TOWN OF SUTTON

Comprehensive Wastewater Management Plan – 2018 Update

Final Report

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1. INTRODUCTION

1.1 Purpose and Scope

The purpose of this updated 2018 Comprehensive Waste Management Plan (CWMP) is to recognize that well over fifteen years have passed since the submittal and approval of the Towns 2002 CWMP. Much has changed with respect to wastewater permitting as well as the Town's understanding of the feasibility of and need for wastewater expansion within Sutton. It is the Town's intent to present this Plan to the Massachusetts Department of Environmental Protection (MassDEP) and Massachusetts Environmental Policy Act (MEPA) Office to seek input and guidance on required future permitting with respect to the significantly less impactful recommendations of this 2018 CWMP.

The 2002 CWMP update sprang from a 2001 Administrative Consent Order (ACO) with the Department of Environmental Protection (DEP) to address wastewater issues within the Village of Manchaug. In 2002 the Town of Sutton filed an Expanded Environmental Notification Form (EENF #12720) and a Comprehensive Wastewater Plan Update (CWMP) dated September 2002. The Secretary of Environmental Affairs issued a Phase 1 waiver to allow the construction of the Manchaug/South Sutton Advanced Wastewater Treatment Facility (WWTF) and collection system. The CWMP was updated at that time in part to satisfy the planning requirements of the Clean Water State Revolving Fund Program for funding the construction of the Manchaug/South Sutton WWTF and collection system, and in part to move forward on Phase 2 of the Special Procedures issued with the Phase 1 Waiver that included developing an updated Wastewater Facilities Plan. The 2002 CWMP was approved in November of 2003. Copies of the 2002 CWMP and related MEPA documents are included in Attachment A.

This 2018 CWMP updates the base information from the 2002 CWMP including existing conditions, wastewater management methods, and financing information. However, unlike the 2002 update, this version includes flow projections that are based on a more thorough understanding of actual undeveloped site constraints as well as market studies and dialogue with the development community to anticipate likely development types to produce more realistic projections. Through a systematic evaluation of the wastewater needs and the alternatives considered feasible in view of demographic, topographic, hydrologic, and other characteristics in the planning area, this CWMP Update demonstrates that the recommended alternatives presented are the most appropriate and economical means for meeting water quality and public health requirements, while recognizing environmental considerations and other non-monetary factors. The CWMP also demonstrates that the proposed alternatives are implementable from financial, legal, and institutional perspectives.

1.2 Study Area Description

The study area for this CWMP is the entire Town. The Town is located in the historic Blackstone River Valley region of south-central Massachusetts. The study area is illustrated in Figure 1-1 and is discussed in further detail in succeeding sections of this Report.

The entity conducting the 2018 Updates to the CWMP is the Sutton Sewer Commission through the Planning & Economic Development Director and Sutton Sewer Superintendent. The Sewer Commission is appointed by the Town of Sutton's Board of Selectman and is responsible for the supervision, planning, operation, maintenance, extension, and improvement to the centralized wastewater collection, disposal, and treatment systems. Since the Sewer Commission completed the 2002 CWMP, various changes have occurred regarding the Town of Sutton's wastewater needs. While the 2002 CWMP provided the essential framework of the Town and its neighboring towns, this section provides additional details about the region and most importantly, it provides a much more comprehensive discussion of the Town and the sub-areas as well as information about the collection systems and the WWTF.

