and the City is required to reduce I/I in its sewers and to complete the upgrade to the WWTF's headworks. The latter is scheduled to be completed by October 2009.*

Response: The final Phase IV report includes amended information for the Fitchburg East WWTF permit.

Comment 5: *Although not discussed for revision, the IMA with the City of Leominster is 500,000 gallons per day (gpd) and the total projected flow is 500,800 gpd. As stated in Phase III, page 3-17, "According to the DPW Director, the City of Leominster is attempting to remove flow from their system by reducing I/I, and are not currently amenable to increasing the IMA flow capacity with Lunenburg at this time." This conflict should be resolved in the SEIR.*

Response: Town of Lunenburg is working with the Cities of Fitchburg and Leominster to discuss possible revisions to the existing IMAs. An SEIR would detail the recommendations and required revisions to the Town's existing IMAs based on the recommended plan and describe Lunenburg's commitments to Leominster and Fitchburg to amend the IMAs including any agreements for Infiltration/Inflow.

Comment 6: *There appears to be a discrepancy in flows indicated on the following Tables: Phase I, Table 3-6 (Page 3-19), "Projected Year 2026 Flows" and Phase III, Table 2-1 (Page 2- 22), "Projected Year 2026 Flows". There is also discrepancy between Phase I, Table 3-10 (Page 3-34), "Year 2006 and Projected 2026 Wastewater Collection" and Phase III, Table 4-12 (Page 4-23), "Municipal Wastewater Collection". Please ensure that consistent backup material is provided for all flow quantities through each Phase.*

Response: The estimated flows were revised as part of the completion of the Phase IV report.

Comment 7: *The recommended plan calls for installing by 2019 six conventional sewer pump stations, two wastewater treatment facilities with groundwater discharges and a total of 35 miles of sewer (24.5 LPS, 7.4 gravity, 3.2 FM). The project is designed to a Year 2026 total design flow of 0.48 mgd. Principal cost of the project is estimated about $56.9M.*

Response: The scope and cost of the recommended plan has been revised and is detailed in the Phase IV report.

Comment 8: *It is not clear how many individual grinder pumps are proposed for the area to be served by low-pressure sewer. According to the recommended plans, almost all residences in Needs Areas #6, #9, #12, #14, #15, #19, and #24 will need a grinder pump in order to get connected to the proposed sewer. The total number of grinder pumps may be greater than 1,500: A conventional sewer pumping system may more effectively serve some areas. It is also not clear who will pay for the grinder pump and its*

installation, and who will own and be responsible for operate/maintenance the pump.

Response: The draft recommended plan included low pressure systems in areas that may be more effectively served by a conventional system in order to manage growth and I/I flow. The final recommended plan includes conventional systems in any area where is it appropriate from an engineering standpoint. Growth management and I/I will be managed through Town standards and bylaws, including zoning regulations and DPW asset management. The Sewer Commission will need to determine the capital recovery mechanisms and operations and maintenance of the low pressure system through Sewer Bylaws.

Comment 9: *The SEIR should discuss total buildable lots and potential connections in these areas, design criteria for the low-pressure sewer (LPS) system, the rationale for choosing LSP over a conventional pumping system, minimum design standard (alarm system, wet well storage, backup power, special prevision for systems within water supply protection zoon, etc.), and the Town's management plan proposals (e.g., public education, inspections, replacement units, emergency responses/repairs, compliance and enforcement, etc.).*

Response: The Town will work with Mass DEP to define the required information for the discussion on total buildable lots, potential connections, design criteria, collection system design standards, and management plan proposals.

Comment 10: *Table 4-7 (Phase III report, Page 4-12) may be revised to focus on groundwater discharge permit requirement since the CWMP does not suggest the Town to apply for a NPDES permit but does recommend two groundwater discharge facilities. For a typical groundwater discharge permit, effluent limit of 10 mg/1 will be required for total nitrogen and Nitrate nitrogen, but there will be no limit for ammonia nitrogen.*

Response: As no groundwater discharge permits are recommended for the Town (the lakes areas have been shifted to areas with "need for further study") so this comment in not applicable at this time.

Comment 11: *The Department's phosphorus control policy (Feb03 interim) requires that proposed groundwater discharges, either with a design flow of 50,000 gpd or within 600 feet of a sensitive receptor, such as inland surface waters, be evaluated for phosphorus controls. Should the site-specific conditions warrant phosphorus removal, the permitted discharge limit will be no greater than one (1) mg/1 as total phosphorus.*

Response: See response to Comment 10 above. This comment is not applicable at this time.

Comment 12: *The proposed package WWTFs should be designed to handle both average and maximum day hydraulic flow and maximum organic loading. Maximum flow will be calculated in accordance with the Merrimack Curve contained in TR-16.*

Response: See response to Comments 10 and 11 above. This comment is not applicable at this time.

Comment 13: *We recommend that the Town establish minimum sewer design standards equivalent to TR-16 (NEIWPCC Guides for the Design of Wastewater Treatment Works).*

Response: The CWMP includes several recommendations for the Town to update and revise the sewer

design standards. The minimum design standards should be equivalent to TR-16. The Town intends to revise their sewer design standards after completion of the CWMP process.

Comment 14: *The SEIR should identify any potential downstream sewer and pumping station capacity issues for the recommended CWMP plans.*

Response: The final CWMP reviewed and evaluated existing system capacity issues. The Phase IV report details the results of this evaluation.

Comment 15: *Cost analyses of the recommended plans should be provided separately for each Needs Area since they are implemented in difference schedule over 10-year period and some of them may change.*

Response: The cost recovery plan for any capital project includes estimated betterments to the properties in the service area of any future construction project. The cost recovery was calculated based on the project and project area, instead of cost by needs area. A calculation of cost by needs area would not allow for any economy of scale for a project between two or more areas.

April 29, 2008 letter from Marilyn Stafford, resident of Lunenburg, MA at 89 Townsend Harbor Road and owner of 100 Townsend Harbor Road property.

Comment 1: *As a resident and taxpayer, I have concerns about the costs to install, operate, and maintain such a facility, how those costs will be borne by the town and the residents "served" by such a facility, and whether those costs exceed the benefit derived by those residents "served", especially since many of them currently have adequate, functioning Title 5 septic systems.*

Response: The Hickory Hills lake area has been shifted to an area with "need for further study" making this comment not applicable at this time.

Comment 2: *As an immediate abutter, I have concerns about odor, noise, appearance, and proximity to myself and other abutters and neighbors, and the negative impact those factors will have on our property values.*

Response: See response to comment 1 above.

Comment 3: *Were the facility to be constructed on the 100 Townsend Harbor Road property – a parcel that has been in my family for at least 80 years – I and my heirs would be deprived of any other uses currently under consideration for that property.*

Response: See response to comments 1 and 2 above.

Comment 4: *I have concerns about the proposed use of private vs. public property for a facility serving Study Areas 14 and 24, unlike the facility proposed to serve Study Areas 19 and 25 - Shirley Reservoir.*

Response: See response to comments 1, 2 and 3above.

Comment 5: *I have serious concerns about the environmental impacts of 89,000 gpd of effluent (max.*

monthly flow as calculated by Wright-Pierce and listed in Table 7-7 of the Phase III report) on a parcel that currently has seasonal drainage issues. That concern extends to the permanent impact that volume of effluent would have on neighboring wetlands and buffer zones. Additionally, as the surface drainage from that parcel currently delivers water, ultimately, directly into Hickory Hills Lake, I am concerned about the impact to water quality of that "important recreational surface water body" (as defined by Wright-Pierce in Section 2.6.1 of the Phase III report).

Response: See response to comments 1, 2, 3 and 4above.

Comment 6: *Were the property ultimately to be acquired by the Town for the construction of such a facility, I question the calculations that yielded a total land cost of $350,000: (from 4.1.2 Off-site Decentralized Wastewater Treatment Facilities):*

"Using a straight-line fit method for the data points, it is estimated that for a 1 acre parcel it will cost approximately $125,000 per acre. It was assumed that the minimum required lot acreage for an off-site decentralized wastewater treatment facility would be 5 acres for a total land cost of $350,000."

Response: See response to comments 1, 2, 3 and 4 above.

Comment 7: *Finally, and most importantly, the facility intended to serve Study Areas 14 and 24 -Hickory Hills, and proposed for the 100 Townsend Harbor Road site (unlike the facility proposed for Study Areas 19 and 25 – Shirley Reservoir), would not reside within either Study Area it would serve. Figures 7-12 and 7-15 of the Phase III report clearly show that a proposed treatment facility at that location actually sits outside the defined boundaries of Areas 14 and 24.*

Response: See response to comments 1, 2, 3, 4 and 6above.

April 29, 2008 letter from Donald F. Bowen, resident of Lunenburg, MA.

Comment 1: *I believe this (CWMP) should be named a Water Management Plan since the emphasis should be placed on the water budget to insure adequate supply of this precious resource.*

Response: A CWMP is a municipal planning document to define a recommended wastewater management plan. A CWMP is developed in accordance with the MassDEP Guide to Comprehensive Wastewater Management Plans. The scope of work for the Lunenburg CWMP was reviewed and approved by the MassDEP and includes a water balance for the proposed recommended plan. A comprehensive water resource management plan is a separate planning tool and is in accordance with the MassDEP Water Policy and Guide to Water Resource Planning. This type of "water management plan" is outside of the scope of this project.

Comment 2: *Consider the following:*

a. *According to the plan, septic systems are not allowed whether or not they are new or functional.*
b. *The only options are to:*
    i. *Sewer to Devens and ship our water to the Atlantic Ocean or*

ii. *Put in a processing plan on Lake Shirley it at a cost to the individual owner that puts the fixed income and young people with a decision to eat or flush! And to what end?*

Response: This area has been shifted to an area with "need for further study" making this comment not applicable at this time.

Comment 3: *"Does a sewer system eliminate all of the nitrates and nutrients from the lake?" I don't think so, maybe 10% with 90% coming from four streams, wildlife and the air or 15% vs. 85% or 20%. I don't think this has been quantified in the study.*

Response: This issue will be "further studied" for this area.

Comment 4: *What if we have an extreme flood event, do we dump sewerage excess back into the Lake as one point source of pollution like they do on the Merrimac?*

Response: This question is not applicable as this area has been shifted to an areas with "need for further study".

It should be noted that any proposed decentralized treatment facility and groundwater discharge system would be required to be designed for the maximum (peak) flows for the service areas (and would not be permitted to discharge to surface water bodies).

April 27, 2008 letter from Bonita Martin and Mark Rzenznikiewicz, residents of Lunenburg, MA.

Comment 1: *We sincerely believe that a proposal such as this should have included the abutters during all phases.*

Response: The CWMP process includes several different measures to provide public participation. These measures include a public meeting, public hearing, and participation through the Massachusetts Environmental Policy Act (MEPA) office. The Town of Lunenburg and the Town's consultant also established several additional measures to include the public, such as CWMP workshop meetings (approximately monthly during the active CWMP stages), a website (http://lunenburg-cwmp.wright-pierce.com), and public depositories for CWMP documents.

The MEPA process includes formal opportunities for comments on the CWMP. The comment letters from the Notice of Project Change (including your letter) were one of the ways to include abutters in this phase of the project.

Comment 2: *We are very concerned about this residential area having a 'municipal' building.*

a. *This will lower property values that are already dropping due the current economy. And the chances of selling our homes at a later date will likely be impossible.*
b. *We never would have bought this home if such a facility was even a 'thought' for the neighborhood. We only heard about the eventual sewer lines coming down the road.*

c. *The stench will be awful for the entire residential community.*
d. *If this plant is to service both Hickory Hills Lake and Shirley Reservoir...how about placing it within their 'association' lands? ... Particularly since 'we' on the 'outside' cannot access 'their' bodies of water. Or preferably it could be built on town/commercial land elsewhere where there is less impact on town residents? Tying into alternative sites in Shirley or Devens sound very promising... please focus on this!*

Response: This area has been shifted to an area with "need for further study" making this comment not applicable at this time.

Comment 3: *Last, but not least, this area has environmental wetlands and wonderful wildlife. We have greatly enjoyed the deer, foxes, raccoons, and turkeys that roam that lot as well as our woodlands. It is a safe environment for these animals and birds, whose habitats are being threatened everywhere.*

Response: See response to comment 2 above.

April 29, 2008 form letter from Muriel Dyas, Nazareno Sciotto and Michael Romano, residents of Lunenburg, MA.

Comment 1: *The location of the field is on a highly traveled and populous road. I fear the odor from such a facility would affect residents and travelers alike.*

Response: See above responses.

Comment 2: *I believe that there is another area, deep into the woods, that was once used as a waste disposal site. I do not understand why this location is not up for primary consideration.*

Response: See above responses.

April 19, 2008 letter from Andrea Laford, resident of Lunenburg, MA in Area 6.

Comment 1: *What troubles me the most is that Wright-Peirce has not bothered to call a neighborhood meeting to ask us if we want public sewer.*

Response: The CWMP process includes several different measures to provide public participation. These measures include a public meeting, public hearing, and participation through the Massachusetts Environmental Policy Act (MEPA) office. The Town of Lunenburg and the Town's consultant have also established several additional measures. The Town will consider discussions with individual neighborhoods identified for potential projects and include the discussions in future stages of their implementation plan.

Comment 2: *Do you think it would be a good idea for me to form a petition for my neighborhood? It would be unfortunate if I had to do all the legwork that Wright-Peirce should be doing, but if that is what I have to do to let them know that a sewer line would not be welcome through my neighborhood, then I will do it.*

Response: Property owners should continue to be involved in public participation in any way appropriate. The Town will consider discussion with neighborhoods identified for potential projects and include the discussions in future stages of their implementation plan. Neighborhood petitioning can be performed by individuals and/or the Town.

April 29, 2008 e-mail from Ralph Swick, resident of Lunenburg, MA.

Comment 1: *It concerns me greatly that Wright-Pierce's recommendation for the Hickory Hills area does not describe in detail the aesthetic mitigation measures that will be required for their proposed decentralized alternative.*

Response: This area has been shifted to an area with "need for further study" making this comment not applicable at this time.

Comment 2: *I am also puzzled by the 20-year 0&M costs provided by Wright-Pierce for alternatives 1, 3, and 8. More detail on the precise calculation should be provided. The costs apparently include salary expenses for additional town staff; however it is inconceivable that the operation of a Town-owned treatment facility would require the same or less staff than the monitoring of privately-owned on-site conventional or I/A systems. Particularly with critical operations such as the "manually controlled" odor mitigation measures, a significant 24x7 staffing requirement must exist.*

Response: See response to Comment 1 above.

April 27, 2008 letter from Clifford Smith and Pamela Anzaldi, residents of Lunenburg, MA.

Comment 1: *Referring to Page 58 Paragraph 3.1.1 of the CWMP report, this section refers to conventional systems, alternative needs. Also referring to Page 70 Paragraph 3.13.1 makes reference to the previous discussion and consideration to tie in with Shirley and Devens. It is our understanding that this would eliminate the need for this construction in our neighborhood. We know that parts of our community have tied into sewage lines in other surrounding communities.*

Response: See response to comments above.

Comment 2: *Considering the monetary impact this would have on our property, should this site be chosen we would expect our property be part of your eminent domain decision.*

Response: See response to comments above.

Please feel free to contact us should you have any questions or comments regarding this letter.

Sincerely;

WRIGHT-PIERCE

Kevin M. Olson, P.E.
Senior Project Manager

KMO/mas

APPENDIX E

Septage Management Planning Description and Examples

APPENDIX E

SEPTAGE MANAGEMENT PLANNING

A septage management plan for the Town is recommended for areas proposed for long-term on-site wastewater disposal as well as those areas proposed for future infrastructure until such time as the recommended plan is implemented in those areas. Inadequate maintenance of on-site systems can hurt their performance and pose a threat to public health and nearby resources. The Board of Health regulates the installation and repair of on-site systems per Title 5 requirements. The Board is also responsible for inspecting systems when properties are sold or when the Board receives evidence of a problem. However, individual owners are responsible for regular maintenance. Often, problems with on-site systems persist undetected or ignored for long periods of time.

A community may enact more stringent regulations than those associated with Title 5 to minimize the risk to public health and threats to environmental resources. The particular elements of those regulations would vary considerably with the goals of the community. When preparing a regulation (such as a SMP), a community must balance the environmental benefits of the regulations with the additional financial burden on taxpayers and the administrative burden on the community's departments. At the forefront of any SMP is the Public Education portion. It is the foundation of a successful SMP.

A typical SMP includes the following tasks.

- **Level of Management**

  Management levels range from the very basic System Inventory and Awareness, which is a minimum level of management to the rigid Management Entity Ownership, whereby the Town takes over ownership of all systems thereby removing the homeowner from any responsibility. In the middle of these two is the Management through Maintenance Contracts model. The Town would need to establish an appropriate level of management for its SMP

that is tailored to the Town's resources, management capabilities, and the level of protection necessary for protection of health, drinking water resources and other water resources.

- **Planning Objectives**

Set planning objectives. The Board of Health is responsible for coordinating program rules and regulations with state and local planning and zoning and other water related programs. The potential risks of wastewater discharge would be evaluated to limit environmental impacts on receiving environments during the rule making process.

- **Performance Requirements**

Set performance requirements according to local rules and regulations. Right now, the Board of Health, along with Title 5 Regulations, is responsible for establishing system failure criteria to protect public health.

- **Site Evaluation**

Set all site evaluation criteria. All site evaluations are currently performed according to state Title 5 and local rules and regulations governing site evaluations.

- **Design Criteria**

Set any and all design parameters. All designs are currently in conformance of state Title 5 and local rules and regulations governing the design and construction of on-site wastewater systems.

- **Operation and Maintenance Requirements/Responsibilities**

Set operation and maintenance requirements/responsibilities with guidance from public education materials.

- **Residuals Management (Pumping Requirements)**

Set pumping requirements/responsibilities with guidance from public education materials.

- **Certification/Licensing/Jurisdiction**

Set parameters through the Board of Health.

- **Public Education and Training**

Develop and implement a public education and training program. The local Board of Health has initiated a public education and outreach program, which could be expanded.

- **Water Conservation**

Develop and implement a public education program dedicated to water conservation benefits.

- **Corrective Actions/Enforcement**

The Board of Health currently negotiates all compliance schedules with the property owners for correcting documented noncompliance items and administers the enforcement actions taken. A program, including fines and or/penalties for failure to comply with compliance requirements, could be established.

- **Record Keeping and Reporting-Database Design and Implementation**

All database record keeping is currently undertaken through the Board of Health. New programs should be administered with the use of the database, and pumping notices, for example.

- **Financial Assistance**

Financial assistance and funding opportunities could be explored.

- **Level of Consultant Involvement**

A SMP could be developed with several levels of outsourced assistance from the consultant.

- **Required Town Meeting Action for Adoption**

Rules and regulations, by-laws would be developed and adopted.

- **Required Legislative Review Procedures, if Required**

Rules and regulations, by-laws would be developed and adopted, such as "Septic Districts" under Special Legislation.

- **Schedule of Implementation**

A schedule of scope implementation would be developed.

- **Estimated Costs**

A schedule of costs to implement and carry out the SMP would need to be developed based on the level and complexity of services offered.

- **Level of Conformance With Town Goals**

Coordination with the CWMP recommended plan, Town Master Plan, and Stormwater Management Plan, for example.

- **Identification of Required Permits and Potential Environmental Impacts**

All necessary permits and environmental impacts would need to be discussed and identified.

A typical SMP regulation consists of any of the following examples:

- Requiring existing systems to be pumped at regular intervals as determined by the Board of Health;
- Requiring existing systems to be inspected and if necessary, repaired, or upgraded to meet Title 5 regulations; or
- Requiring certain failing systems to be upgraded with I/A technologies.

We recommend the local Board of Health establish and implement the SMP regulations. System owners would be included in a Town database, and notified when their system requires pumping. A free inspection of the system's storage component (typically a septic tank) could also be included as an option to mandatory pumping.

Examples of other Communities with SMPs

There are several communities within Massachusetts which have incorporated a SMP. Communities that have enacted more stringent Board of Health regulations include Acton, Gloucester, Essex, Cohasset, Yarmouth, and Westminster, and the regulations range from septage management plans to town-wide system inspection programs. Each of these communities enacted more stringent Board of Health regulations to meet an objective or to overcome extreme circumstances.