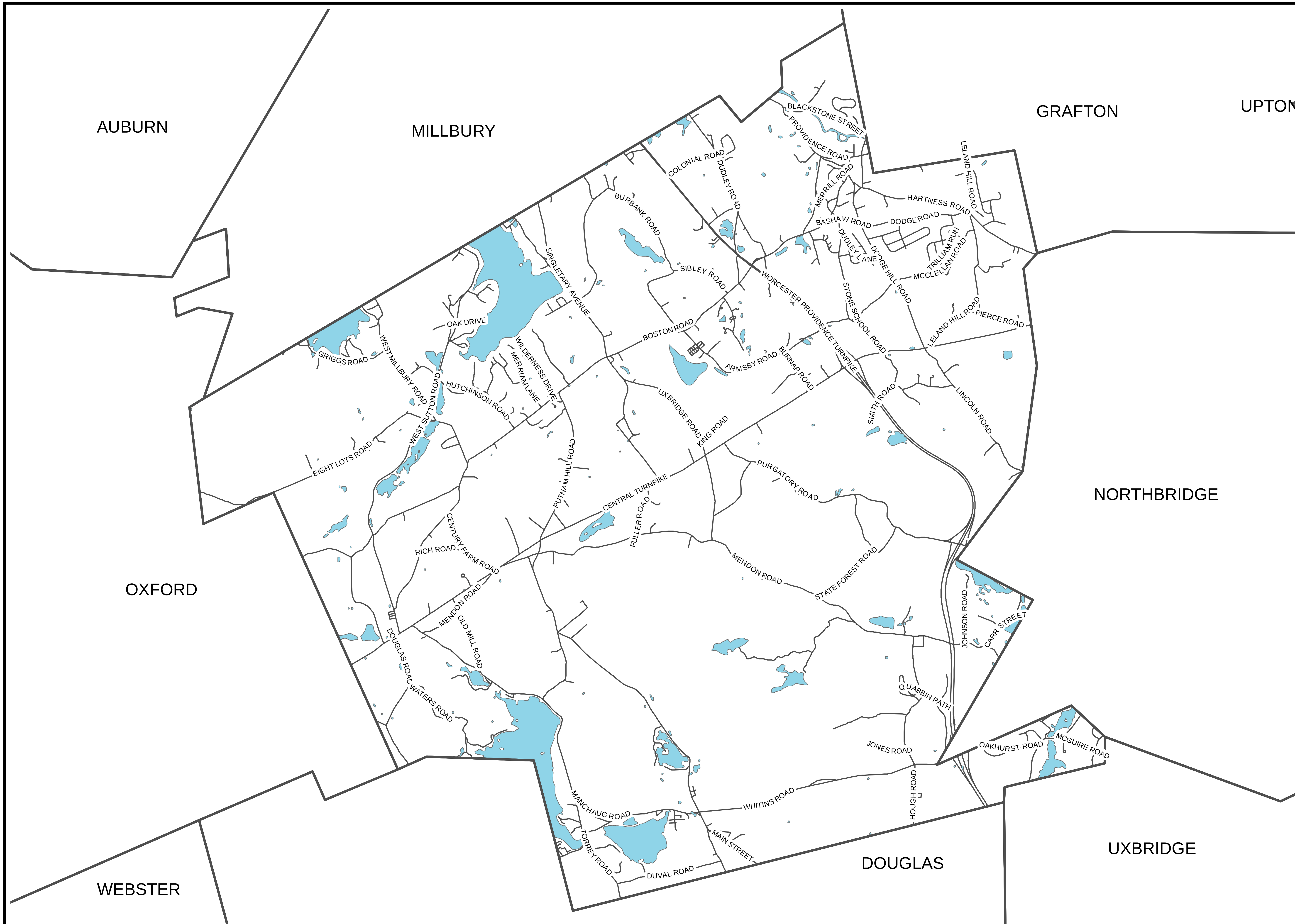
The Town of Sutton is situated approximately 10 miles south of the City of Worcester and is bordered to the north by the Towns of Millbury and Grafton, to the east by the Towns of Grafton and Northbridge, to the south by the Towns of Douglas and Uxbridge, and to the west by the Towns of Douglas and Oxford. The Town of Sutton consists of six major village sub-areas: Wilkinsonville; Manchaug; South Sutton; Sutton Center; Ramshorn Pond; and West Sutton. Refer to Figure 1-2 for the Villages and Sub-areas. Sutton is primarily a rural residential community covering approximately 34 square miles. According the US Census Bureau's 2010-2019 Population Estimate Tables, the population of Sutton in 2017 was 9,465. Route 146, which is the main highway link between the cities of Worcester, Massachusetts and Providence, Rhode Island, traverses through the Town of Sutton from north to south dividing the Town of Sutton into two sections. The majority of the existing commercial and industrial development in the Town of Sutton is located along or closely adjacent to Route 146.

The Wilkinsonville sub-area, located in the northeast section of Town of Sutton, is the only area of Town with long-standing sewer service. Primarily for this reason, Wilkinsonville has experienced the highest rate of residential development. Wastewater generated in the Wilkinsonville sub-area is conveyed to the Town of Millbury pump station and then to the Upper Blackstone Water Pollution Abatement District (UBWPAD) for processing and treatment. This arrangement is based on the Inter-Municipal Sewer Agreement (IMA) between Sutton, the Town of Millbury, and the UBWPAD. The IMA was renewed between Sutton and Millbury in June 2008 and is included as Attachment B. It allows for average daily flows (ADF) up to 589,000 gallons per day (gpd) to pass through Millbury on its way to treatment at the UBWPAD. The first wastewater collection system was constructed in the Wilkinsonville sub-area dating back to 1975, "Agreement on Sewerage and sewage Treatment", dated May 6, 1975 as amended on July 31, 1975, July 25, 1978 and December 13, 1994 (referred to as the "1975 Agreement"). The wastewater collection system has been expanded to service several additional subdivisions that were developed in the northeastern section of the Town of Sutton during the 1980's and 1990's as well as a few more recent condominium and single family developments post 2000. The overall system in Wilkinsonville sub-area contains five pump stations and approximately 89,378 linear feet (LF) (16.9 miles) of gravity sewers and 8,878 LF (1.7 miles) of force main.

Manchaug and South Sutton sub-areas of Sutton have a dedicated wastewater treatment facility. The Advanced WWTF came online on Hough Road in the Fall of 2006. This WWTF currently has the ability to process 110,000 gpd of wastewater. The wastewater collections system in South Sutton contains five pump stations and approximately 22,598 LF (4.3 miles) of gravity sewers and 15,183 LF (2.9 miles) of force main.

Wastewater treatment needs in the remaining sub-areas of the Town of Sutton are served by individual subsurface disposal systems. These areas are deemed long-term sustainable with on-site systems and do not pose threats to environmental resources. The Town of Sutton's policy is to not extend sewers into these subareas unless there is an underlying environmental need.

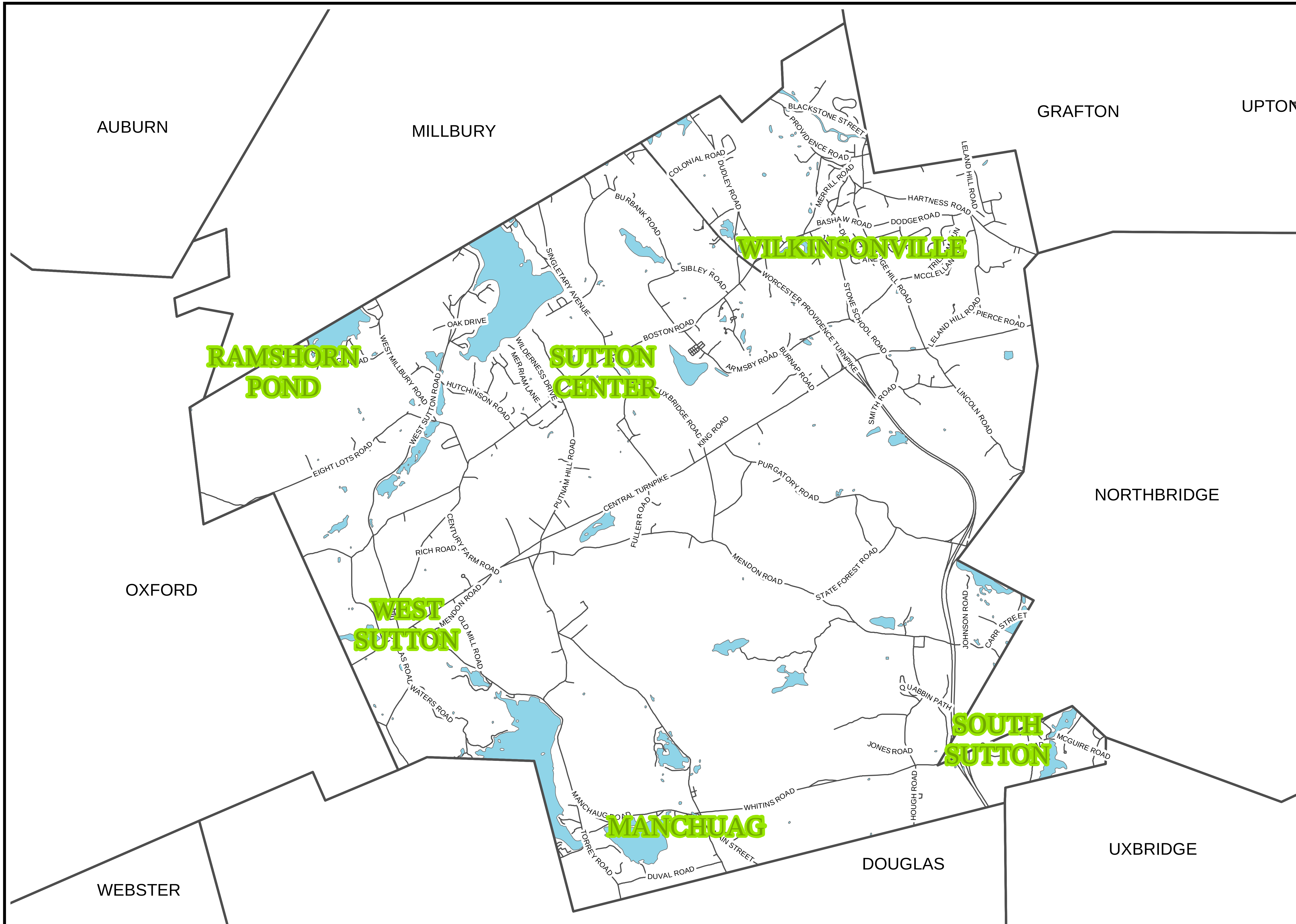
While the 2002 CWMP provided the essential framework of the Town of Sutton and its location in relation to the geographic region of Massachusetts, this section provides updated details about the region and most importantly, provides a more comprehensive discussion of the wastewater needs for the Town of Sutton, as well as updated information about the existing wastewater collection systems and the Manchaug Sewer System and WWTF.



STUDY AREA MAP
Figure 1-1

VILLAGE SUB-AREAS

Figure 1-2



1.3 Previous Reports

During this Update, several reports and studies were reviewed to establish historic and baseline conditions in the planning area as well as understand the past and present focus of the Town with respect to wastewater treatment and needs. The most significant of the base documents utilized for the previous 2002 Update was the Town of Sutton's Facilities Plan that was prepared in 1983 by Morganroth Engineers. This Report included a brief analysis of the characteristics of the planning areas and recommended the design and construction of sewer infrastructure in the areas determined with the most significant need. Except for a small amount of sewer expansion in the Wilkinsonville sub-area, none of the recommendations had been implemented at the time of the 2002 CWMP (Ref: A-12). Since the 2002 CWMP, the Town has dedicated resources to ensuring the water quality and wastewater management are a major priority. Moreover, the Town has made ongoing investments to assure that the wastewater systems are operating in accordance with the governing laws and regulations and that improvements are being made on an ongoing basis. The following are the documents reviewed for this update.

- *2002 CWMP Update – BETA Engineering*

  In 2002, the Town of Sutton completed a CWMP. It is the most recent CWMP.

- *2007 Sewer User Rate Fee Study*

  This Tighe & Bond study evaluated the cost to run the Town of Sutton wastewater collection system. It provided recommendation(s) for adjustments to the rate structure to cover operational costs.

- *2007 Town of Sutton – Sewer Regulations*

  These regulations govern the building of sewers and the connections, the use of the public sewer, the penalties for violating these regulations, and other factors that affect efficient operation of the sewer system.

- *2010 Northbridge/Sutton Sewer Extension Feasibility*

  This Graves Engineering study investigated the possibility and costs that would be involved with serving a portion of a regional economic development area via the South Sutton wastewater treatment plant.

- *2012 Town Master Plan*

  The Town of Sutton updated its Master Plan in 2012, which supports planning over the next 20 years. The Master Plan outlines the Town of Sutton's polices on existing resources and issues, projections of future conditions and needs, as well as incorporating Sutton's goals and desires. This CWMP Update coordinates its recommendations closely to the goals of the Master Plan. The Shared Vision, Key Issues & Priorities for Action from the Master Plan is included as Attachment C.