The Town of Acton enacted a SMP approximately 15 years ago to include required biennial septic tank pumping and is updating their SMP to incorporate more stringent BOH regulations, I/A system management and guidelines for nutrient sensitive areas. The situation in the Town of Gloucester includes concerns of threatening contamination, system failures, and enforcement actions. The environmental and geological conditions in both communities consist of sensitive coastal embayments, areas of critical environmental concern, and extensive ledge outcrops that pose severe limitations to on-site wastewater management. The geological conditions in the Town of Cohasset are similar to Gloucester and Essex, and there is a crucial need to protect drinking water resources in the Town of Cohasset from dense development. The Town of

Yarmouth is another clear example of enacting stricter local regulations to meet an objective, which was to obtain funding to finance the regional septage treatment facility.

Town of Acton

Their SMP defines areas of Town that are nutrient sensitive and have additional requirements for those areas. The requirements define the number of bedrooms allowable per sq. ft of the individual parcel. Additional bedrooms may be credited with the use of an I/A system. The Town of Acton has a comprehensive SMP, a septage enterprise fund and plans for additional maintenance requirements. About 15 years ago the Town established a program which requires biennial septic tank pumping. The program also includes an enterprise fund where each hauler needs to obtain a $20 permit for each individual pumping. This fee goes into an enterprise fund which funds the maintenance of the pumping/BOH database, as well as, and frequent testing of groundwater and surface water. The pumping frequency is monitored for all systems, and if a system has not been pumped in 2 years, then the BOH sends them a letter. The letter works in two ways. First, the letter reminds the owner to pump out their tank. Second, it monitors and enforces the Town septage permit process. If a hauler has not obtained a permit, but pumped out a system, the property owner informs the BOH. This makes the program maintainable since the permits are enforced by the individual property owners. Currently, the Town of Acton has a Town pump out rate frequency of 2.2 years. The enterprise fund collects about $120,000 annually.

The Town of Acton has also identified areas (Needs Areas) where they are planning to "ramp up" the SMP program. The Town would require I/A systems in these areas with annual reporting/monitoring. The I/A systems would be required when there is a Title 5 failure or variance. The Town is also updating their BOH regulations to include a 6 ft groundwater separation and a 100 ft setback from nutrient sensitive areas. I/A systems will be allowed as alternatives in these areas. The Town also has 20 years of water quality monitoring (funded by the enterprise program) which allows the Town to follow nutrient trends.

The Town of Acton also just finished a CWMP which identified needs areas that will have additional on-site maintenance requirements. The Town of Acton is currently in the planning process for these measures. They are looking to establish new thresholds in these areas, require Title 5 inspections every 5 years, and require systems with nutrient removal.

Town of Gloucester

The Town of Gloucester Wastewater Management Plan originated in 1997 in response to a MA-DEP Administrative Consent Order (ACO) under the Clean Water Act and concern with coastal contamination from existing on-site systems. The plan requires all systems in the City to be pumped out every 3-½ years by an approved, licensed septage hauler, and a system functional check (inspection) is conducted at the time of pumping. If effluent breakout or ponding is discovered, or the liquid level in the storage tank is above the outlet, the hauler notifies the Board of Health and a Title 5 inspection must be performed. The City conducted a study to investigate the coastal contamination issue, and identified seven Priority Drainage Areas in the City that are of the highest concern for contributing contamination. The plan also requires that all systems within these areas that are located within 50 feet of a wetland, waterway, or storm drain be subject to a Title 5 inspection. The inspection includes excavating a deep observation hole adjacent to the leaching area to assess high groundwater elevation. All cesspools within Priority Drainage Areas and 50 feet of a wetland, waterway, or storm drain must also be eliminated. Inspections within several of these Priority Drainage Areas were completed; however, inspections within other areas were terminated because the areas were scheduled to be sewered when a planned sewer extension to the Town of Essex was constructed. I/A technologies are only required in Town of Gloucester when it is not feasible to upgrade a conventional system to Title 5 standards.

Town of Essex

The Town of Essex implemented a regulated program similar to the Town of Gloucester plan in 1998. System failures in the Town of Essex are typically caused by high groundwater, severe soils, and shallow ledge. The program established several priority areas, and initiated system

inspections within these areas. The Town had completed inspections within four areas; however, it discontinued the program for the remaining areas when the sewer extension plan to these areas was approved and implemented.

Town of Cohasset

The Town of Cohasset adopted an On-site Wastewater Management Plan in 2000. The plan goals include protecting the environment, minimizing costs to owners, encouraging alternative and shared solutions, and implementing a systematic inspection, maintenance, and upgrade approach to extend the useful life of on-site systems. The plan is voluntary and requires users to pay an entrance fee, quarterly user fee, and a usage fee based on water consumption. There is an additional annual cost for I/A systems. Prior to entrance, the plan requires that users bring their system into full compliance with Title 5, and submit a certificate of compliance. Once a property is incorporated into the plan, it will remain in the plan until connected to a municipal sewer system. The plan finances and provides periodic septage pumping of the system as needed, system function checks and maintenance, Title 5 inspection if needed, and design and upgrade of the system to meet Title 5 if required. In order for the Town to access system components and provide service, plan entrants must also grant an easement of their land which contains the system to the Town. This has concerned residents showing interest in joining the plan and consequently the plan did not have any users as of 2003. The Town has approximately 75 I/A systems currently in use. The Town of Cohasset relies on surface water as a public drinking water source; therefore, a Board of Health regulation was implemented in 2000 that requires the use of I/A technologies for existing system upgrades that are located within 400-feet of any named surface water body in Town. The regulation mandates that the only I/A technologies installed meet a total nitrogen effluent removal of 20 mg/l.

Town of Yarmouth

The local regulations in the Town of Yarmouth include a septage management plan. The Town constructed a regional septage treatment facility, which was completed in 1995, and received State and Federal funding. The funding was contingent upon the Town implementing an on-site

system maintenance component in their local regulations. The plan requires system owners to pump their system every four years, or receive a free inspection of the system storage component to determine the level of solids within and if pumping is necessary. The local Board of Health initiates this procedure by sending notice to the owner, and coordinating the inspection if it is requested. The Board has also established standard storage capacity criteria to determine if the system requires pumping. If during the inspection, the system is determined to be in need of maintenance such as pumping or upgrades, the Board of Health sends notice to the owner to perform the required maintenance within a timeline established by the Board. The plan does not include any regulations requiring use of I/A technologies unless it is to receive reduction in required setback distances or nitrate credit for construction on small lots, as allowed in Title 5. There are approximately 40 I/A systems in use in the Town of Yarmouth.

Town of Westminster

The Town of Westminster is not facing a major contamination threat, area-wide on-site system failures, or extreme limitations that would require adopting more stringent regulations that include mandatory Town-wide system inspection programs. In addition, the Board of Health has indicated that I/A technologies have only been installed on a few occasions in the Town. In those cases, I/A technologies were necessary to meet the more stringent requirements of the Westminster Board of Health regulations and not Title 5. However, subsurface conditions in the Town of Westminster can make on-site system maintenance a challenge and there are surface water bodies in Town that require protection. Therefore, a SMP was recommended for Town of Westminster in their CWMP.

The recommended SMP requires system owners to pump their system every three to four years. The SMP may receive support from Westminster residents if the plan includes a free inspection of the system storage component to determine if pumping is necessary. It is important that the plan include a means for assessing the condition of on-site systems in Town. At the time of the inspection, a brief functionality check of the system should be performed to determine if a full Title 5 inspection is needed. The owner would then be responsible for carrying out the Title 5 inspection. Also, a system function check can be conducted at the time of pumping by an

approved, licensed septage hauler. If effluent breakout or ponding is discovered, or the liquid level in the storage component is above the outlet, the hauler notifies the Board of Health and a full Title 5 inspection is required. This type of plan would not require a significant amount of additional technical and administrative support to operate.

APPENDIX F

Sewer Service Area Map

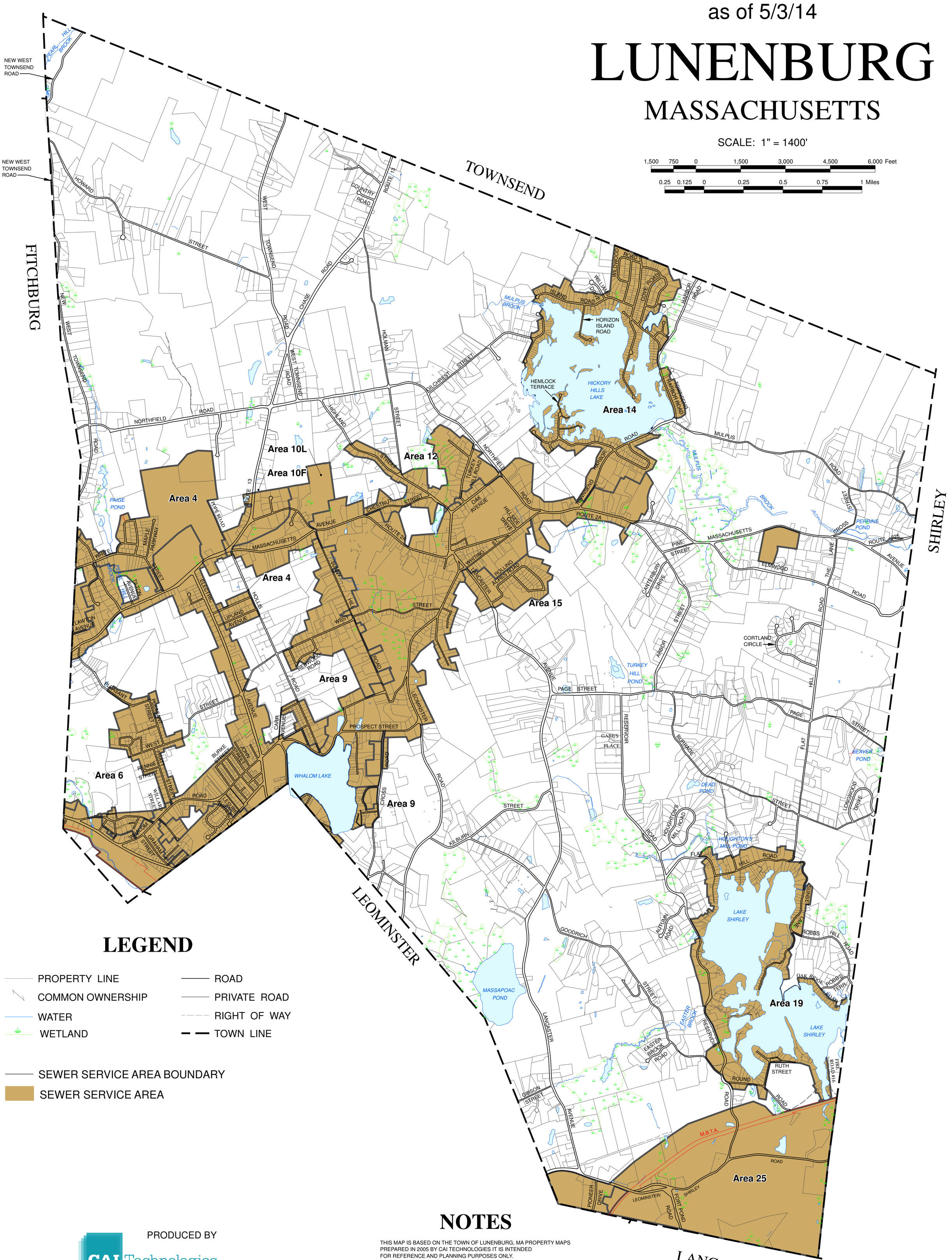
SEWER SERVICE AREA
as of 5/3/14

LUNENBURG
MASSACHUSETTS

SCALE: 1" = 1400'

1,500 750 0 1,500 3,000 4,500 6,000 Feet

0.25 0.125 0 0.25 0.5 0.75 1 Miles



LEGEND

- PROPERTY LINE
- COMMON OWNERSHIP
- WATER
- WETLAND
- ROAD
- PRIVATE ROAD
- RIGHT OF WAY
- TOWN LINE
- SEWER SERVICE AREA BOUNDARY
- SEWER SERVICE AREA

PRODUCED BY

CAI Technologies
Precision Mapping. Geospatial Solutions.

11 PLEASANT STREET, LITTLETON, NH 03561
800.322.4540 - WWW.CAI-TECH.COM

NOTES

THIS MAP IS BASED ON THE TOWN OF LUNENBURG, MA PROPERTY MAPS PREPARED IN 2005 BY CAI TECHNOLOGIES IT IS INTENDED FOR REFERENCE AND PLANNING PURPOSES ONLY.

PROPERTY LINES CURRENT TO JULY 1, 2013

SOURCE DATA: SEWER SERVICE AREA DATA PROVIDED BY TOWN OF LUNENBURG, MA. PROPOSED SERVICE AREAS DIGITIZED BY CAI TECHNOLOGIES. IN NOVEMBER, 2009.

APPENDIX G

Public Meeting Presentation
May 17, 2007

Public Meeting – May 17, 2007

Lunenburg Comprehensive Wastewater Management Plan

Phase I –
Existing Conditions, Future Requirements and Problem Identification/ Needs Assessment

Wright-Pierce
Civil and Environmental Engineering Services

Presentation Team

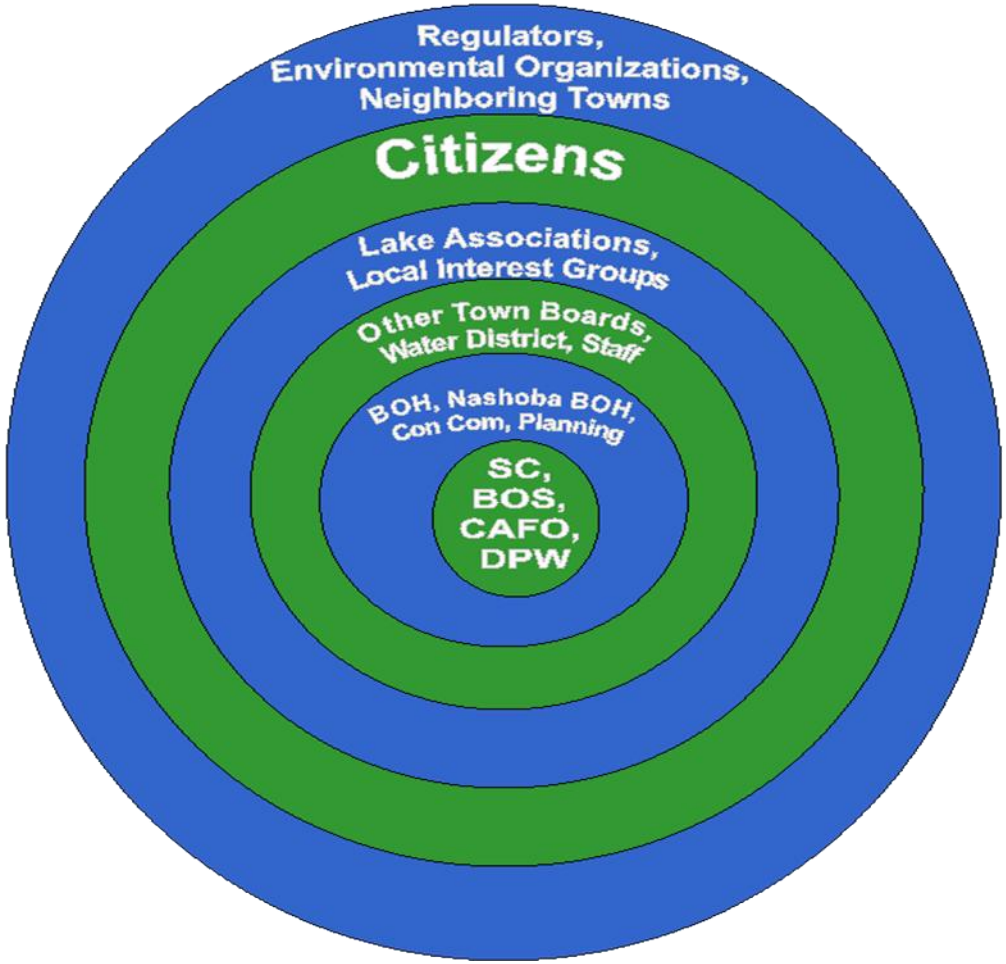
- **Kevin Olson, PE - Project Manager**
- **Abby Charest, PE - Lead Project Engineer**
- **Jason Jancaitis, PE - Project Engineer**
- **Keith Gardner, EIT - Engineer**

Wright-Pierce
Civil and Environmental Engineering Services

CWMP Phases

- Project Management/Public Involvement
- Phase I - Existing Conditions
- Phase II - Alternatives Identification and Screening
- Phase III - Detailed Evaluation of Alternatives and Recommended Plan
- Phase IV – Report

Communication, Coordination and Consensus



Wright-Pierce
Civil and Environmental Engineering Services

Phase I CWMP

- Existing conditions
- Water demand/supply sources
- Water balance
- Wastewater needs assessment
- Report and public meeting

Wright-Pierce
Civil and Environmental Engineering Services

Existing Conditions

- Land use and demographics
- Environmentally sensitive areas
- Soils
- Groundwater
- Wastewater volumes
- Water balance

CWMP Terms

- **Wastewater**
  - Liquid entering septic tank or collection system
- **IMA**
  - Intermunicipal agreement between communities to outline treatment and disposal of wastewater
- **I/A**
  - Innovative/alternative treatment provides enhanced on-site wastewater treatment
- **GWD**
  - Groundwater discharge is a type of effluent (treated wastewater) disposal

Wright-Pierce
Civil and Environmental Engineering Services

Types of Wastewater Systems

- **Centralized Systems**
  - **Publicly owned and operated**
- **Decentralized Systems**
  - **Individual on-site**
  - **Cluster**
  - **Satellite**
  - **Typically privately owned and operated**

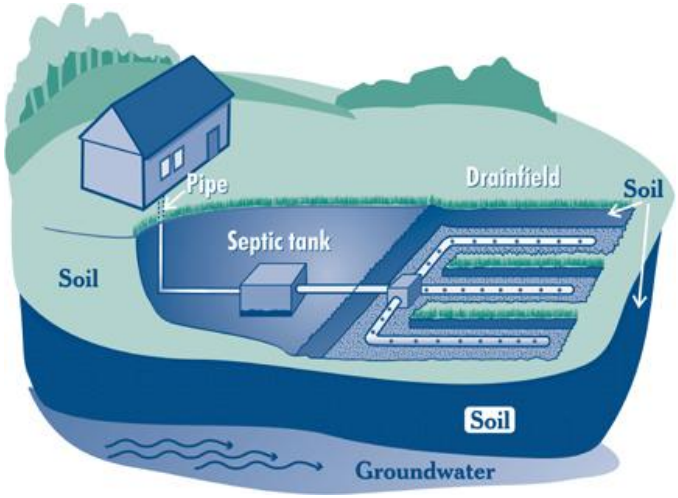
How is Lunenburg Wastewater Disposed of Now?