- *2013 Blackstone Street Wastewater Pump Station Assessment*

  This Graves Engineering study evaluated the condition and capacity of the Blackstone Street pump station and immediate service lines.

- 2014 Lake Singletary Trophic Status Model & Lake Management Plan

  Geosyntec Consultants, Inc. was contracted by the Lake Singletary Watershed Association (LSWA) to conduct a study of Lake Singletary and its watershed. Among other things the study assessed the trophic status of Lake Singletary, conducted an evaluation of the Lake Singletary watershed identifying opportunities for stormwater management improvements to reduce pollutant loading to the lake, and provided recommendations for future watershed and in-lake management actions.

- 2016 General Bylaws

  The Town of Sutton last amended its General Bylaws in 2016.

- *2017 Zoning By-Laws of the Town of Sutton*

  Zoning By-Laws of the Town of Sutton serve as a guide to encourage the most appropriate use of land, prevent overcrowding, conserve the value of land, and preserve and increase the amenities of the Town of Sutton.

- 2018 Sewer System Evaluation Survey (Attachment F)

  This BETA Engineering study evaluated Infiltration and Inflow within Sutton's Sewer Systems in September of 2018 (Updated 2019). Although this study is outside the dates of the base documents referenced in this study, its findings were so significant it was considered prudent to update related information and calculations contained in the original draft of this update with the knowledge gained through this document.

Copies of these documents can be found on the Town of Sutton's website at https://www.suttonma.org/.

2. EXISTING CONDITIONS

2.1 General

This section of the CWMP has been updated where necessary to reflect existing conditions within the Town of Sutton. The physical characteristics of the natural environment, including topographic conditions, the presence of natural systems (wetlands, etc.), soil conditions, groundwater, and surface water quality, significantly influence the rate and location of development and remain largely unchanged. In addition, the location of the community resources, such as the availability of public water and sewer services, in relation to major economic factors and forces, regional job centers, transportation modes, and social networks can also greatly influence economic development and population growth. Some changes have occurred with respect to these factors.