- Individual on-site systems (Title 5)
- Innovative/Alternative (I/A) on-site systems
  - Jet System
  - Presby
  - FAST
- Private satellite systems
  - Village at Flat Hills
  - Woodlands Village
- Sewer connections – regional/centralized
  - Leominster
  - Fitchburg

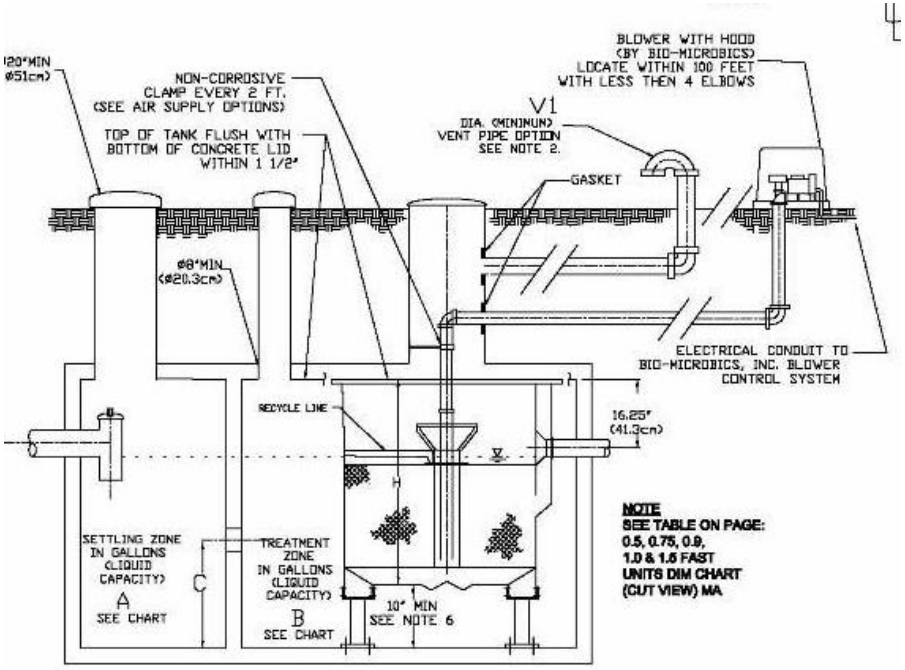
Wright-Pierce
Civil and Environmental Engineering Services

Types of Wastewater Systems

Individual On-Site Title 5
Septic tank/leach field



I/A On-Site Systems



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Types of Wastewater Systems

Satellite -- Defined service area, GWD permit

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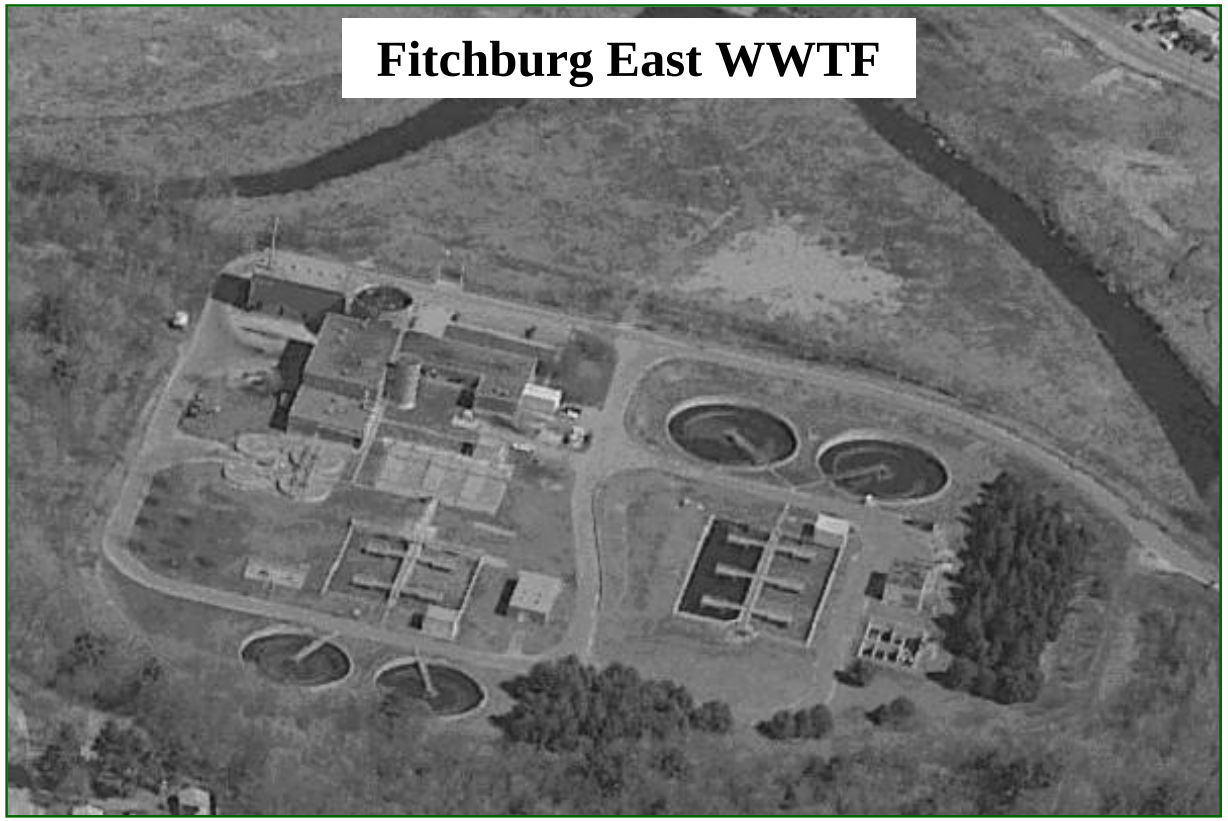
Civil and Environmental Engineering Services

Types of Wastewater Systems

Satellite -- Defined service area, GWD permit

Types of Wastewater Systems

Centralized - Traditional municipal facility



Wright-Pierce
Civil and Environmental Engineering Services

Types of Wastewater Systems

Centralized - Traditional municipal facility

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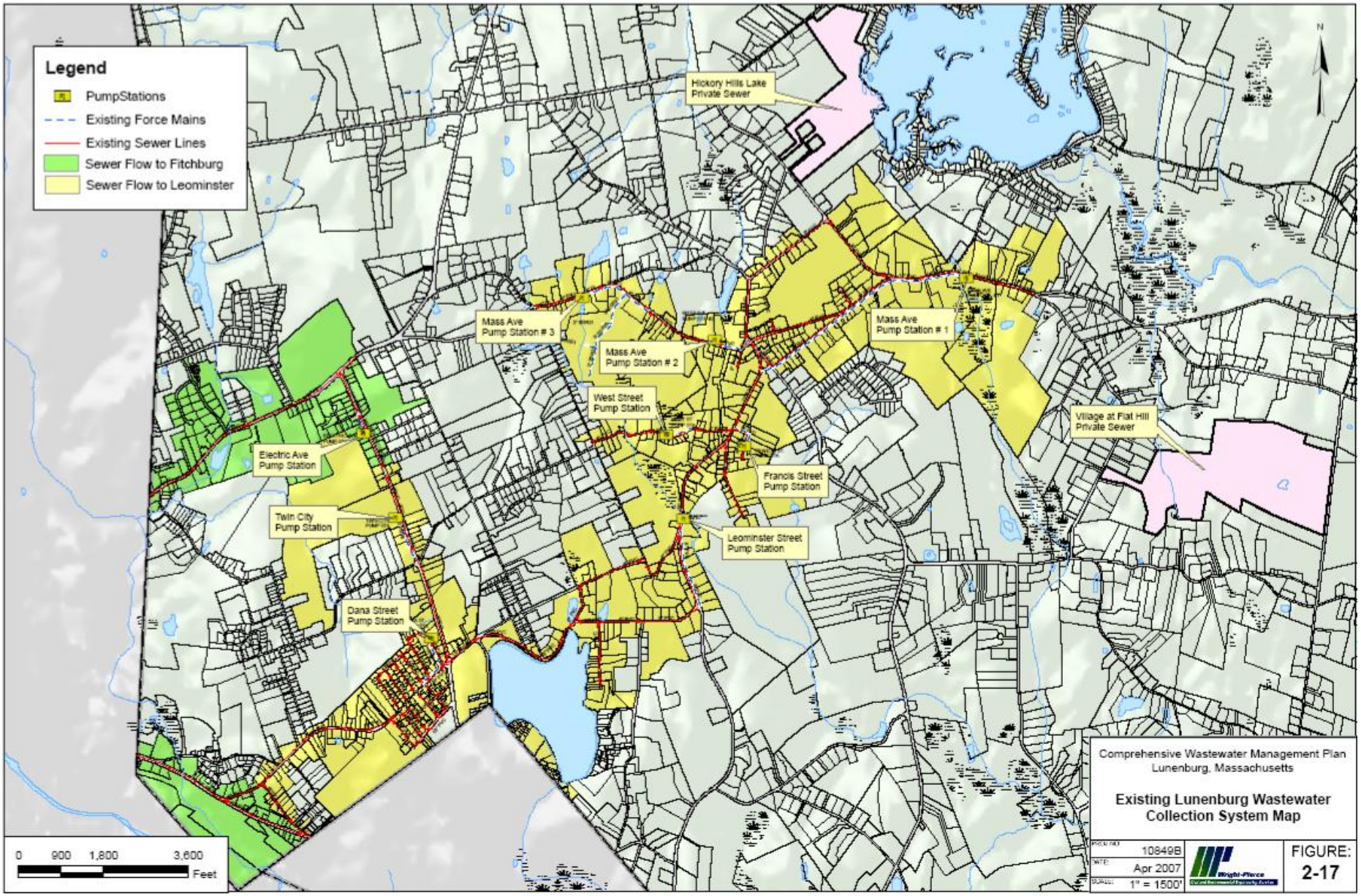
Civil and Environmental Engineering Services

Lunenburg Collection System



Wastewater Flows

- **On-site – Individual & I/A**
  - **93% of Town, approx. 620,000 gpd**
  - **64 gpd/person**
- **Satellite**
  - **Village at Flat Hills – Bioclere System**
    - **Permitted flow - 14,850 gpd**
  - **Woodlands Village – RUCK System**
    - **Permitted flow - 12,500 gpd**
- **Regional Sewer System**
  - **Leominster**

    IMA - 500,000 gpd,Remaining Capacity - 354,000 gpd
  - **Fitchburg**

    IMA - 80,000 gpd, Remaining Capacity - 0 gpd

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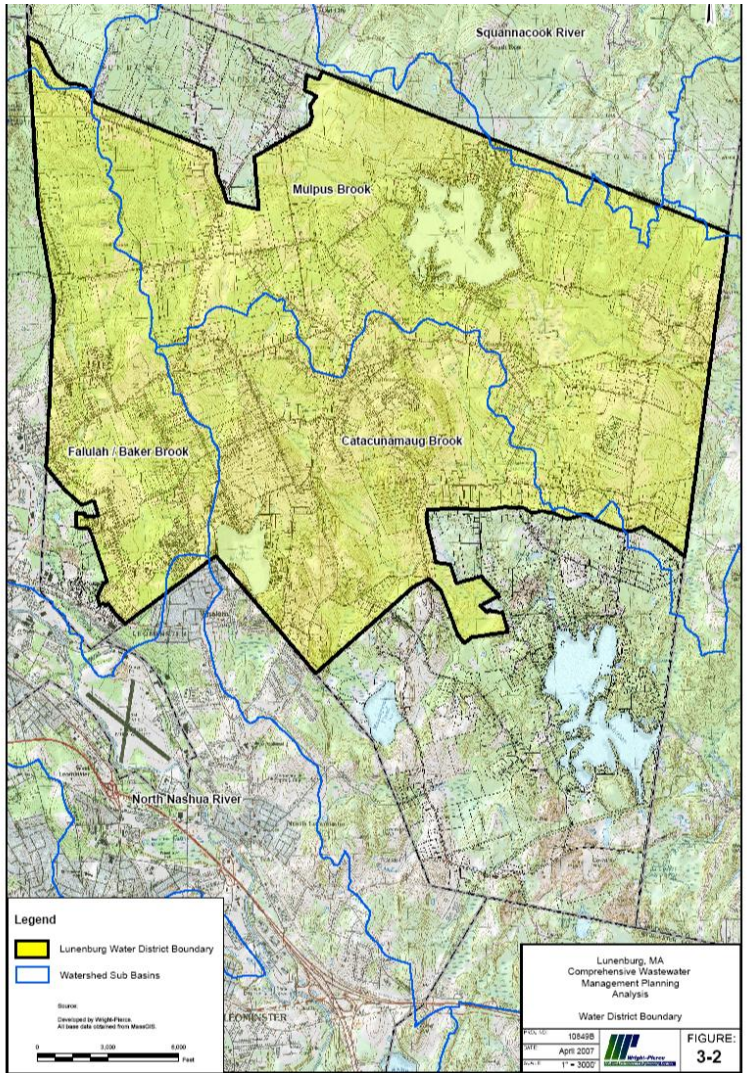
Civil and Environmental Engineering Services

Water Demand / Supply Sources

Lunenburg Water District



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Civil and Environmental Engineering Services

Water Demand / Supply Sources

Lunenburg Water District

- **Serves**
  - **Approx. 5,265 people**
  - **55% of Lunenburg**
- **DEP - Water Management Act (WMA) Permit**
  - **Ave. withdrawal - 0.51 mgd.**
  - **Additional 0.1 mgd over permitted volume**
  - **Allows for ave. withdrawal - 0.61 mgd**
- **Water Wells**
  - **5 - Catacunamaug Brook sub-basin**
    - **4 Active**
  - **1 - Mulpus Brook sub-basin - Well 6**
    - **Issues with color**

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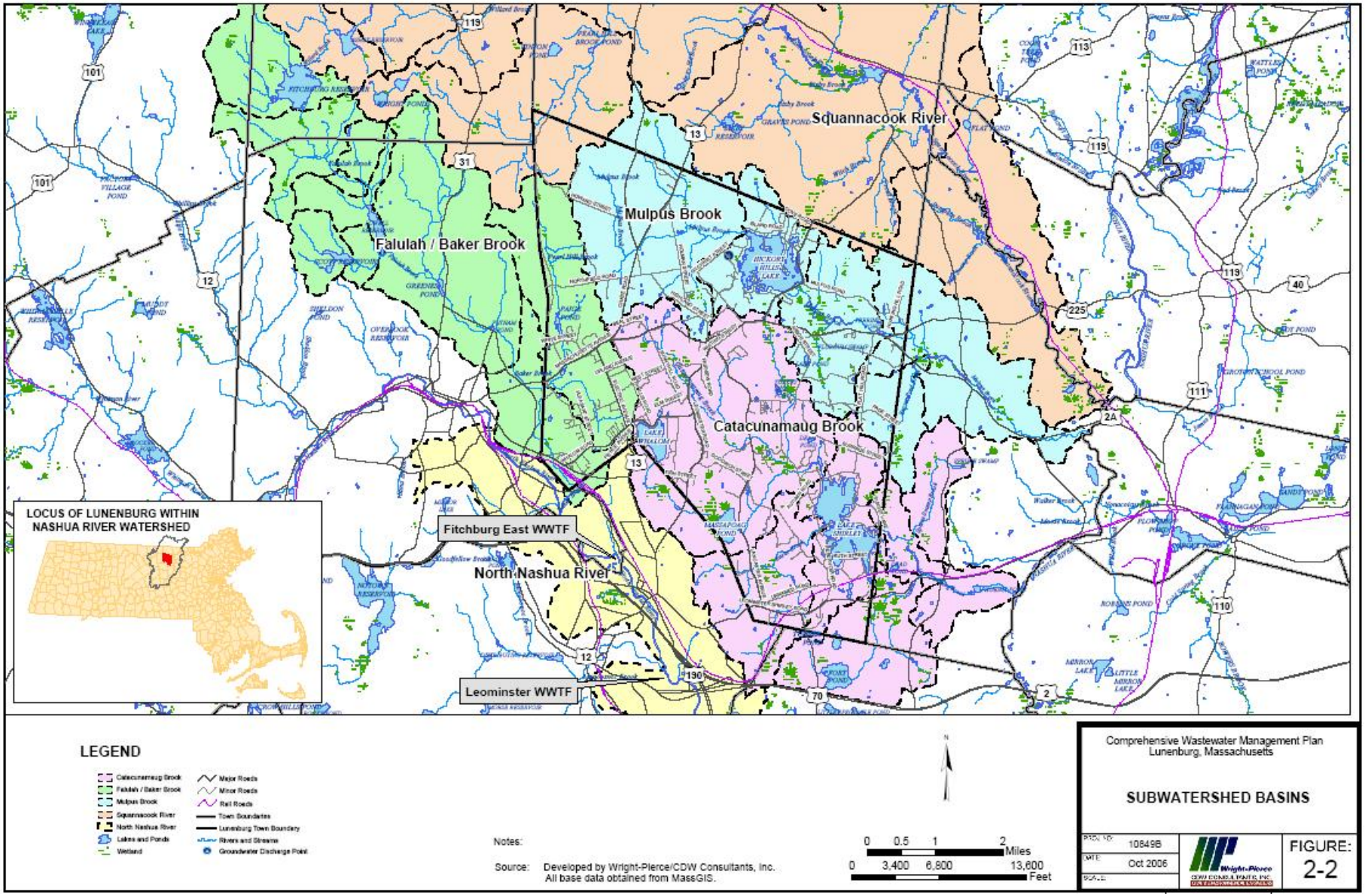
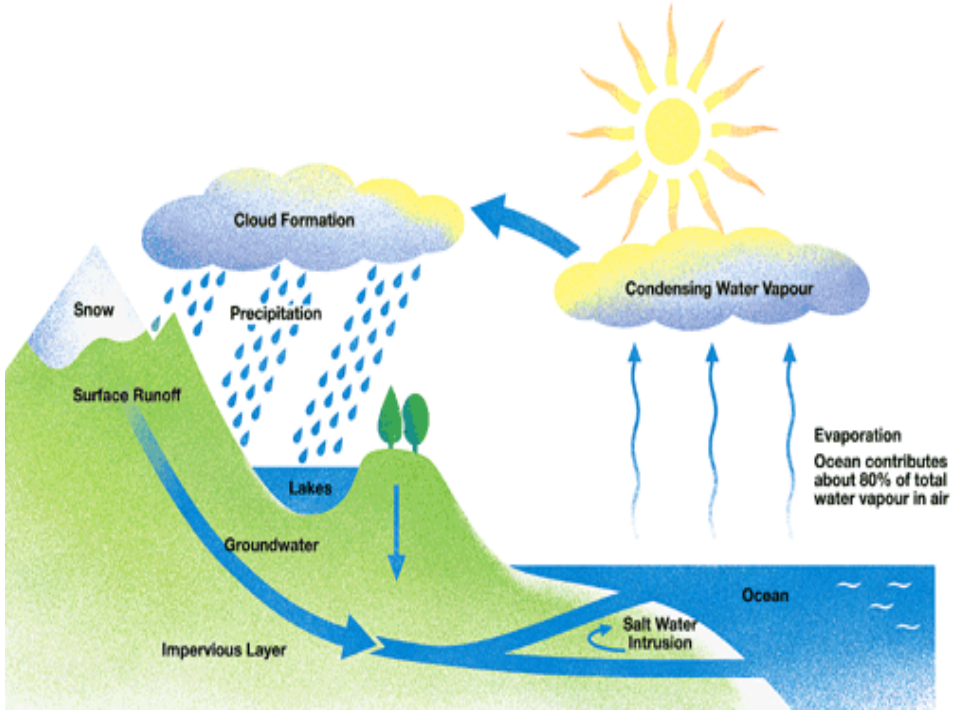
Civil and Environmental Engineering Services

Lunenburg Watersheds



Water Balance

- Based on the 2000 NRWA model
- Balances for 2006 & 2026
  - Drinking Water Withdrawn
  - Drinking Water Distributed
  - Wastewater Collected
  - Wastewater Discharged
- 2026 – Based on estimated changes due to current conditions



- To be used in Phase II & III of the Alternatives Screening

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Lunenburg's Reasons for Wastewater Planning

- **Reliance on individual on-site systems**
- **Population growth concerns**
- **Limited capacity to nearby municipal facilities**

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Civil and Environmental Engineering Services

Wastewater Needs Assessment

In which areas are on-site wastewater systems an adequate means of providing for sanitation, environmental protection and growth management, and in which areas may enhanced on-site, off-site, or a combination of solutions be "needed"?