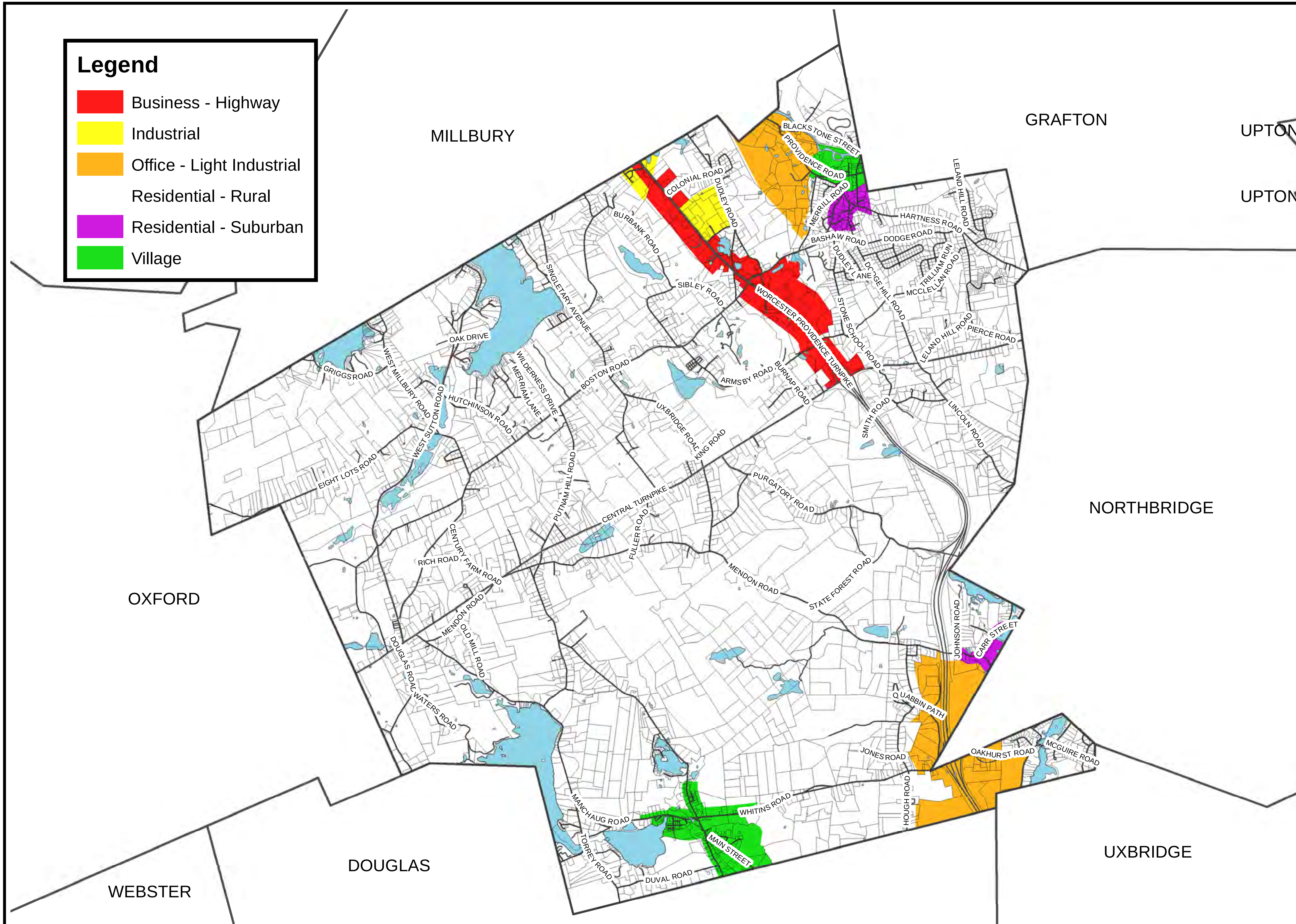
2.2 Planning Area Conditions

2.2.1 Zoning and Land Use

Information on current land use and zoning was gathered through a review of zoning maps, land use regulations, the Town of Sutton's Master Plan (2012), and on-site inspections. Sutton has a total area of 33.9 square miles (88 km2), of which 32.4 square miles (84 km2) is land and 1.5 square miles (3.9 km2) or 4.57 percent is water. Sutton encompasses a total area of approximately 21,778 acres, the majority of which (14,700 acres) is currently forested or undeveloped. Approximately 20,088 acres are currently zoned for residential purposes and 1,361 acres are zoned for industrial/commercial use. The 329 acres zoned as "Village" accommodates both business and residential uses. The majority of the industrial/commercial land is found along the Route 146 corridor and Route 122A in the Wilkinsonville sub-area. The current zoning map is provided as Figure 2-1 and a zoning district summary is provided in Table 2-1. Actual land use conforms well to zoning.

Table 2-2A: Zoning District Acreage Summary

Zoning	Percentage of Area	Acres
Residential Rural (R-1)	91.7	19,961
Residential Suburban (R-2)	.6	128
Village (V)	1.5	329
Business-Highway (B-2)	2.1	462
Industrial (I)	1.9	138
Office/Light Industrial (OLI)	2.2	760
Total	100	21,778



ZONING MAP

Figure 2-1

This Report considered the Sutton Zoning By-Law, amended through October 16, 2017. The By-Law includes six zoning districts: Residential Rural, Residential Suburban, Village, Business-Highway, Industrial, and Office/Light Industrial. Rural Residential zoning (R-1) is the predominant zoning district found throughout Sutton. It requires a minimum lot size of 80,000 square feet. Suburban Residential zoning (R-2) is found in limited spots in Wilkinsonville and southeast Sutton. This zoning designation requires a minimum lot size of 60,000 square feet, which can be reduced to 40,000 square feet with the availability of water or sewer, and further reduced to 20,000 square feet with the availability of water and sewer. Generally, lots more than 40,000 square feet have adequate space to allow for the use of new or upgraded on-site wastewater disposal system systems to dispose of wastewater. Smaller lots have less available space for upgrades given considerations for property line setbacks, existing trees, driveways, pools, etc. No major changes in zoning are anticipated as it is the Sutton's goal to maintain its predominately rural character.

2.2.2 Existing Population

Comparing changes in population data is an important part of determining future wastewater needs. The Town has had only a modest growth in its population over the last two decades. The main change is that the average household size as reported in the 2014-2018 US Census data shows Sutton at 2.72 persons per household compared to 2.9 in the 2002 CWMP. Additional detail pertaining to future population changes are covered in sub-section 4.2 herein.

For the purposes of estimating the Town's future wastewater needs considered in this report, the US Census Bureau's 2010-2019 Population Estimate Tables show a 2017 population of 9,465 and annual population growth rate of .78%, and the 2014-2018 US Census average household size of approximately 2.72 persons per household, will be used as a baseline for estimating future wastewater flows where necessary.

2.2.3 Geophysical conditions

To plan for changes in wastewater management it is important to understand the geophysical conditions within the Town. Over the last two decades, conditions have remained largely the same and are summarized below.

2.2.3.1 Soil, Hydrology and Surficial Geology

Determination of the types of soils and their suitability for subsurface disposal systems in Sutton was based on the United States Department of Agriculture Natural Resource Conservation Service (USDA NRCS) online soil survey data for Southern Worcester County. The information and data in this sub-section and in Table 2-2 are similar to the information previously evaluated in the 2002 CWMP, with the exception that the water table slope information has been added to Table 2-2 herein.

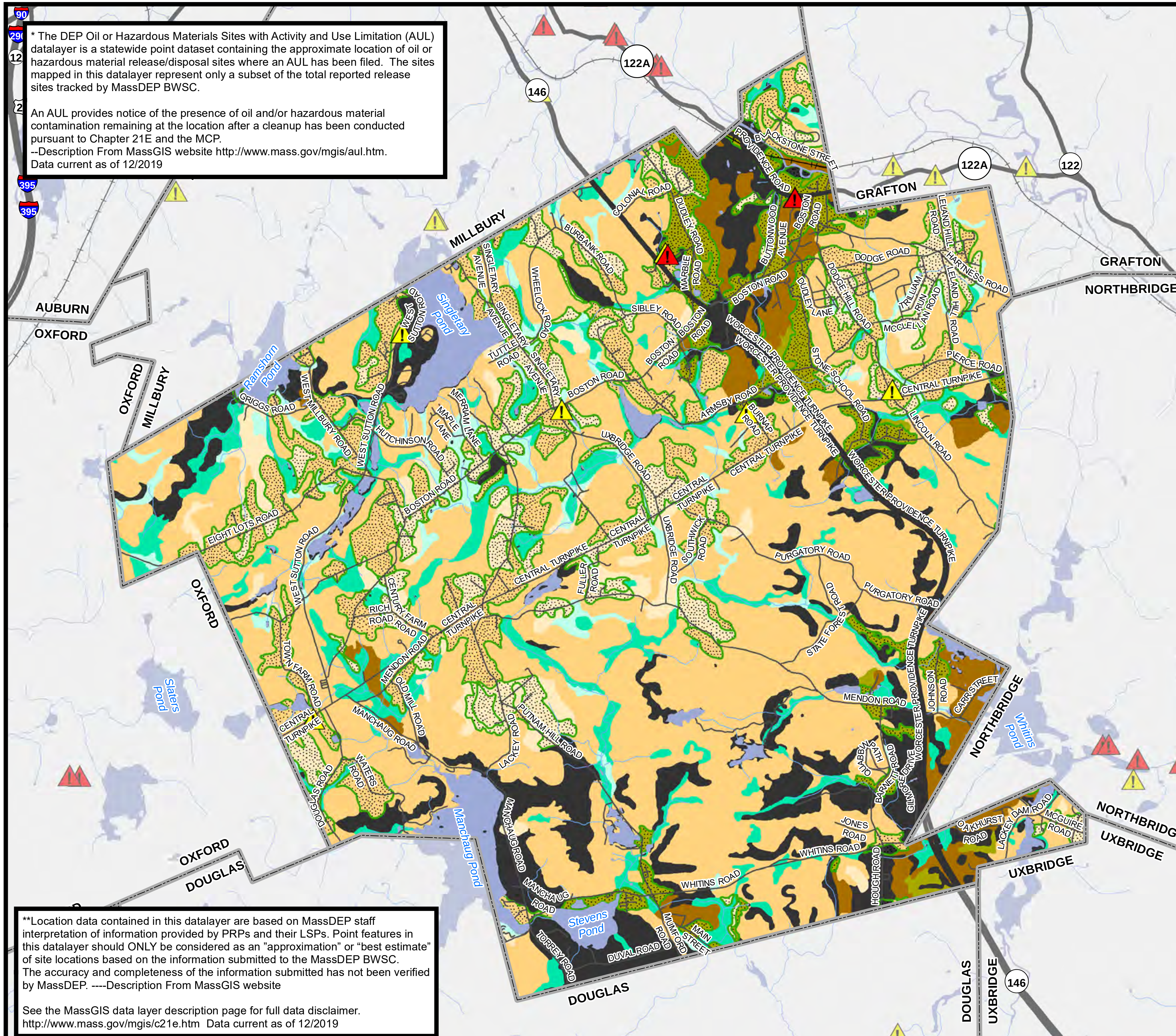
The USDA data shows that soils in Sutton consist largely of rough, stony soils and sandy loam combinations. The four most common soil types for Chatfield-Hollis, Merrimac, Paxton, and Canton, are re-summarized in Table 2-2. While there are small pockets of land, mainly adjacent to wetland resources, that have poor drainage properties, the majority of the Town has soils that can support private on-site wastewater disposal system systems. Permeability of soils in Sutton has remained largely unchanged since the 2002 CWMP and is shown on Figure 2-2.

Table 2-2B: Summary of Sutton Predominant Soil Types

Soil Type	Main Characteristics	Water Table of Slope
Chatfield-Hollis	Rock Outcrop Well-drained, water is removed readily Depth to bedrock between 20-40 inches	Water table greater than 6 feet 3 to 15 percent slopes
Merrimac	Fine sandy loam Excessively drained Depth to bedrock greater than 60 inches	Water table greater than 6 feet 3 to 8 percent slopes
Paxton	Fine sandy loam Percs slowly Depth to bedrock greater than 60 inches	Water table between 1.5 & 2.5 feet 15 to 25 percent slopes
Canton	Fine sandy loam Well drained Depth to bedrock greater than 60 inches	Water table greater than 6 feet 3 to 8 percent slopes

SOILS & GEOLOGIC FEATURES MAP

Town of Sutton, Massachusetts



* The DEP Oil or Hazardous Materials Sites with Activity and Use Limitation (AUL) datalayer is a statewide point dataset containing the approximate location of oil or hazardous material release/disposal sites where an AUL has been filed. The sites mapped in this datalayer represent only a subset of the total reported release sites tracked by MassDEP BWSC.

An AUL provides notice of the presence of oil and/or hazardous material contamination remaining at the location after a cleanup has been conducted pursuant to Chapter 21E and the MCP.
--Description From MassGIS website http://www.mass.gov/mgis/aul.htm.
Data current as of 12/2019

**Location data contained in this datalayer are based on MassDEP staff interpretation of information provided by PRPs and their LSPs. Point features in this datalayer should ONLY be considered as an "approximation" or "best estimate" of site locations based on the information submitted to the MassDEP BWSC.
The accuracy and completeness of the information submitted has not been verified by MassDEP. ----Description From MassGIS website

See the MassGIS data layer description page for full data disclaimer.
http://www.mass.gov/mgis/c21e.htm Data current as of 12/2019

Legend

- Town Boundaries
- Active Railroad
- Major Road
- Water Bodies
- Local Road
- Streams
- AUL Location*
- MassDEP Tier 21E Sites**
- Prime Farmland Soils (NRCS Soils-WORC. S)

NRCS SSURGO-Certified Soils (WORC. S)

(Dominant Drainage Class)

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Poorly drained
- Very poorly drained
- Not Classified

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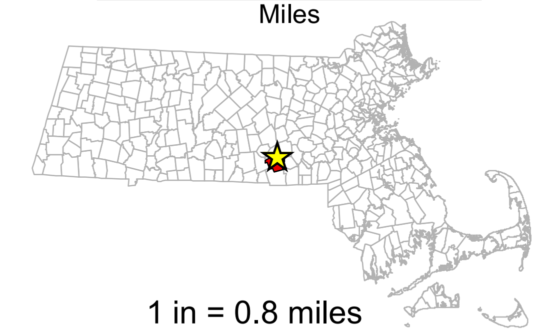
Miles



1 in = 0.8 miles

Source: Data provided by the Town of Sutton, Central Massachusetts Regional Planning Commission (CMRPC), massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

Information depicted on this map is for planning purposes only. This information is not adequate for legal boundary definition, regulatory interpretation, or parcel level analysis. Use caution intrepreting positional accuracy.