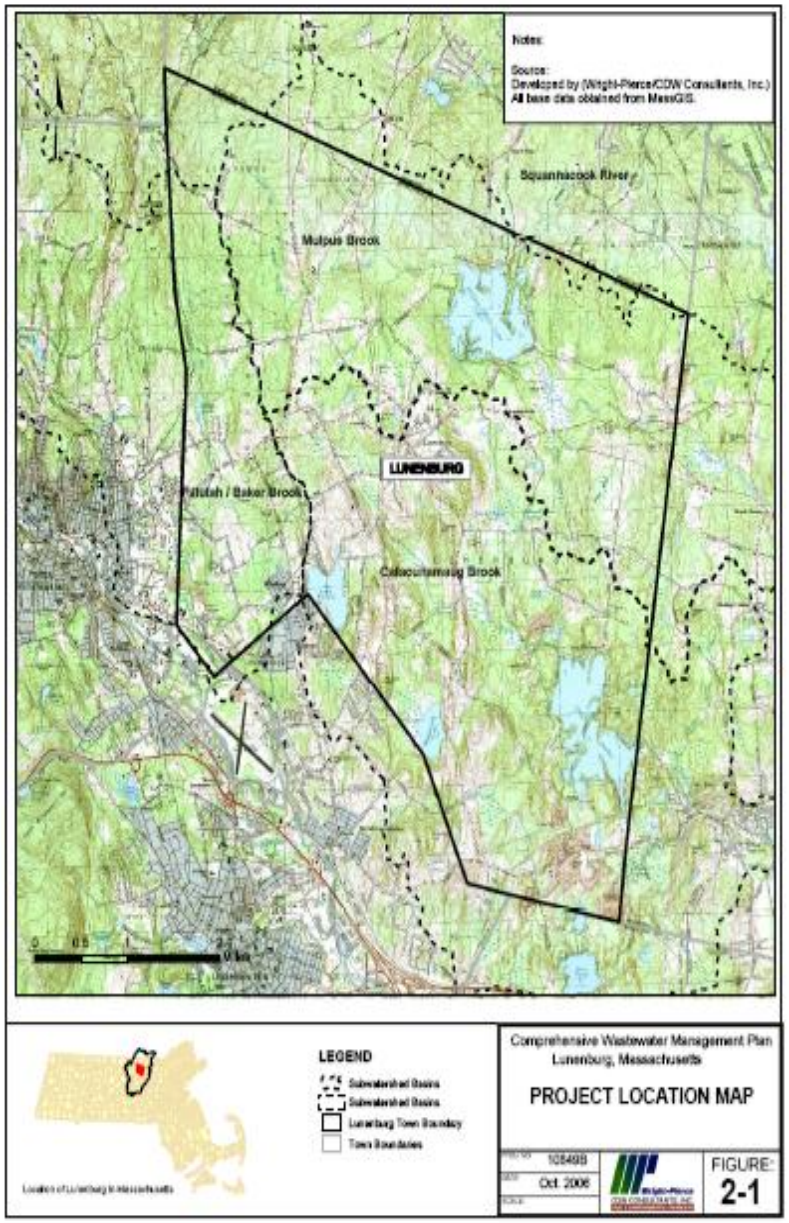
Needs Assessment

Five Categories of Need

1. Avoid public health problems
2. Water supply protection
3. Protect surface waters
4. Preserve community character
5. Support managed growth

Needs Assessment Methodology

- **Town-wide Approach**
- **Study Areas**
- **Tier 1**
  - **MassGIS**
    - **Geographic Information System**
  - **Data based approach**
  - **Ranking formula**
- **Tier 2**
  - **Observation approach**
- **Result: Areas with Need for Further Study (Phase II)**



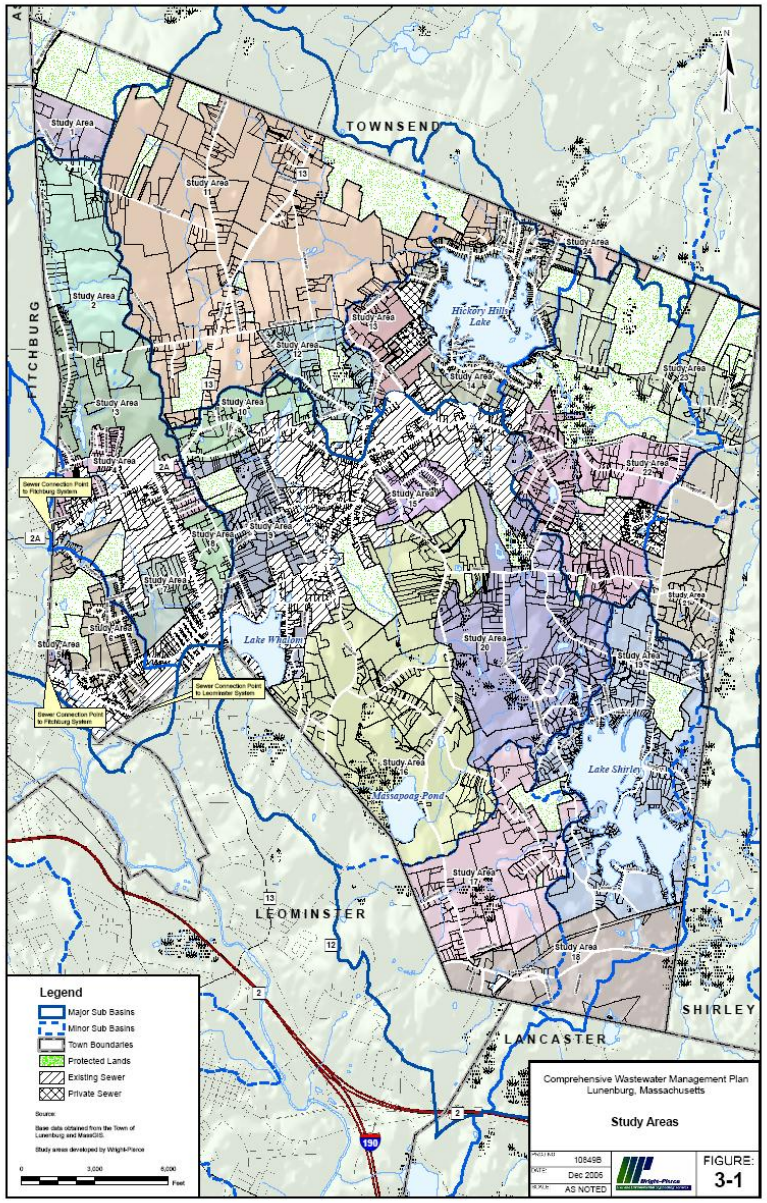
Study Areas – 24 Total

Areas removed from analysis

- Previously sewered
- Cemeteries
- Protected open space

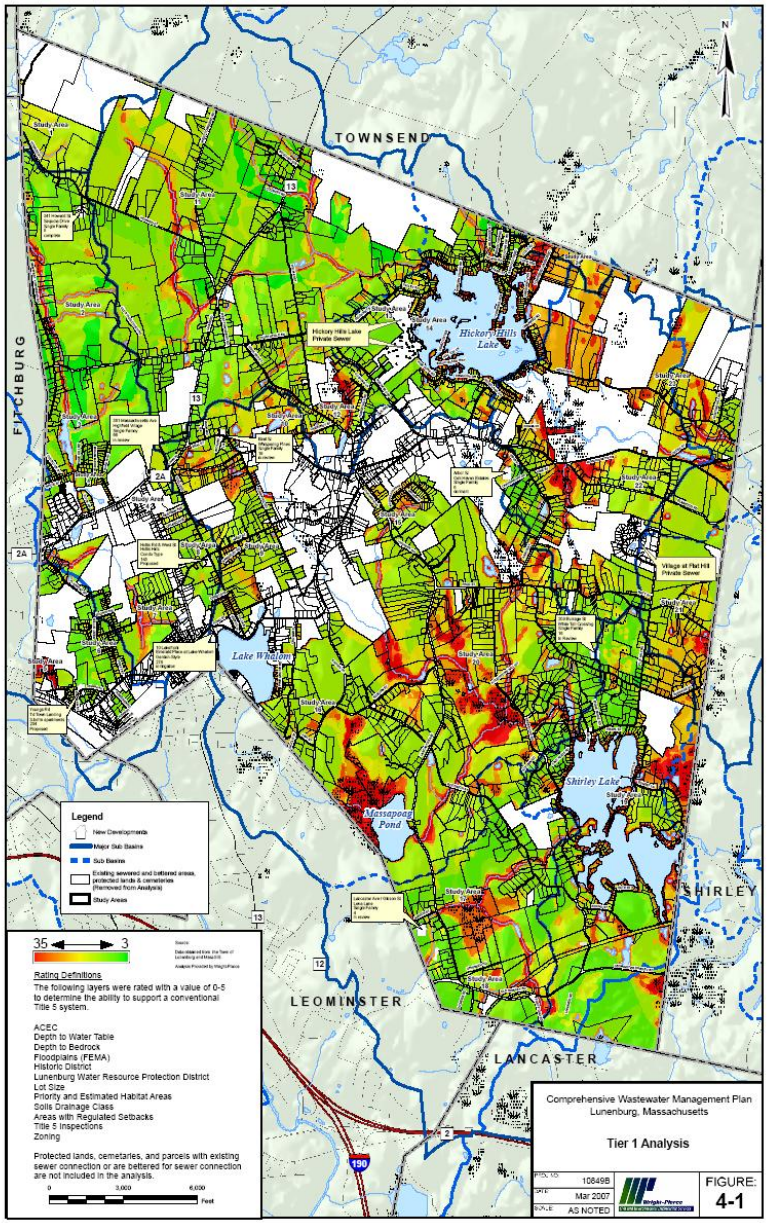
Areas determined by:

- Watershed Sub-Basins
- Zoning
- Lot size
- Geographic features



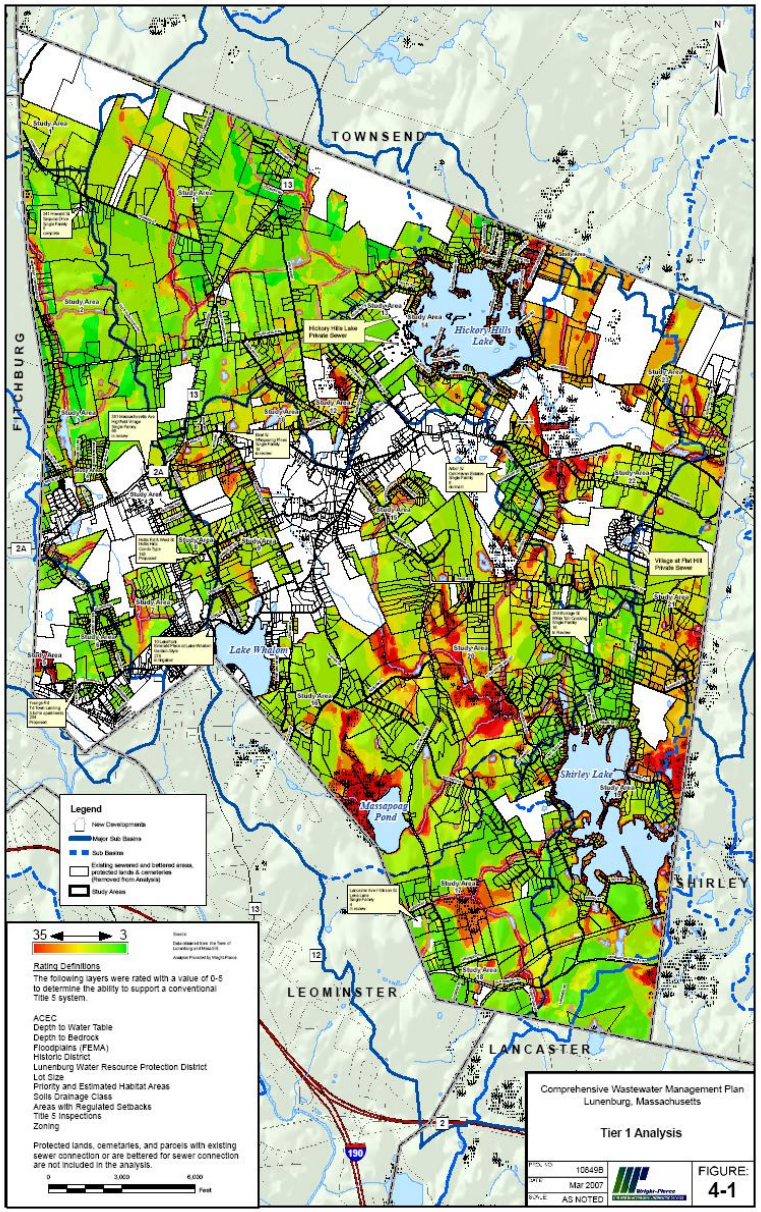
Tier 1 Analysis

- **Utilizes a "layered" approach**
  - **12 Layers**
  - **Examples**
    - **Depth to bedrock**
    - **Drainage**
    - **Lot size**
    - **Depth to water table**
- **Utilizes numerous data sources**
  - **Examples**
    - **Board of Health database**
    - **MassGIS**
    - **Soil conservation service**



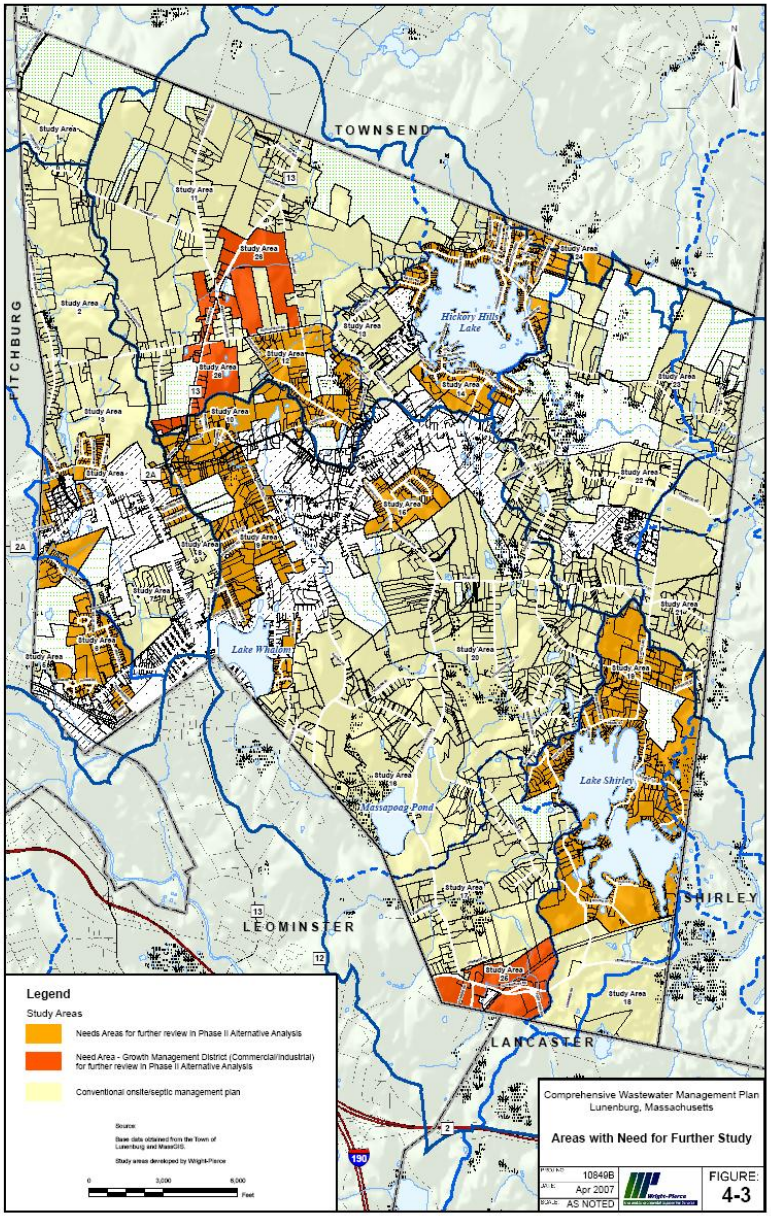
Tier 1 Analysis

- Each layer was ranked according to ability to treat wastewater on-site
- Layers Ranked
  - 0 to 5
  - Well Suited to Not Well Suited
  - Green to Red
- Layers complied and scores accumulated
  - 3 to 35
  - Green to Red
- Result - Areas potentially not well suited for on-site systems



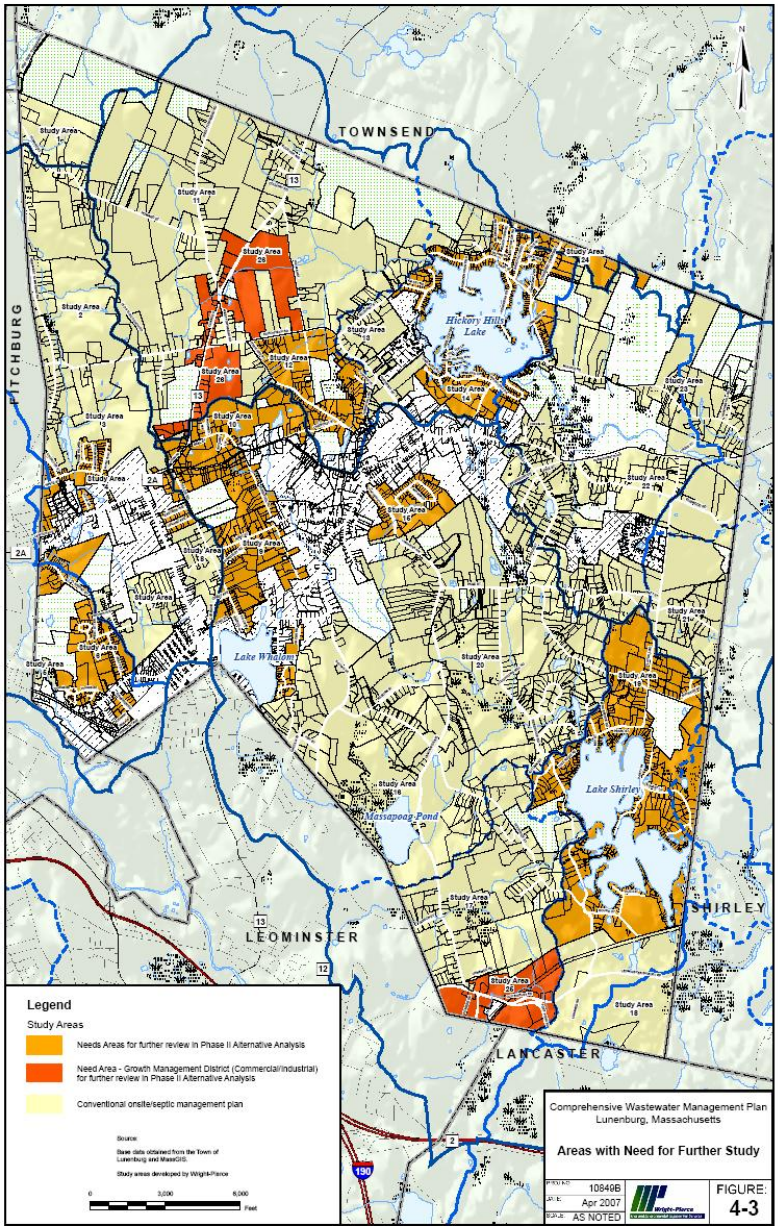
Tier 2 Analysis

- **Board of Health Records**
  - Types of failures and variances
  - Depth to GW
  - Area trends
- **Site Visit**
  - Ledge outcroppings
  - Areas of potential development



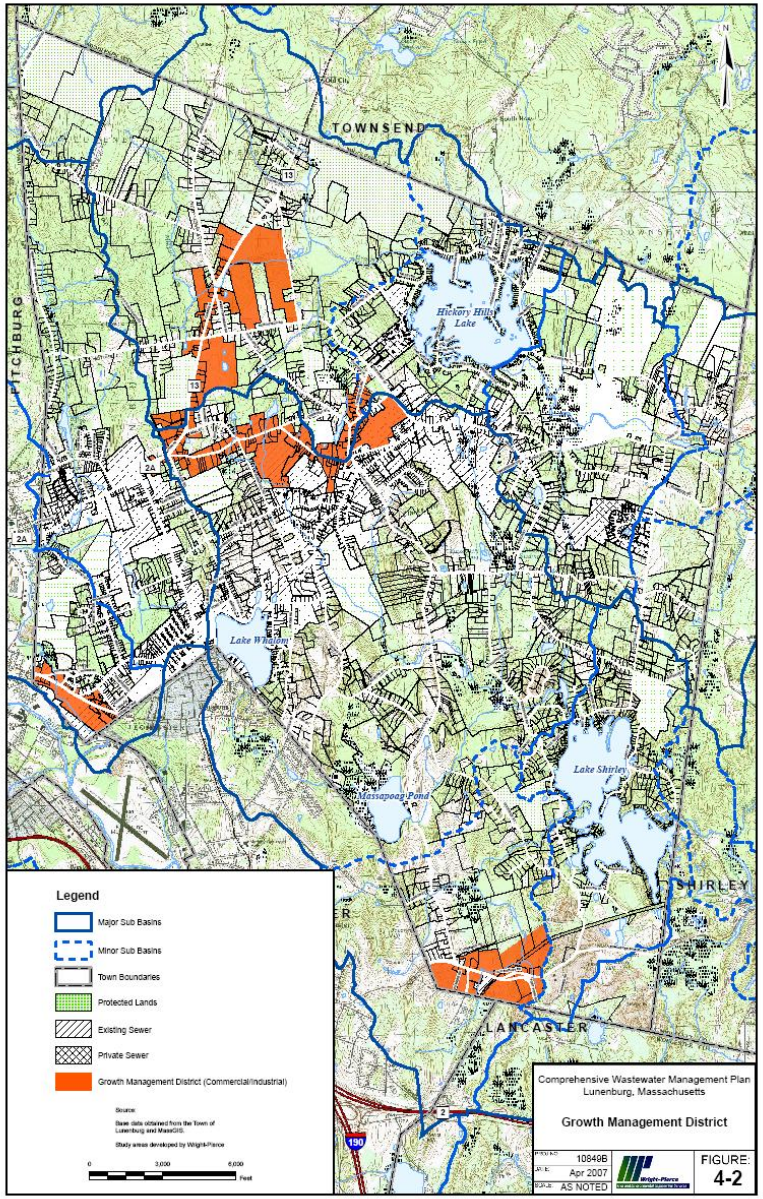
Tier 2 Analysis

- **Land Board Analysis**
  - **Board of Health**
  - **Planning Board**
  - **Sewer Commission**
  - **Conservation Commission**



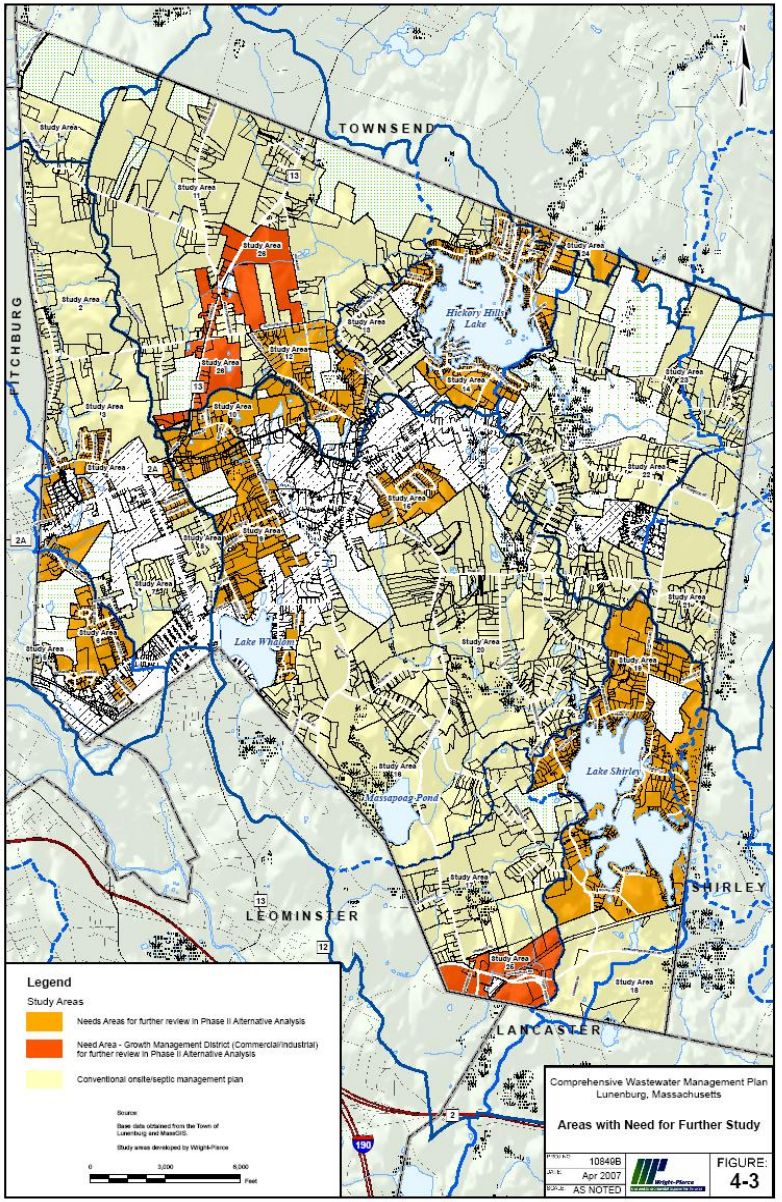
Needs Related to Growth Management

- **Planning Board**
- **Growth Management Districts**
  - **Commercial**
  - **Industrial**
  - **Broaden tax base**

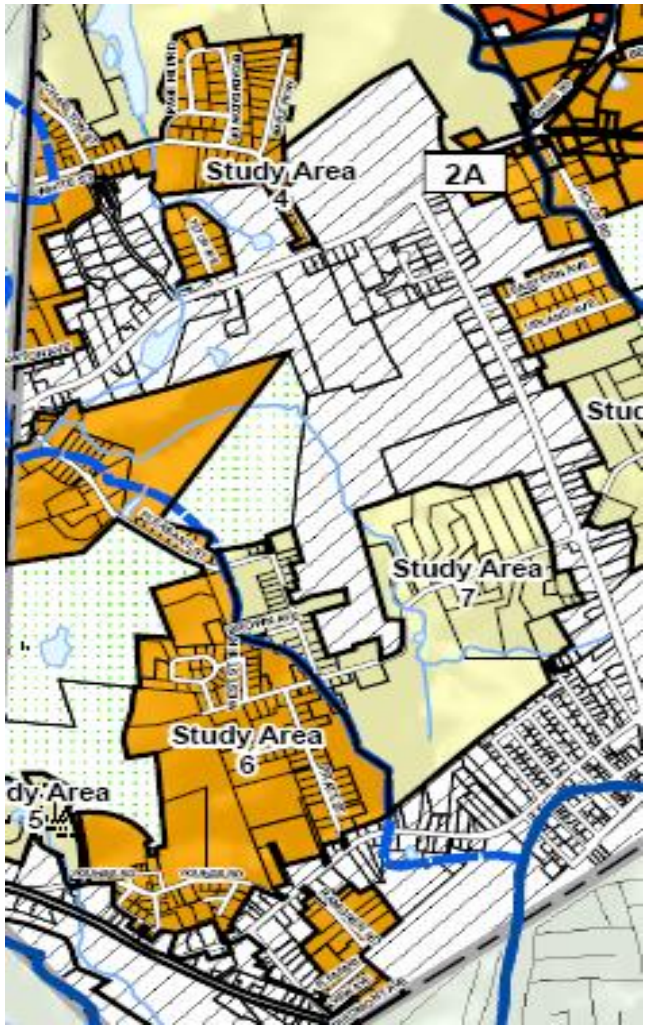


Areas of Need for Further Study

- CWMP Phase I Results
- 11 Needs Areas
  - 9 Study Areas
  - 2 Growth Management Districts
- Phase II - Alternatives Identification and Screening



Study Areas 4 & 6



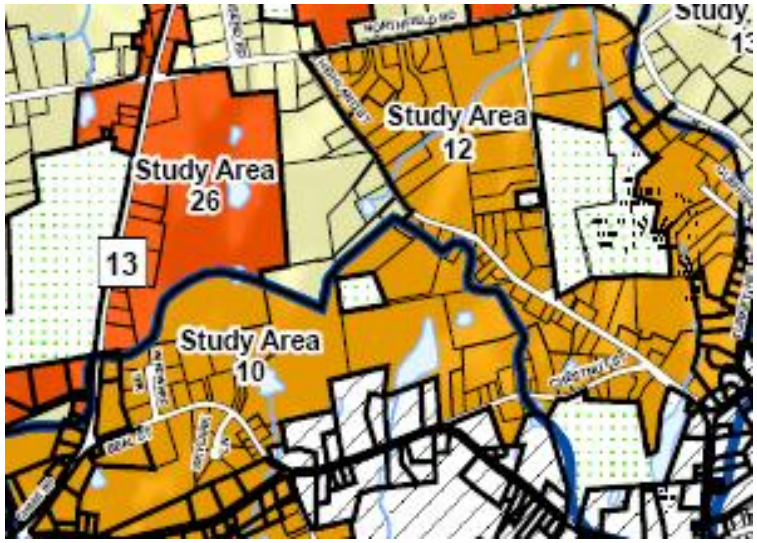
- **Area 4 - Lower Mass Ave**
  - **High groundwater**
  - **Ledge outcroppings**
  - **Small lots**
- **Area 6 - Baker Station**
  - **High groundwater**
  - **Poorly draining soils**
  - **Portions with small lots**

Study Area 9

Study Area 9 - Lake Whalom

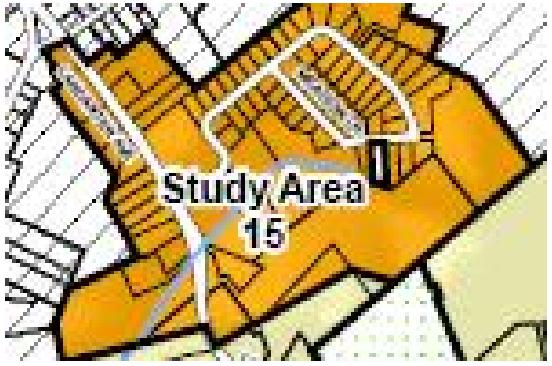
- **Lot size – varied**
- **High groundwater**
- **Poor draining soils**

Study Areas 10, 12 & 15



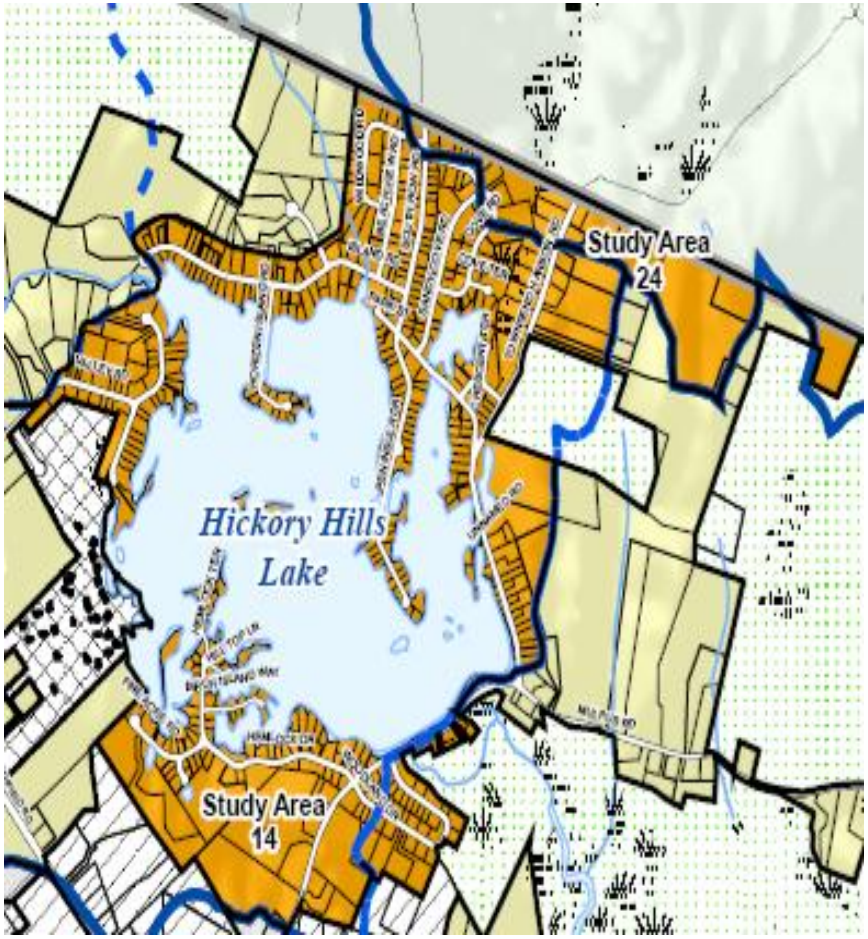
- **Area 10 - Mass Ave / Beal Street**
  - **Small lots**
  - **Varied soils**

- **Area 12 - Highland St.**
  - **Varied soils**
  - **High groundwater/wetlands**



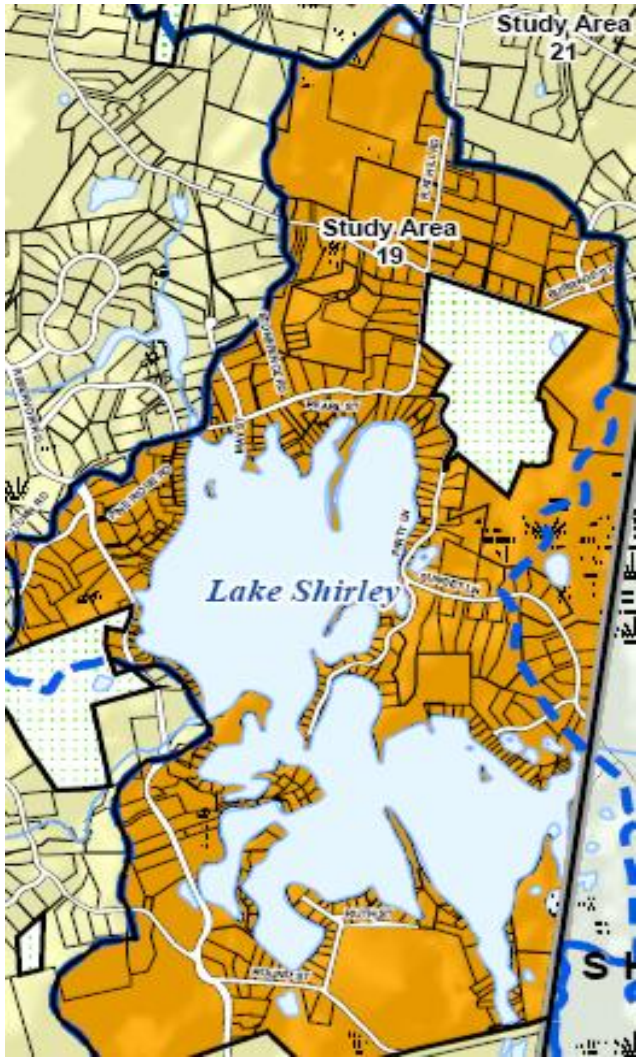
- **Area 15 – Rolling Acres Road**
  - **High groundwater/wetlands**
  - **Small lots**

Study Areas 14 & 24



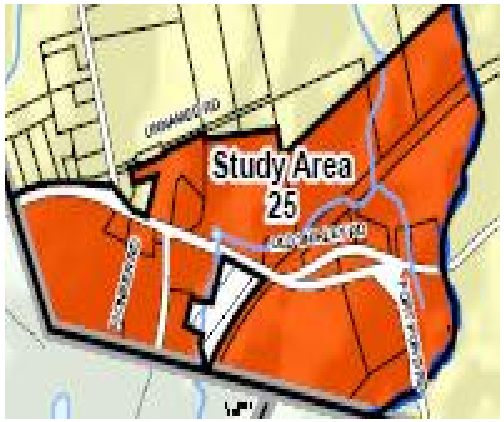
- **Area 14 - Hickory Hills Lake**
  - **Small lots**
  - **Varied soils**
- **Area 24 - Squannacook**
  - **Small Portion abuts Area 14**
  - **Landfill**

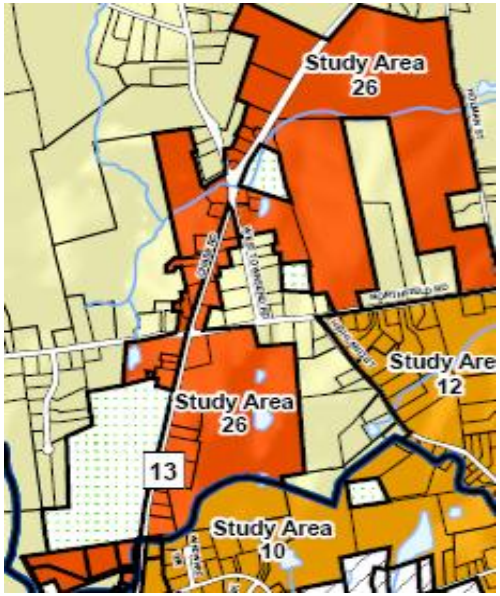
Study Area 19



- **Study Area 19 - Lake Shirley**
  - **Lot size – varied**
  - **Soils – fast perc rates**
  - **High groundwater**
  - **Protect surface water quality**

Study Areas 25 & 26 – Growth Management Districts





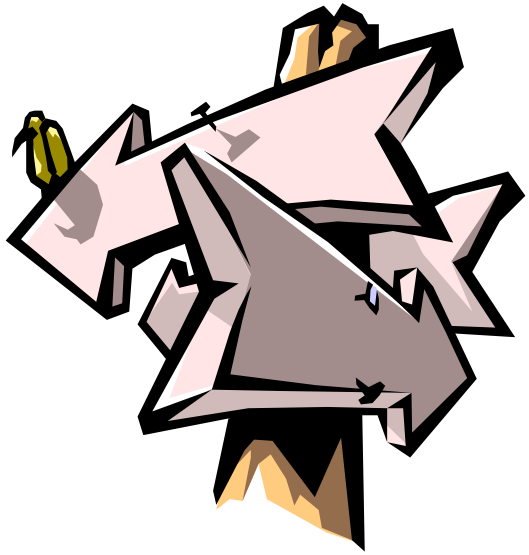
- **Area 25 - Pioneer Drive**
  - **Leominster-Shirley Road**
  - **Commercial/Industrial**
- **Area 26 - Chase Road (Route 13)**
  - **Commercial/Industrial**

CWMP Phases

- Project Management/Public Involvement
- Phase I - Existing Conditions
- Phase II - Alternatives Identification and Screening
- Phase III - Detailed Evaluation of Alternatives and Recommended Plan
- Phase IV - Report

Next Steps

- Update needs analysis/review needs areas
- Identify and short list potential off-site wastewater alternatives
- Review enhanced on-site wastewater alternatives
- Consider ways to reduce wastewater flows (conservation)



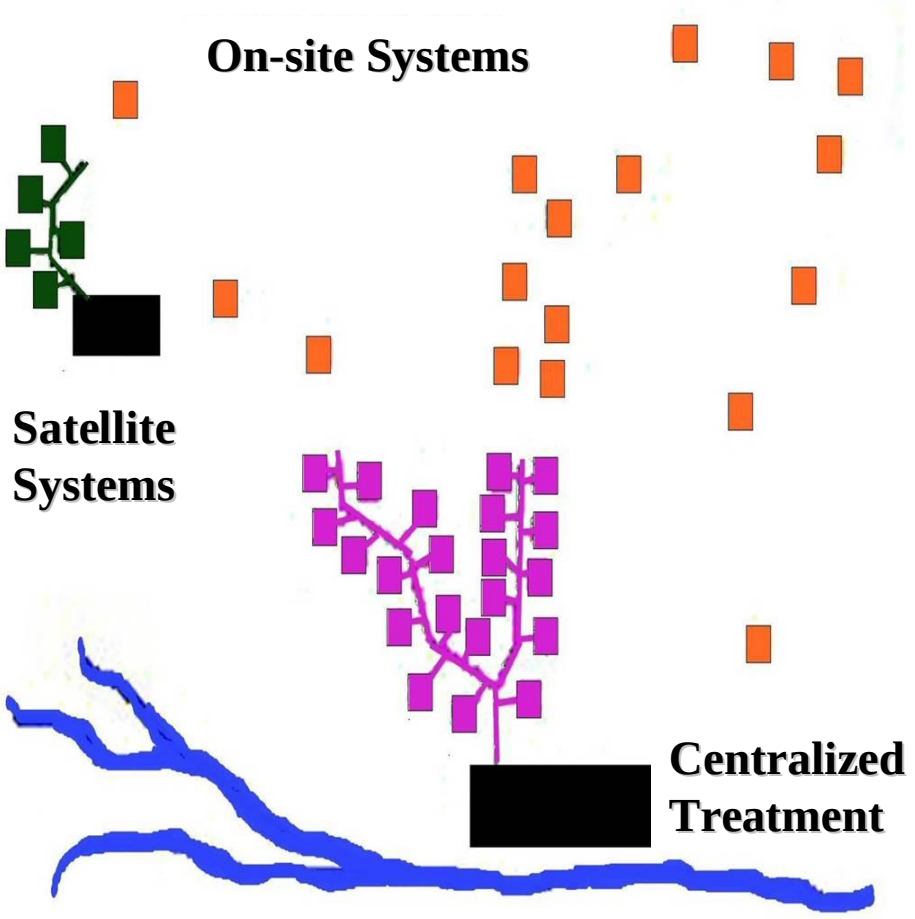
Phase II - Alternatives Identification and Screening