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One Mercantile Street, Suite 520 Worcester, MA 01608

SUTTON SOILS MAP FIGURE 2-2

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2.2.3.2 Topography and Drainage

Topographical and drainage characteristics for the Town have remained largely the same since the 2002 CWMP. These characteristics affect the current efficiency of the Town's wastewater system as well as planning for futures needs.

Most of Sutton lies within the Blackstone River drainage basin. The area of Sutton that lies generally north of the Central Turnpike drains to the Blackstone River. The remaining portion of Sutton drains directly into the Mumford River in the southern part of Sutton before joining with the Blackstone River in Uxbridge. Only a small portion (18 acres) in the northwest corner of town lies in the French River drainage basin, which eventually empties into the Long Island Sound in New London, Connecticut.

2.2.4 Surface and Ground Water Quality

The surface and ground water quality for the Town have remained unchanged since the 2002 CWMP and most of this sub-section is the same as in the 2002 CWMP (Ref: A-21).

The Town contains many surface water features. The primary rivers include the Blackstone and the Mumford. The two large water bodies in Sutton are Lake Singletary and Manchaug Pond. In addition, there are several other medium and small water bodies including Steven's Pond, Tucker Pond, Ramshorn Pond, Lackey Pond, Clark Reservoir, and Swans and Meadow Ponds. All of water bodies, rivers, lakes, ponds, etc. account for approximately 800-1000 acres of surface water or 4.5 percent of the total land area in Sutton.

Lake Singletary is located in the northern part of Sutton and its border extends into the Town of Millbury. The small lot sizes, steep slopes, and poor soil types found in the developed areas along the northwest and eastern shoreline have created concerns with respect to pollution of the Lake Singletary from on-site wastewater disposal system failures. In 1991, a diagnostic study of Lake Singletary was prepared for the Singletary Lake Association, an association of concerned residents residing along Lake Singletary. This study showed that the water quality was deteriorating due in part to excessive nutrient loading. Fugro East Inc. (Fugro is a technical consulting firm that provides engineering analysis on the properties of rocks, soil and water) prepared a management plan feasibility study for the Singletary Lake Association in May 1995 that recommended actions for reducing nutrient loading and sediment loads as well as controlling nuisance aquatic plants. In March of 2014 the Association released the Lake Singletary Trophic Status Model & Management Plan prepared by Geosyntec which challenged prior studies in assessing only 17 lbs per year, or 2.7% of phosphorous loading to septic systems. This study also anticipated a minimal increase of up to an additional17.2 lbs of phosphorous loading from projected lake adjacent development during their study period through 2030.

There has been some history of bacteriological contamination in the Mumford River. The outflows of Manchaug Pond, Stevens Pond, and Tucker Pond are tributaries to the Mumford River and failing on-site wastewater disposal systems from surrounding developments are thought to be the major source of this contamination. Most lots around Sutton's ponds are undersized. These smaller lots were developed before the current zoning regulations were enacted. Most of the homes found in these areas are former summer cottages, many of which are now inhabited year-round. In addition, there are several campgrounds that are located along the shores of Manchaug Pond that are significant producers of wastewater on a seasonal basis; they could be a threat to water quality.

Historically, areas that rely on on-site sewage disposal systems can contribute fecal coliform and excessive nutrient contamination to surface water bodies. The two primary mechanisms by which contaminants are transported to water bodies are surface runoff in areas, in which there are a high degree of failing sewage disposal systems and groundwater migration, especially where inadequately treated wastewater passes quickly through the soil.

2.2.5 Drinking Water Supply

The sources of public drinking water supply in Sutton have remained largely the same since the 2002 CWMP, however this sub-section has been updated to include system improvements.

Sutton does not have a municipal water department, but rather water supply is furnished by three privately-owned water suppliers: 1) Wilkinsonville Water District; 2); Manchaug Water District; and 3) Whitinsville Water Company. Collectively, they serve approximately 32 percent of the population. The remainder of the Sutton is served by individual wells located on each property. Changes have occurred to the Wellhead Protection Areas as well as Zone II Areas within the Town which are shown in Figure 2-3.

Wilkinsonville Water District serves the northeast section of Sutton, primarily east of Route 146 and north of Central Turnpike. Water is supplied from the Hatchery Pond Well and the Cold Spring Brook Wells. Both sites are located in gravel bank areas. Wilkinsonville Water District also has the option of purchasing water from Grafton's municipal water system on an emergency basis.

Manchaug Water District serves the southern section of Sutton near Douglas. Water is supplied from three gravel-packed wells, located just south of Tuckers Pond, that are connected to a pump house on Putnam Hill Road. The District has recently made improvements to address Iron and manganese issues.

Whitinsville Water Company serves a section of South Sutton from the Northbridge town line, extending westward into Sutton to Barnett Road including the South Sutton Industrial Park along Gilmore Drive. Water is supplied from three well sites, one of which is located in Sutton on Mendon Road that is fed in part by numerous surface reservoirs in Sutton. This site also hosts a new filtration plant improving water quality from this source. This company has an extensive water supply and has potential to supply water to a much larger portion of Sutton.