- **Proposed Alternatives**
  - Collection
  - Treatment
  - Effluent Disposal
- **Review Criteria**
  - Technical
  - Environmental
  - Institutional
  - Economics/Cost

Wright-Pierce
Civil and Environmental Engineering Services

Proposed Alternatives - Treatment

- **Off-site**
  - Regional solutions
  - Centralized treatment
  - Satellite systems
- **On-site**
  - Cluster
  - Continued use of on-site systems
    - Title 5
    - I/A Systems
    - Septage Management Plans



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Civil and Environmental Engineering Services

Phase II – Alternatives Identification and Screening

Technical Memos

- Identify potential wastewater management alternatives
- Screening of potential alternatives
- Potential off-site wastewater management site selection
- Phase II Report – Short list of alternatives for Phase III

Questions and Comments

Information Depositories:

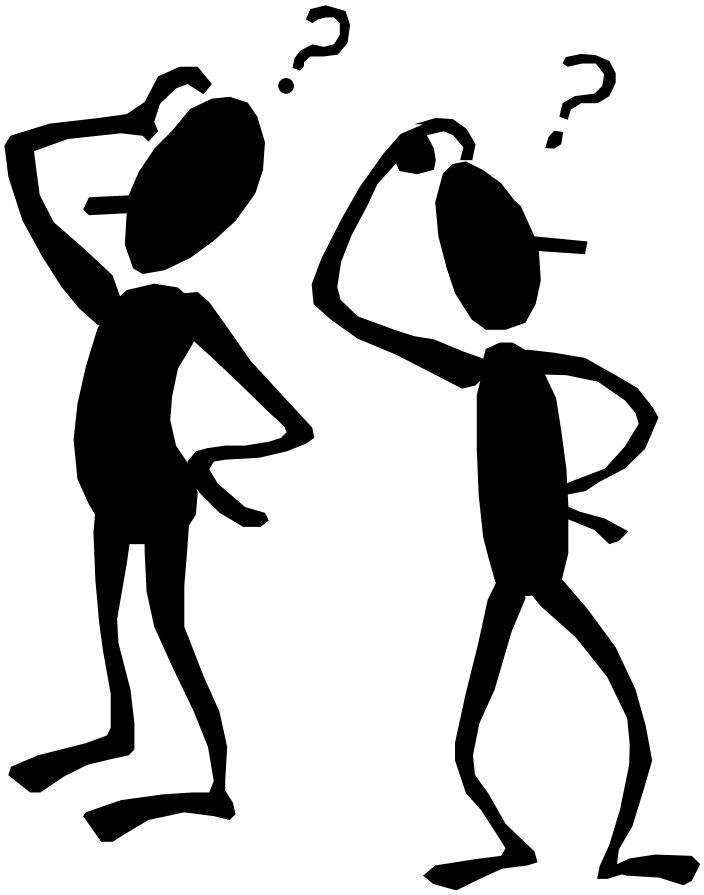
- **Selectmen's Office**
  17 Main St.
  Town Hall
  Lunenburg, MA 01462

- **DPW**
  520 Chase Rd.
  Rt. 13
  Lunenburg, MA 01462

- **Public Library**
  Ritter Memorial Library
  1023 Massachusetts Ave
  Lunenburg, MA

Submit Comments to:

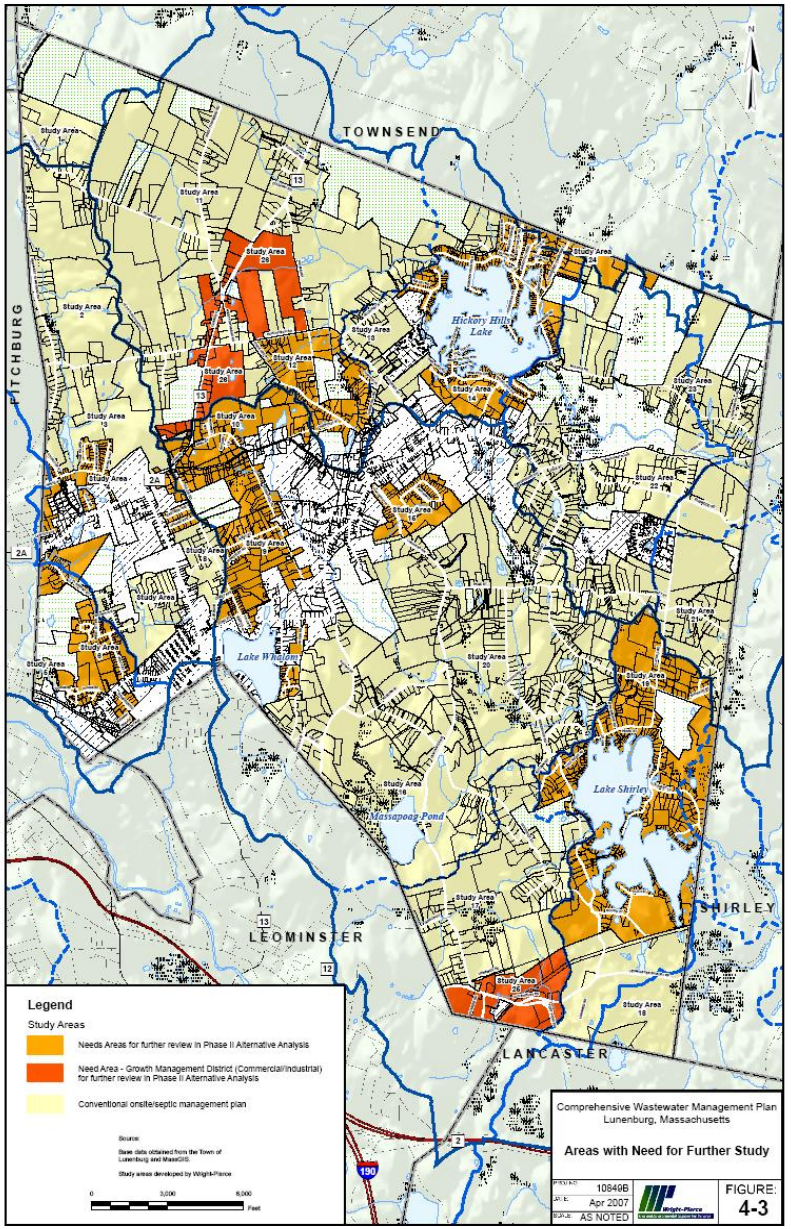
- **Sewer Commission, Chair**
  Town Hall
  17 Main Street
  Lunenburg, MA 01462



http://lunenburg-cwmp.wright-pierce.com/

Summary

- Existing conditions
- Water demand/supply sources
  - Lunenburg Water District
- Water balance
  - 3 local sub basins of the Nashua River
- Wastewater needs assessment
  - 11 Areas of Further Study
- Phase II – Alternatives Identification and Screening



Flows from Proposed Developments

Proposed Developments in Fitchburg Drainage Area:

- **Tri-Town Landing: 21,000 gpd**
- **Highfield Village: 9,400 gpd**
- **White's Woods (Included in existing flows)**

Proposed Developments in Leominster Drainage Area:

- **Emerald Place: 26,100 gpd**
- **Hollis Hills: 24,800 gpd**
- **Lunenburg Village: 13,500 gpd**
- **Lunenburg Estates: 10,400 gpd**
- **Stone Farm Estates: 9,400 gpd**
- **Meadow Woods Mobile Home Park: 5,000 gpd**

CWMP Terms – Wastewater Estimates

- **Current conditions**
- **EOEA full build-out**
- **EOEA planning period build-out**
- **Planning horizon**

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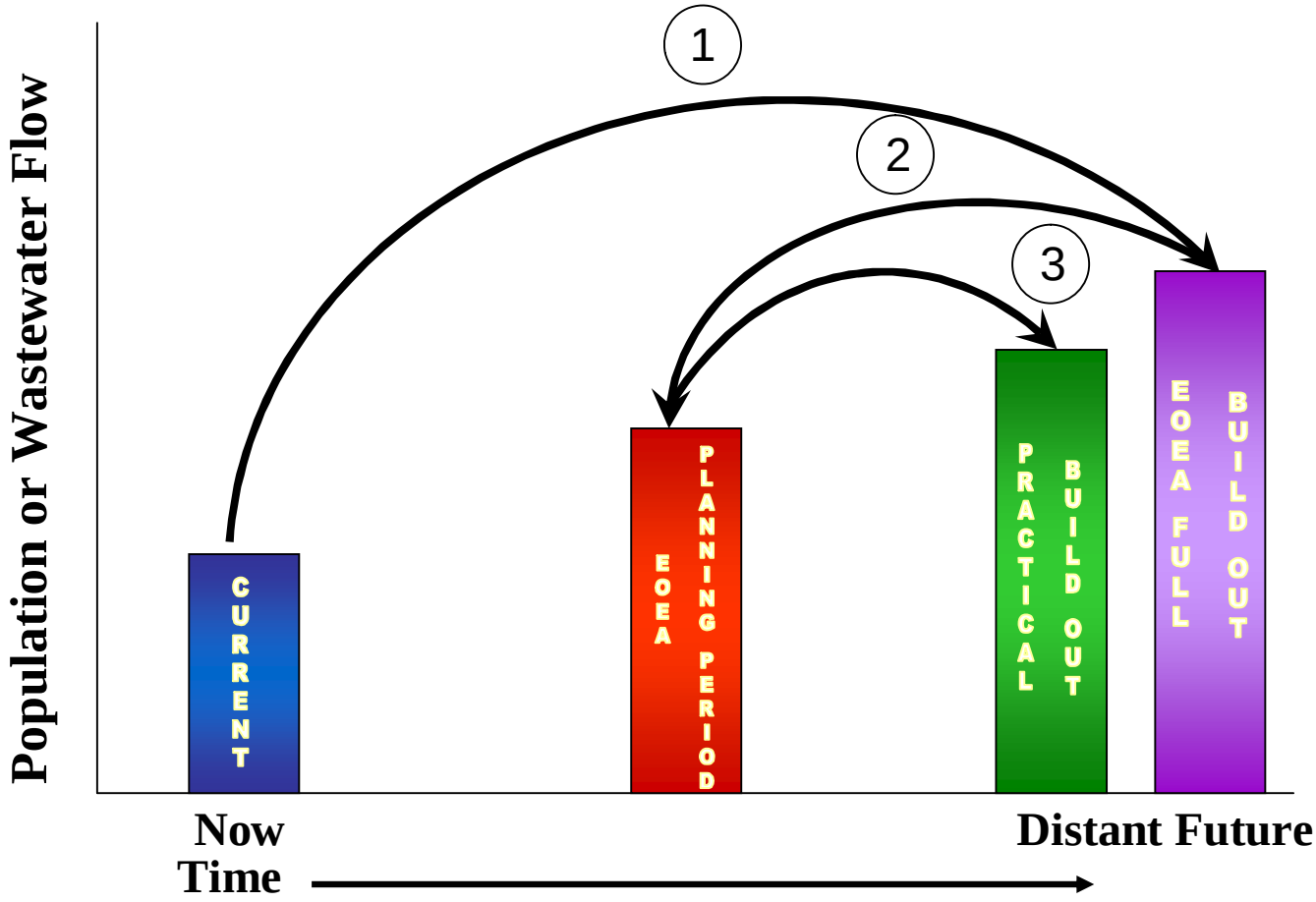
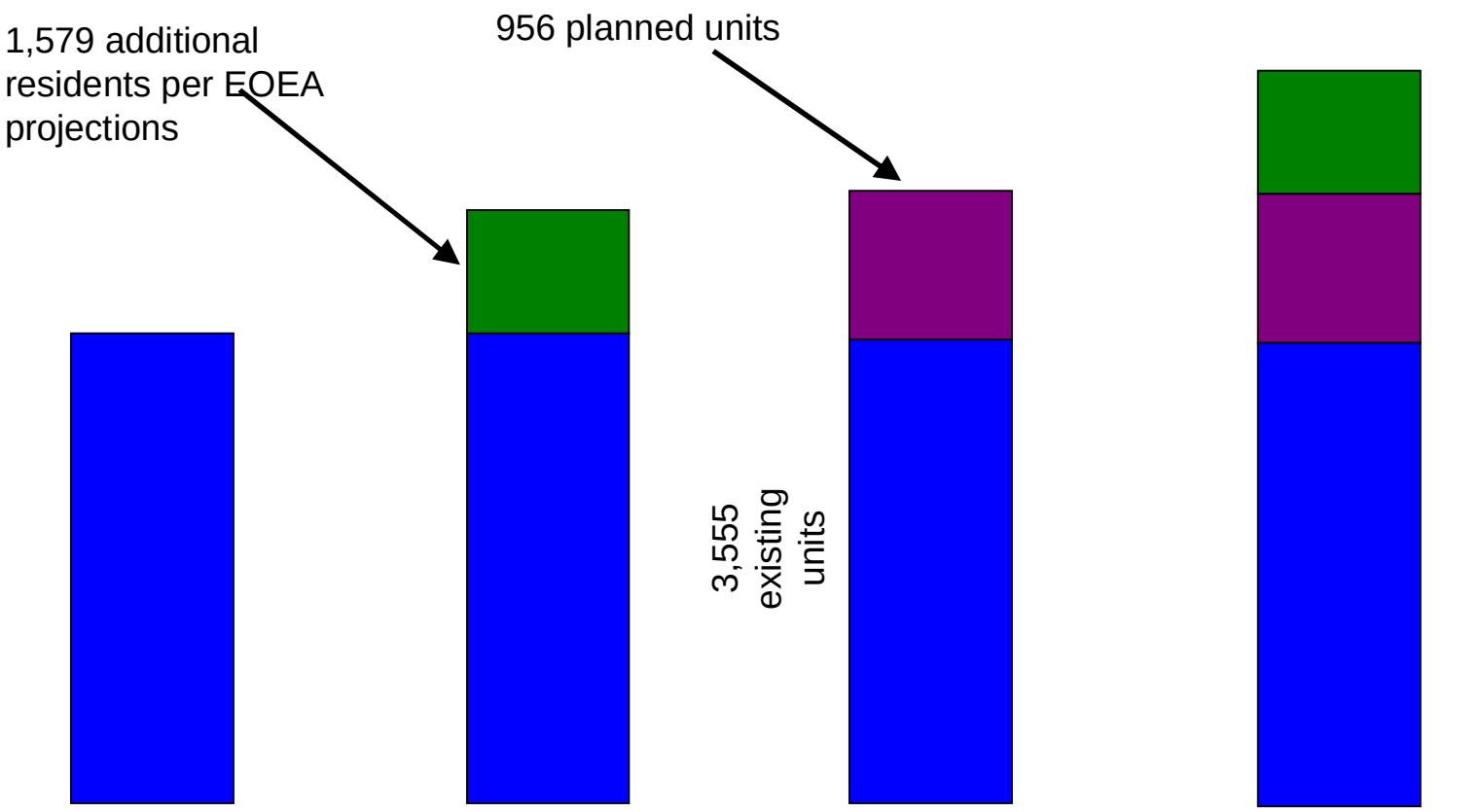
Civil and Environmental Engineering Services

Alternative Planning Horizons



Wright-Pierce
Civil and Environmental Engineering Services

Population Projections



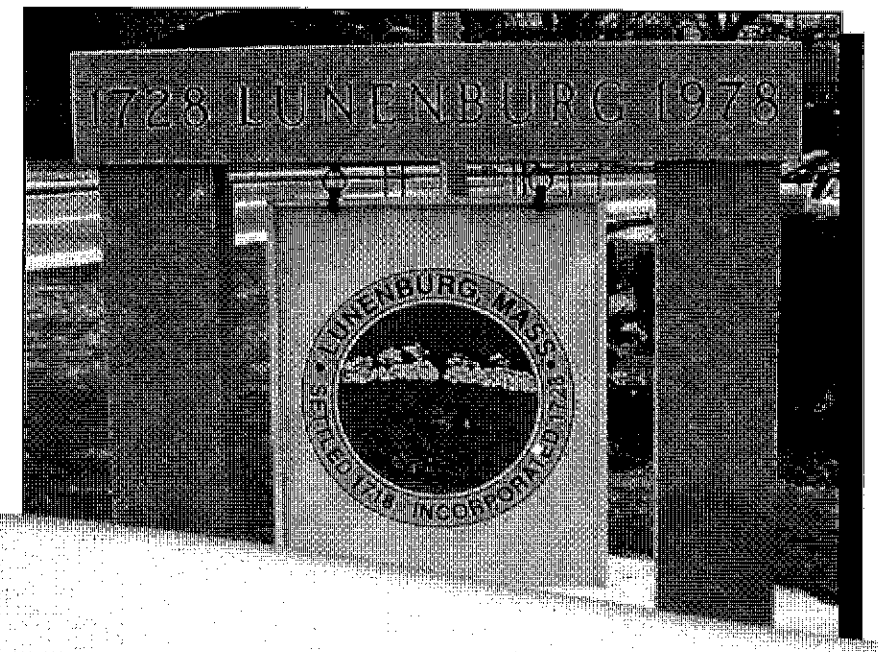
Wright-Pierce
Civil and Environmental Engineering Services

APPENDIX H

Public Meeting Presentation and Meeting Minutes April 28, 2009

Public Hearing - April 28, 2009

Lunenburg Comprehensive Wastewater Management Plan



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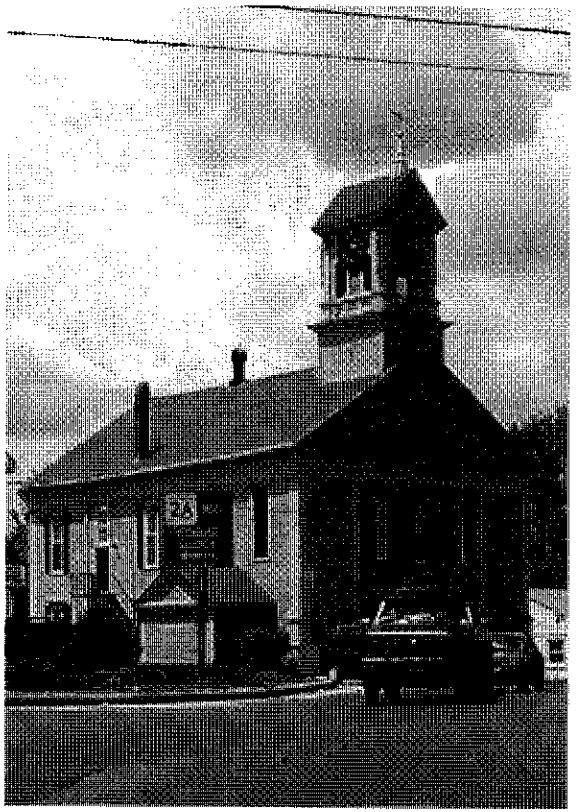
- Kevin M. Olson, PE – Project Manager
- Jason D. Jancaitis, PE – Project Engineer

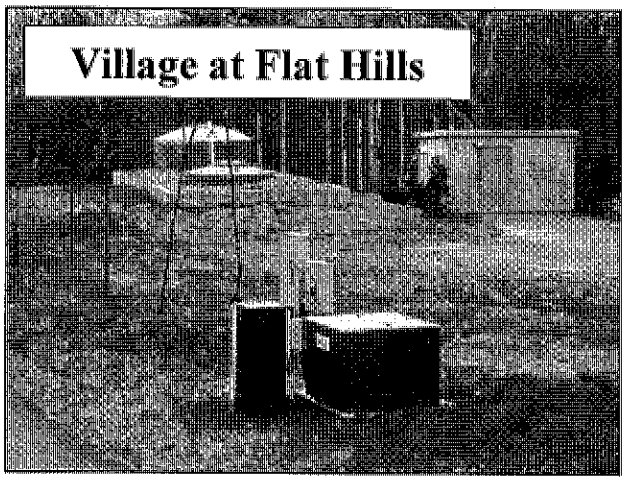
- Identify and evaluate areas that may not support individual on-site wastewater systems
- Population growth concerns
- Secondary growth concerns
- Limited capacity at neighboring municipal facilities – Fitchburg and Leominster

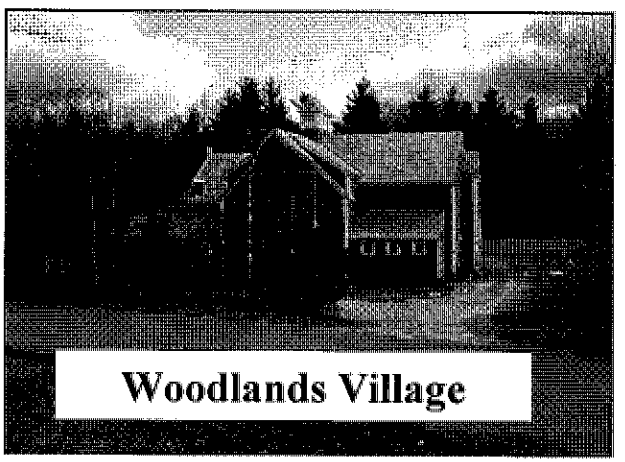


- Project Management and Public Involvement
- Phase I – Existing Conditions and Needs Assessment
- Phase II – Alternatives Identification and Screening
- Phase III – Detailed Evaluation of Alternatives and Draft Recommended Plan
- Phase IV – Recommended Plan

- Existing conditions
- Water demand/supply sources
- Water balance
- Wastewater needs assessment
- Report and public meeting
  - May 17, 2007 public meeting

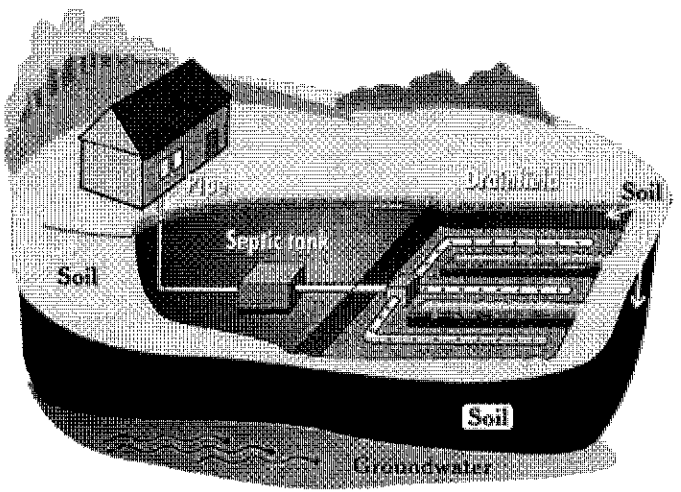
- On-site – Individual & I/A Systems
  - 57 gpd/bedroom
  - 93 percent of Town
- Private Satellite Facilities
  - Village at Flat Hills – Bioclere System
    - Permitted flow - 14,850 gpd
  - Woodlands Village – RUCK System
    - Permitted flow - 12,500 gpd
- Regional Sewer System
  - Leominster WWTF, IMA - 500,000 gpd
  - Remaining Capacity - 147,500 gpd
  - Fitchburg (East) WWTF, IMA - 80,000 gpd





Which areas are <u>on-site</u> wastewater systems adequate for:

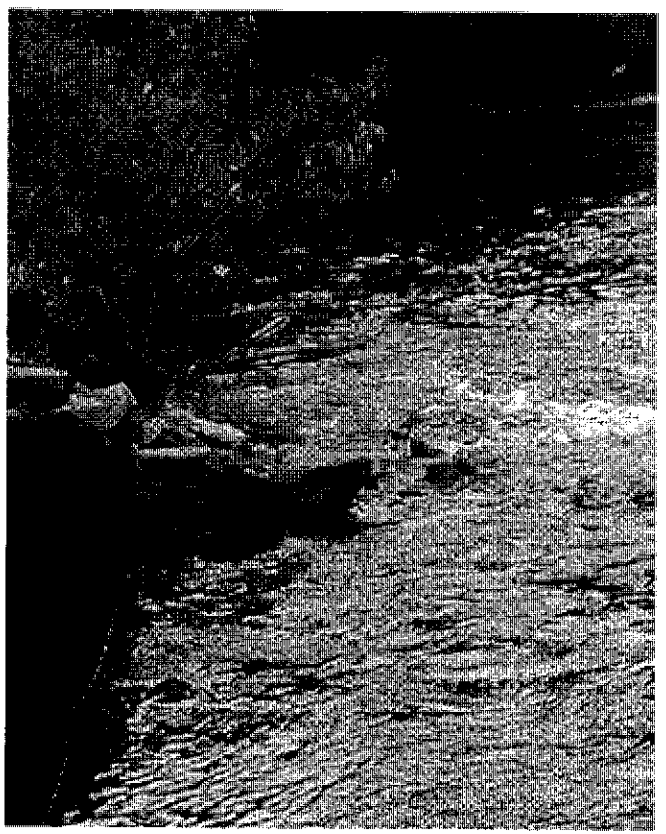
- Sanitation?
- Environmental protection? and
- Growth management?



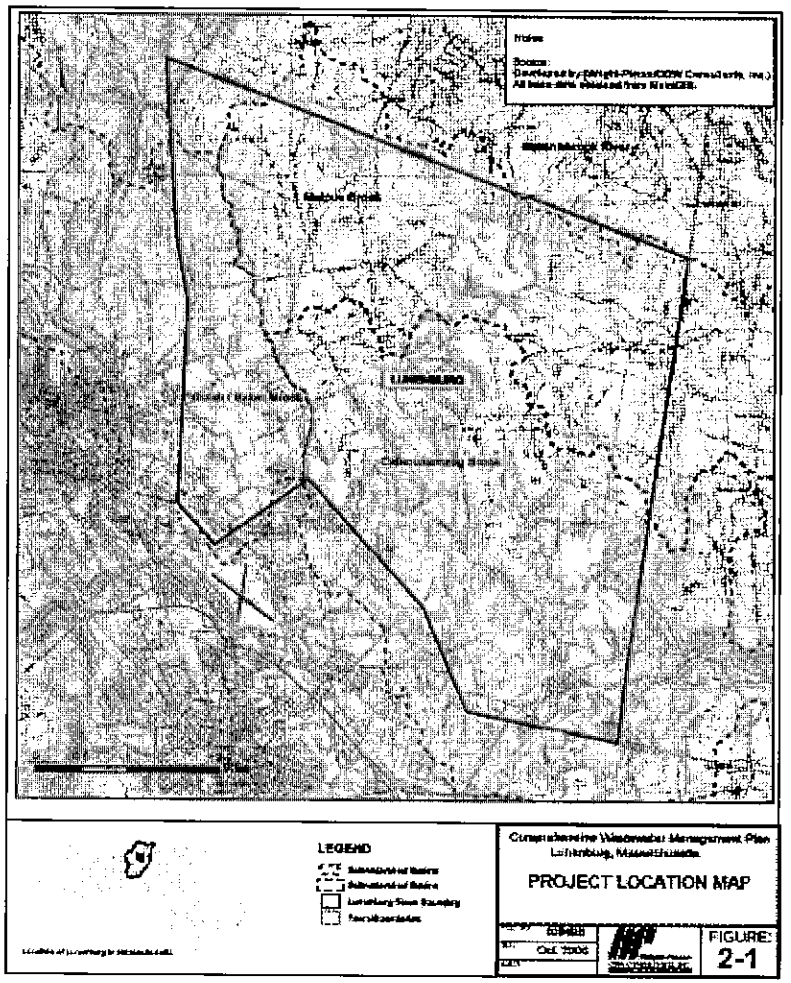
Which areas may "need":

- enhanced <u>on-site</u> solutions?
- <u>off-site</u> solutions? or
- a combination of solutions?

- Five Categories of "Need"
  - Avoid public health problems
  - Water supply protection
  - Protect surface waters
  - Preserve community character
  - Support managed growth



- Town-wide Approach
- Study Areas Developed
- Tier 1
  - MassGIS
  - Data based approach
  - Ranking formula
- Tier 2
  - Observation approach



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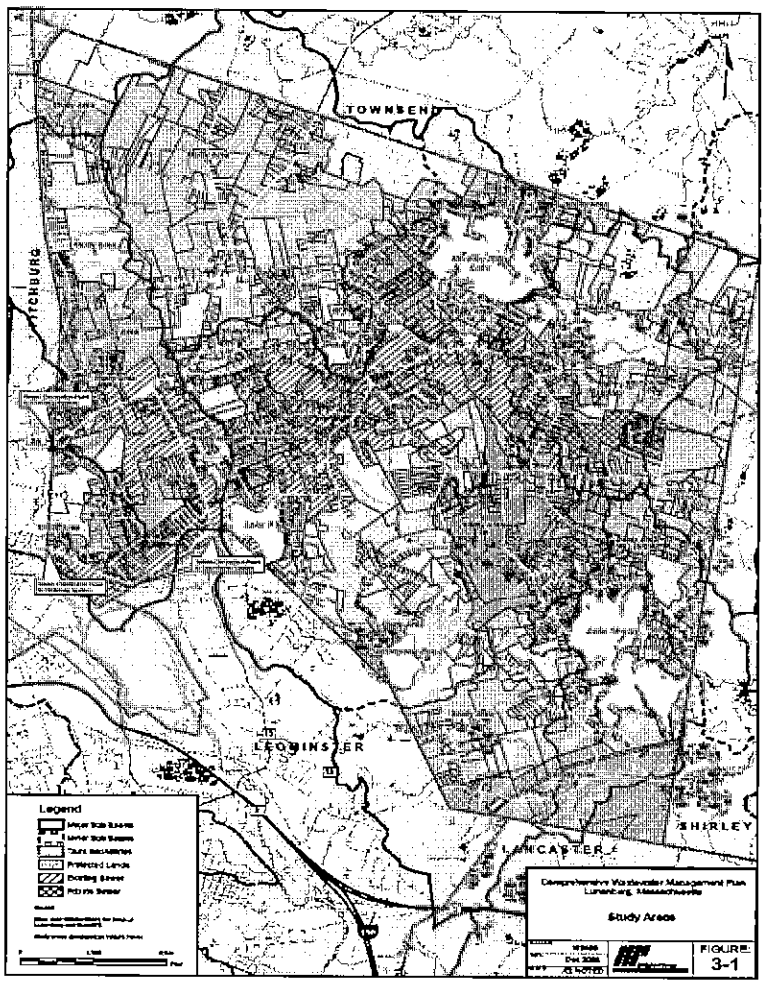
- Areas removed from analysis
  - Previously sewered
  - Cemeteries
  - Protected open space
- Areas determined by:
  - Watershed Sub-Basins
  - Zoning
  - Lot size
  - Geographic features



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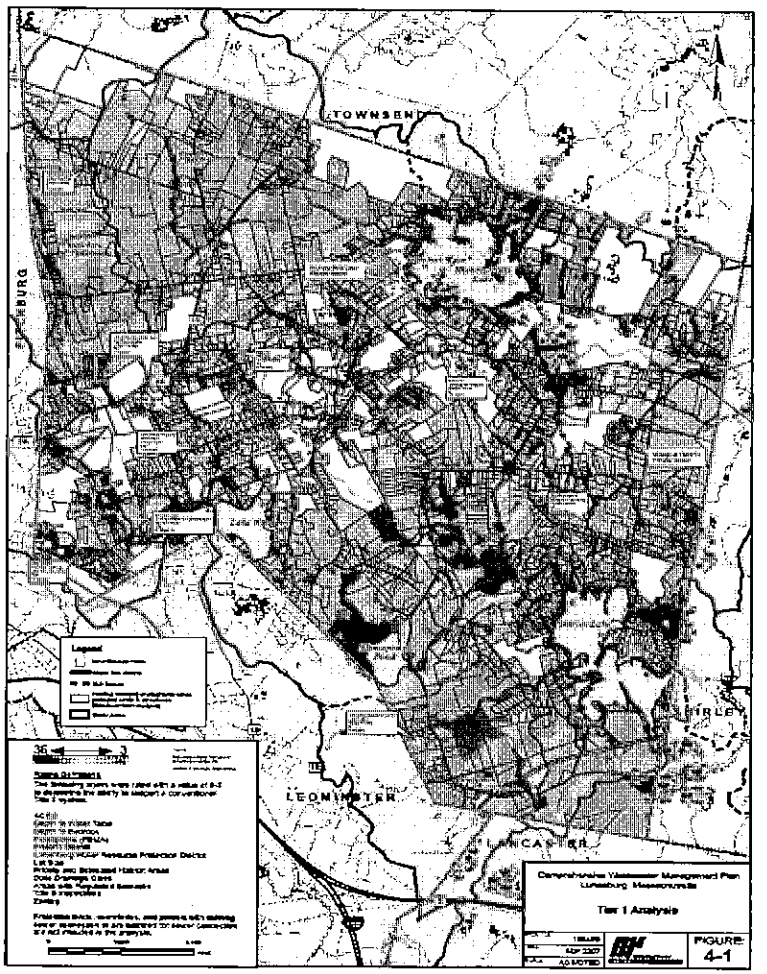
- Utilized a "layered" approach
  - 12 Layers developed
    - Depth to bedrock
    - Soils drainage characteristics
    - Lot size
    - Depth to groundwater table
- Numerous data sources used
  - Board of Health database
  - MassGIS
  - Soil conservation service



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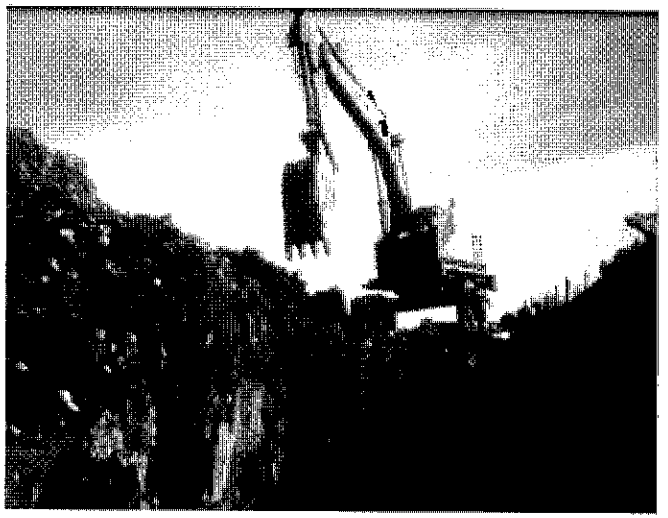
Areas with a Need for Further Study

- 11 Needs Areas (of the 24 total study areas)
  - 9 Study Areas
  - 2 Growth Management Districts
- Phase II - Alternatives Identification and Screening

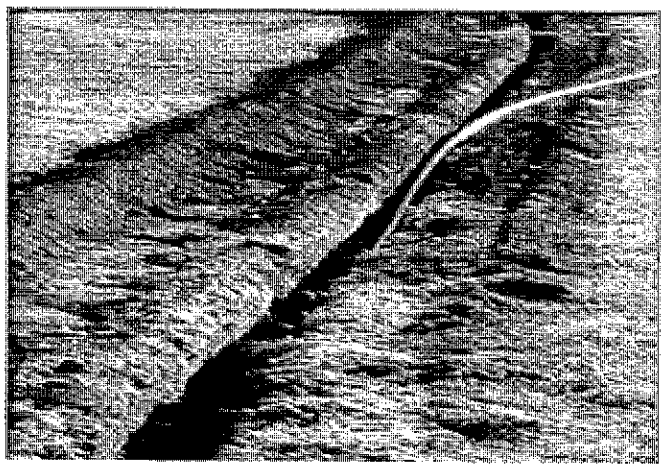
- Identify and Evaluate Alternatives for:
  - Collection Systems
  - Treatment Systems
  - Treated Effluent Disposal Systems

- Review Criteria
  - Technical
  - Environmental
  - Institutional
  - Economics/Cost

- Conventional System
  - Gravity service
  - Common pump stations
  - Force mains

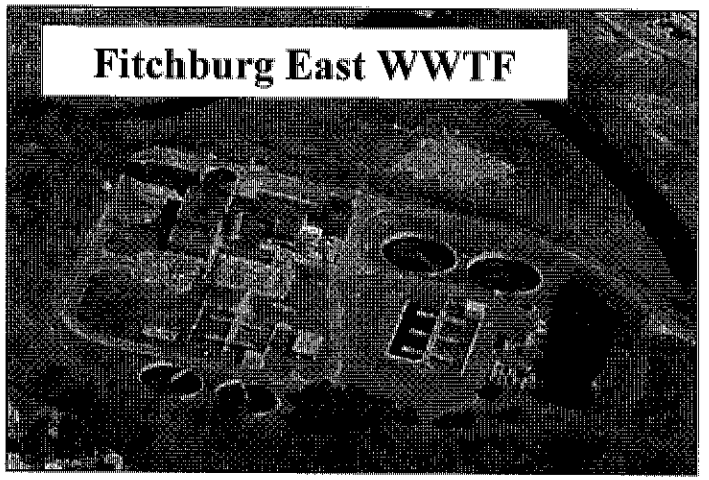


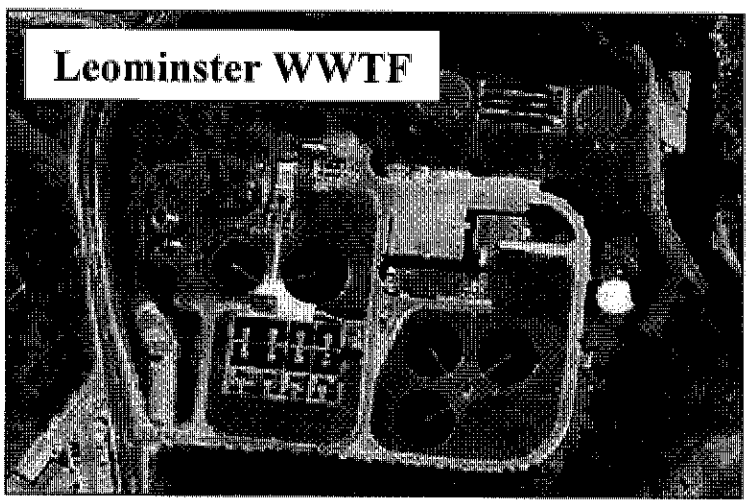
- Low Pressure System
  - Individual grinder pumps
  - Shallow installation
  - Private property work



Types of Wastewater Treatment Systems

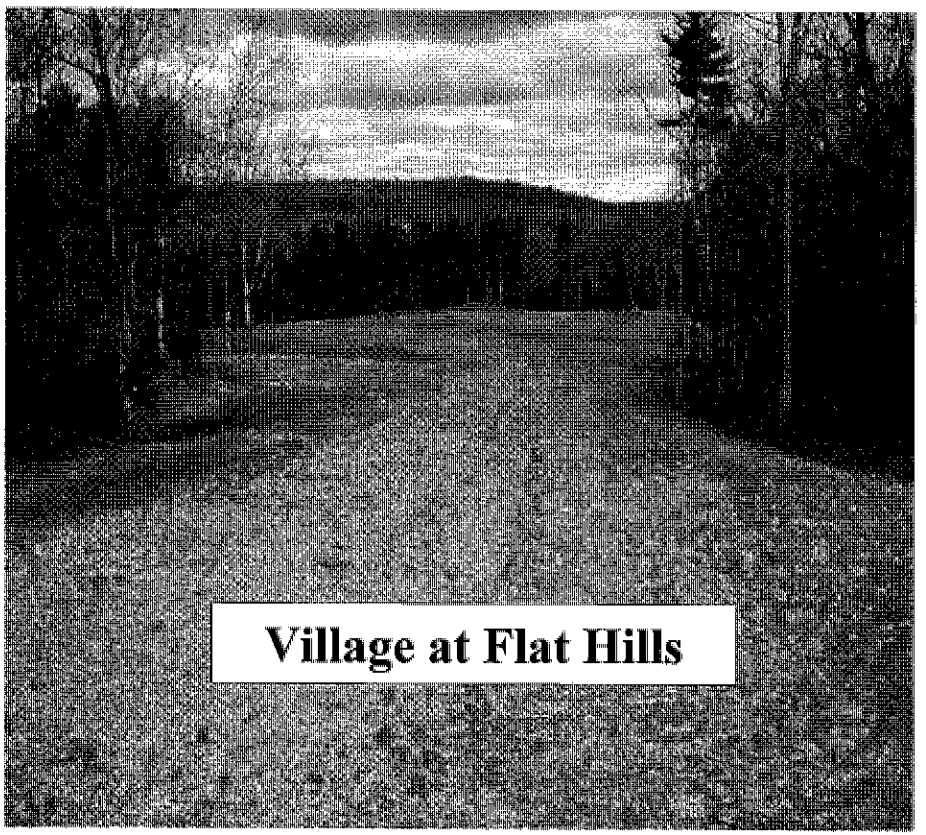
- Centralized Systems
  - Publicly owned and operated
- Decentralized Systems
  - Individual on-site
  - Cluster
  - Satellite
  - Typically Privately owned/operated





Alternatives

- Rapid Infiltration
- Subsurface Leaching
- Water Reuse



Shortlisted Alternatives for Detailed Evaluation

- Collection Systems
  - Conventional
  - Low pressure
- Treatment Systems
  - Regional – Fitchburg, Leominster and Shirley/Devens
  - Decentralized – Hickory Hills Lake and Lake Shirley
- Treated Effluent Disposal
  - Subsurface leaching

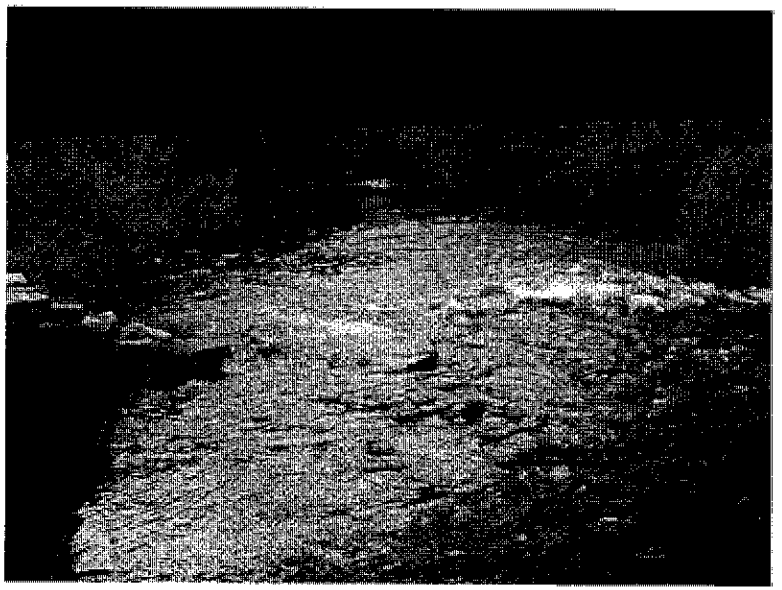
- Evaluated Shortlisted Alternatives from Phase II
- Draft Recommended Wastewater Management Plan
- Submitted to Town, DEP and MEPA (Spring 2008)
- Received Feedback

- Draft and Final Recommended Plan
- Revised Draft Recommended Wastewater Management Plan based on Phase III Feedback and Public Workshops
- Submitted to Town - March, 2009
- Final Recommended Plan based on Town and Public Feedback

- Needs Areas were refined throughout CWMP process
- 10 Areas Total
  - 9 Needs Areas
    - 2 of 9 Needs Areas Designated for Further Study
  - 1 Growth Management District – Pioneer Drive Area
  - Areas Categorized as Primary and Secondary

- Area 4 - Lower Mass Avenue
  - High groundwater
  - Ledge outcroppings
  - Small lots

- Area 6 - Baker Station
  - High groundwater
  - Poorly draining soils
  - Portions with small lots



- Study Area 9 - Lake Whalom
  - Lot size – varied
  - High groundwater
  - Poor draining soils

- Area 10L/F - Mass Ave./Beal St.
  - Small lots
  - Varied soils

- Area 12 - Highland Street
  - Varied soils
  - High groundwater/wetlands

- Area 15 – Rolling Acres Road
  - High groundwater/wetlands
  - Small lots

- Area 14 - Hickory Hills Lake

  - Small lots
  - Varied soils
  - High groundwater
  - Protect surface water quality

- Study Area 19 - Lake Shirley

  - Lot size – varied
  - Soils – fast perc rates
  - High groundwater
  - Protect surface water quality
  - Protect drinking water quality (private wells)

- Area 25 - Pioneer Drive
  - Leominster-Shirley Road
  - Commercial/Industrial

- Wastewater Management Techniques
- Regional Solution - Leominster
- Regional Solution - Fitchburg
- Areas for Further Study
  - Hickory Hills Lake
  - Lake Shirley

- Septage Management Plan
  - Recommended for Board of Health
  - Most parcels to continue use of on-site systems
  - Manage on-site systems town-wide
  - Long term sustainability

- Sewer Service Area Definition
  - Sewer Commission has developed a Sewer Bylaw
  - Comprised of existing sewered areas and proposed new "Sewer Service Zones"
  - Sewer Service Zone = Study/Needs Area

Primary Areas

- Treatment at the existing Leominster WWTF
- Total Revised IMA – 0.75 to 1.5 mgd (current – 0.5 mgd)
- Project A
  - Area 6 - Baker Station
  - Area 9 - Lake Whalom

Note – Town to prioritize recommended projects

- Project B
  - Area 10L – Portion of Mass Ave/Beal Street
  - Area 15 - Rolling Acres Road
  - Area 12 - Highland Street
- Project C
  - Area 25 - Pioneer Drive

Note – Town to prioritize recommended projects

Primary Areas

- Treatment at the existing Fitchburg (East) WWTF
- Total Revised IMA – 0.30 to 0.35 MGD
- Project D
  - Area 4 - Lower Mass Avenue
  - Area 10F - Portion of Mass Avenue/Beal Street

Note – Town to prioritize recommended projects

Secondary Areas

- Area 14 - Hickory Hills Lake
- Area 19 - Lake Shirley
- Further Study of:
  - On-site and off-site wastewater alternatives
  - Stormwater and runoff impacts

Regional Solution - Leominster

Project A - Areas 6 and 9	$9.6M
Project B - Areas 10L, 12 and 15	$5.9M
Project C - GMD 25	$4.2M

Regional Solution - Fitchburg

Project D - Areas 4 and 10F	$5.0M

Note - Cost for Additional Capacity Acquisition Not Included

Estimated costs per parcel

- Capital
  - Project cost $24,000 - $37,000
  - Additional capacity cost $3,500 - $6,000
- Annual O&M cost (residential and commercial)
  - $550 (current average based on metered water use)

Note – Does not include GMD 25

Regional Solution – Leominster

- Project A
  - Area 6 - Baker Station
  - Area 9 - Lake Whalom
- Project B
  - Area 10L – Portion of Mass Ave/Beal Street
  - Area 15 - Rolling Acres Road
  - Area 12 - Highland Street
- Project C
  - Area 25 - Pioneer Drive

Note – Town to prioritize recommended projects

Regional Solution – Fitchburg

- Project D
  - Area 4 - Lower Mass Avenue
  - Area 10F - Portion of Mass Avenue/Beal Street

Note – Town to prioritize recommended projects

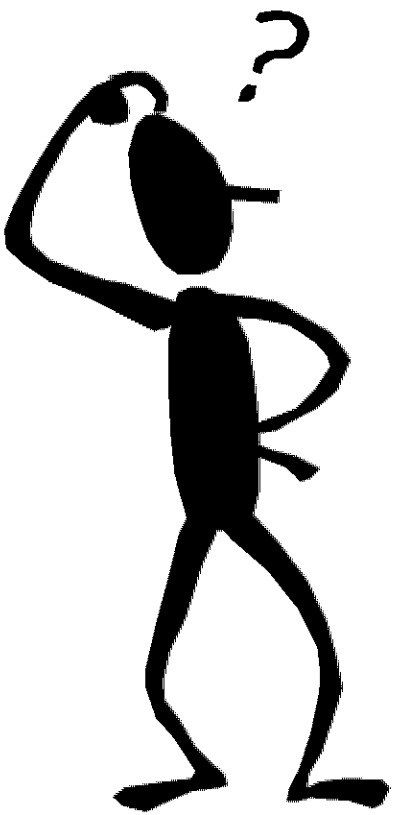
- Finalize Recommended Plan
  - Phase IV Report
- Town to Act on Proposed Sewer Bylaw
  - ATM on May 2, 2009
- Consider other Management Techniques
- Town to Implement Recommended Plan as Appropriate

Information Depositories:

Selectmen's Office
Town Hall

Sewer Commission
Ritter Memorial Building
960 Massachusetts Avenue
Lunenburg, MA 01462

Public Library
1023 Massachusetts Avenue
Lunenburg, MA 01462



Submit Written Comments to:

Sewer Commission, Chair
(same address noted above)

http://lunenburg-cwmp.wright-pierce.com/

Questions & Comments?

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Engineering a Better Environment

APPENDIX H

LUNENBURG SEWER COMMISSION MEETING

APRIL 28, 2009

MEETING MINUTES

ANDREA LAFORD, 53 PLEASANT STREET: Wants more information on low pressure systems - are they limiting in capacity?

KEVIN OLSON, WRIGHT-PIERCE: yes, in general.

ANDREA LAFORD, 53 PLEASANT STREET: Main concern is on Pleasant Street. Lives in lower portion and is concerned about 40B on upper portion.

Bill Gustus, Sewer Chair: open space would not be included as part of the Sewer Service Area.

Perry Jewell: Concern about GMD Area 25.

- Much bigger than Pioneer Drive
- Located near an environmentally sensitive area and railroad tracks
- Commuter Trains too late to Shirley area already
- Shirley wetlands
- GMD Area 25 does not fit the rest of the scope of the recommended plan

BILL GUSTUS, SEWER CHAIR: agrees that this is different than other areas. It was recommended by the Planning Board and other Boards as a means for faster economic development

JOHN, RABBITT, 314 TOWNSEND HARBOR ROAD: look at estimated project cost: assuming worst-case scenario $60,000 over 20 years.

KEVIN OLSON, WRIGHT-PIERCE: many variables go into the costs, these are just estimated at this time.

DON BOWEN, 28 OAK RIDGE: appreciate that cost per parcel was included. If we were voting, would want to have to a better definition of actual betterment costs. Lake Shirley has no problems. Keating is main source of phosphates.

BILL GUSTUS, SEWER CHAIR: thank you

JULIE GLENDON, 334 TOWNSEND HARBOR ROAD: has a tight tank. Disappointed that Hickory Hills Lake is not included in the recommended plan for an off-site solution. Was a lot by Lott survey performed by the study? Thanks a lot of people could benefit.

BILL GUSTUS, SEWER CHAIR: Based on feedback from Lake residents, DEP, etc. it was determined that significant attention and more study would be needed in this area. Would need hydrogeological studies, etc. Did not want to hold up entire plan for Hickory Hills and Lake Shirley areas.

JULIE GLENDON, 334 TOWNSEND HARBOR ROAD: any data on number of properties which have never undergone a title V?

DAVE SHEA, BOARD OF HEALTH: Board of Health has worked closely with homeowners.

SCOTT CURTIS, 234 SOUTH ROW ROAD: Chase Road section of Town - what is the timeframe?

BILL GUSTUS, SEWER CHAIR: Want to approach neighborhoods for interest in sewers. Would want to see at least 2/3 of the residents are in favor of sewer. Capacity available with Fitchburg will also be an issue.

PAULA BERTRAM: There are a number of places to inspect report if there are specific questions.

JAMES HAULOW, 45 CHESTNUT STREET: The new Bylaw does not commit sewer or these areas?

BILL GUSTUS, SEWER CHAIR: Correct.

JAMES HAULOW, 45 CHESTNUT STREET: any obligation to tie in?

BILL GUSTUS, SEWER CHAIR: No.

JAMES HAULOW, 45 CHESTNUT STREET: Can individual homes get a grinder system?

KEVIN OLSON, WRIGHT-PIERCE: yes

KENNETH BAILEY, 157 TOWNSEND HARBOR ROAD: any timetable for later studies? Concern is based on understanding that many systems may fail at the same time.

BILL GUSTUS, SEWER CHAIR: no specific time frame, resident input may expedite the process.

PAULA BERTRAM: funding of these additional studies will be an issue.

JOHN, RABBITT, 314 TOWNSEND HARBOR ROAD: do costs include cost of tie-in?

KEVIN OLSON, WRIGHT-PIERCE: yes for grinder system, not for gravity.

JOHN, RABBITT, 314 TOWNSEND HARBOR ROAD: any price quote for later studies?

KEVIN OLSON, WRIGHT-PIERCE: $100,000-$200,000 for hydrogeological study of both lakes.

Written Questions/Comments from residents

April 27, 2009

From AIDA DOMKORSKI: To the residents of Lunenburg. It is very important we all vote for a betterment for Town sewerage.

1. Interest rates are at their lowest. Now is the time to get a loan.
2. We can not continue, especially around Lake Shirley, not to have town sewerage. Not only does every other town around us have it, but there has to be sewerage pollution going into the lake especially from older homes.
3. You must realize people swim in this lake.

Now is the time. Vote yes for betterment. Thank you, Aida Domkowski, Anthony Costa.

April 28, 2009

BOB OWEN could not attend a public hearing tonight and fax to these questions concerning sewer extensions:

1. Lower Massachusetts Avenue and White Street scheduled for 2012? Can it be moved up to 2010?
2. In fact, can all designated areas be started in 2010? (Cost effective?)
3. Flow to Fitchburg is inadequate? Can it all be diverted to Leominster? Examples:
    a. combine Beal Street into one extension

b. complete Pleasant Street to Massachusetts Ave. and divert to Leominster, part of Pleasant Street flow.

4. Area for questions

    a. Is Pearl Brook Road included? I'm clear on plan and street is not named

    b. Lunenburg housing on White Street –

        i. how is it being treated - municipal, or is betterment assessed based on number of units?

        ii. Is there a difference between elderly and other units?

5. Grants - state or federal - are they available?

He adds “congratulations to commission and engineers”

Robert B. Bowen - 978 - 345 – 1654 PBowen3@verizon.net

APPENDIX I

Public Meeting Presentation
April 26, 2016

Sewer Commission Update to Comprehensive Wastewater Management Plan Warrant Article 35

Public Hearing

4/26/16

By:

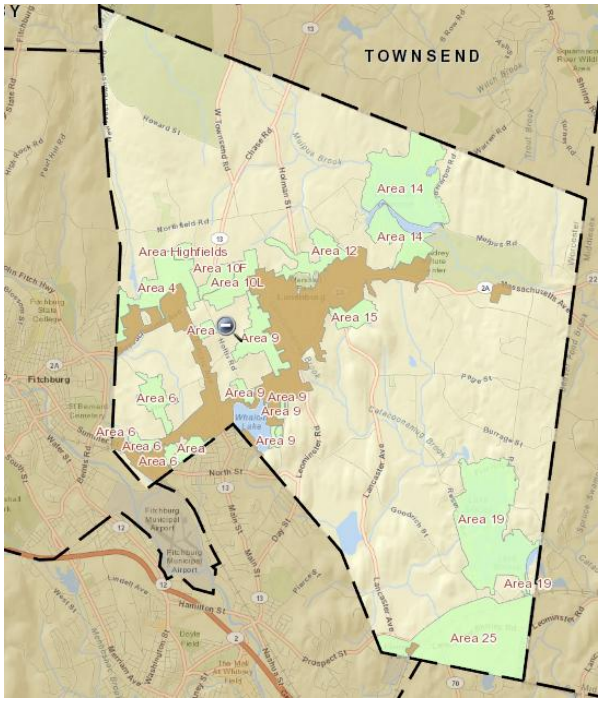
Lunenburg Sewer Commission

Article 35: Update to Comprehensive Wastewater Management Plan (CWMP)

- Original CWMP was finalized and released in 2010 and approved at Town Meeting
  - Any changes to the plan require approval at Town Meeting including areas to potentially be sewered, Sewer Service Area (SSA)
  - To date only minor changes to SSA have been proposed and accepted
  - Serves as roadmap for all Sewer Commission decisions and actions
- Key Aspects of Plan
  - Original plan established methodology to define needs areas resulting in identification and approval of Sewer Service Area (SSA)
  - Provides options for providing service with recommended implementation strategies and costs, including where to send wastewater for treatment and disposal, Leominster or Fitchburg
  - Provides 20 year look ahead for sewer needs based on growth
  - Wright Pierce, who put the original CWMP together, has been contracted for this update

CWMP: Areas of Proposed Change

- Modify infrastructure plan to send all designated Needs Areas wastewater to Leominster
  - Redirects flow from area 4 (Lower Mass Ave) and 10F (Mass Ave Beal St.) from Fitchburg to Leominster
  - Reduced operating costs due to current rate difference between Leominster and Fitchburg (60%)
  - Reduced additional capacity capital costs with Fitchburg to fund John Fitch upgrade
  - Consistent with new IMA with Fitchburg
  - Revised plan does not exceed 2013 IMA capacity to Fitchburg or 151,000 g/d through 2036



CWMP: Revised New Sewer Extension Cost Estimates

- Cost estimates in current plan are over 6 years old
- Cost models have been updated to reflect current estimating parameters and recent actual quotes for ongoing Betterments, as well as other projects that Wright Pierce is aware of
- New costs are significantly higher with Betterment projections ranging from $19,000 to $60,000 before other resident costs that could range from $11,000 to $16,000 or more for unique situations
- All estimates now also assume full pavement overlay within Betterment
- Depending on actual usage of allocated Fitchburg Capacity per IMA and cost/ability to purchase additional capacity from Fitchburg, a major line upgrade of several million dollars might be required to sewer area 4, Lower Mass Ave to Leominster.
- If necessary, this would be a capital expense by the Sewer Enterprise Fund that would be offset by lower user rates

CWMP: Updated Project Cost Estimates

PROJECT DESIGNATION	CAPITAL COST[1]	TOTAL PRESENT WORTH COST
Project A (6 & 9) Baker Station/Whalom	$7,786,000	$10,491,000
Project B (4) White St area	$4,750,000	$6,083,000
Project C (10, 12 &15) Beal/Highland/Rolling Acre	$10,368,000	$12,537,000
Project D Pioneer/Commercial	$5,532,000	$6,342,000
Sewer Pipe Rerouting and Pump Stations Upgrades for Area 4	$3,302,000	$3,302,000
Pump Stations Upgrades for Area 10	$446,000	$446,000

1. Costs were completed in February 2016 at an ENR of 10181

CWMP: ESTIMATED CONSTRUCTION COSTS BY SEWER SERVICE AREA

Area	Project	Capital Cost[1]	No. Units	Betterment Cost ($/Unit)
4A	B	$ 4,750,000	144	$ 33,000
4B	B	$ 3,302,000	n/a	n/a
6	A	$ 2,991,000	166	$ 19,000
9	A	$ 4,795,000	150	$ 32,000
10A	C	$ 4,374,000	74	$ 60,000
10B	C	$ 446,000	n/a	n/a
12	C	$ 3,347,000	97	$ 35,000
15	C	$ 2,647,000	77	$ 35,000
25	D	$ 5,532,000	28	n/a
Betterment Total		$ 28,436,000	736	-
Total Project Costs		$ 32,184,000	736	-

1. Costs were completed in February 2016 at an ENR of 10181

CWMP: Other Changes of Note

- Updated to reflect current policy for homeowners to be responsible for ownership, construction and maintenance of Low Pressure pump systems on their property
- Inflow and Infiltration estimates updated
  - Based on engineering work and measurements done in last 4 years, new estimates have been included
  - Peak I/I flows exceed DEP guidelines in 5 of the 6 sewered areas, hence the focus on I/I reduction and the I/I fee
- Updated 20 year capacity projections through 2036
  - Takes into account all ongoing and projected new development from Planning Board
  - Assumes all Sewer Service Areas are on line, 100% connected and built out (fully developed)
  - Used updated University of Massachusetts Donahue Institute model with 5% growth verses prior model of 16% growth
  - Projected Capacity needs do not exceed current IMA agreements with Fitchburg
  - Total projection in 2036 would require additional capacity from Leominster (796,000 g/d vs 500,000 available today)

Questions

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