Areas that influence drinking water supplies in Sutton are designated by MassDEP as either interim wellhead protection areas or Zone II areas. Designated Zone II areas are defined by MassDEP as "the areas of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated." Several Zone II areas exist in Sutton of particular importance are the Zone II areas for the Hatchery, Cold Spring and Manchaug wells. Sutton's water resources map including interim wellhead protection areas and Zone II areas is shown as Figure 2-3.

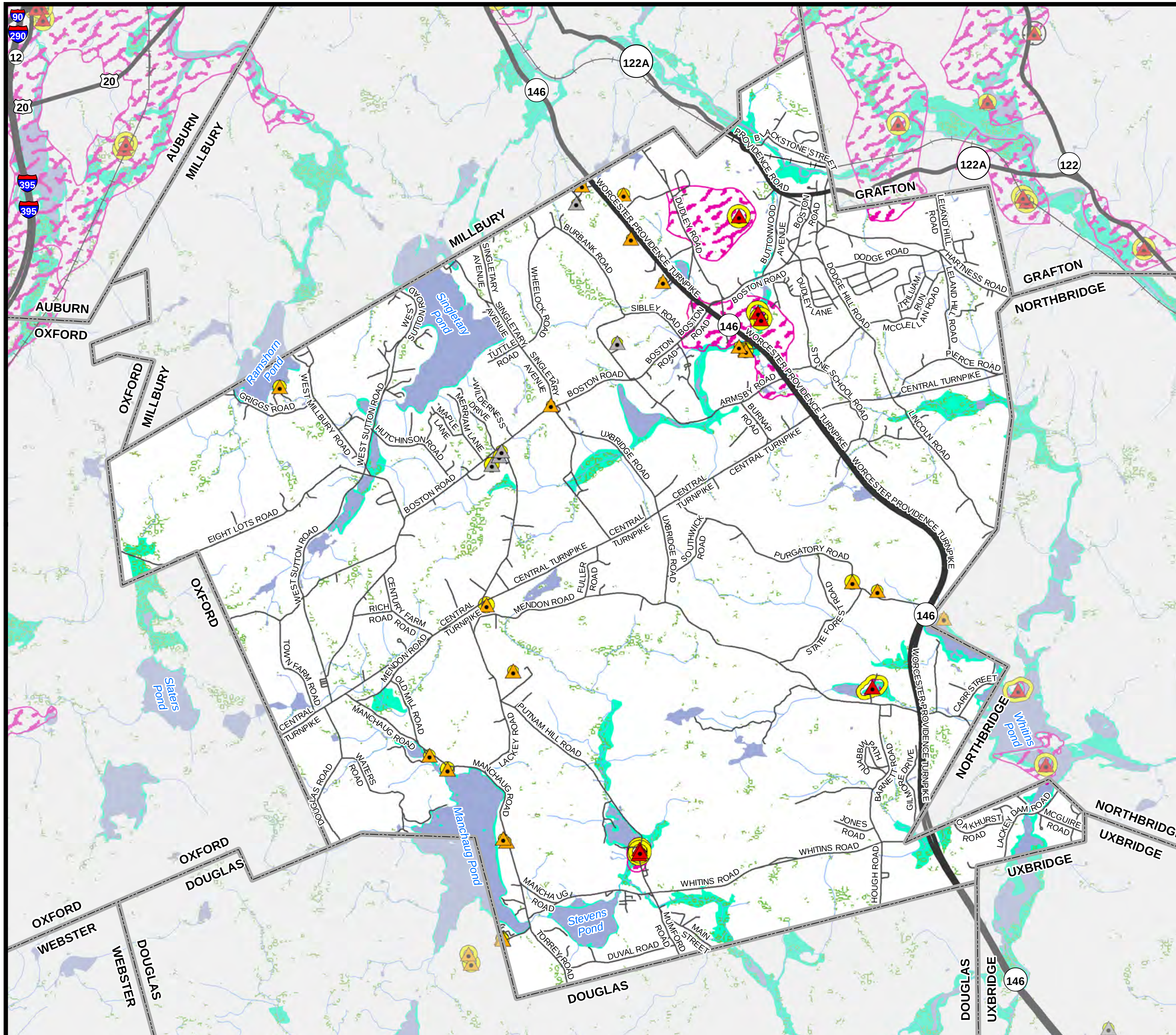
2.2.6 Wetlands

Wetlands generally provide a valuable habitat for a variety of fish and wildlife species and act to improve water quality by filtering nutrients, wastes and sediment from upland runoff. Wetlands also provide flood control and groundwater recharge opportunities. Improper sewage disposal practices and urban runoff, among other factors, can threaten wetland areas. While wetlands have not been formally surveyed and mapped town-wide to date, locations and number of wetlands have been compiled at the State level.

The information is essentially the same as what was in the 2002 CWMP (Ref: A-24).

WATER RESOURCES MAP (Page 2)

Town of Sutton, Massachusetts



Legend

- Town Boundaries
- Major Road
- Local Road
- Active Railroad
- Water Bodies
- Streams
- MassDEP Wetlands
- Public Water Supplies (1)
  - Community Groundwater Well
  - Non-Transient Non-community
  - Transient Non-Community
- DEP Approved Zone I
- Approved Wellhead Protection Areas (Zone II) (2)
- Interim Wellhead Protection Areas
- 100-year Flood Area (FEMA National Flood Hazard Layer, DFIRM)

(1) Data current as of 12/2019
(2) Data current as of 12/2019

0 0.4 0.8 1.6
Miles

1 in = 0.8 miles

Source: Data provided by the Town of Sutton, Central Massachusetts Regional Planning Commission (CMRPC), massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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N E S W

WATER RESOURCE PROTECTION MAP FIGURE 2-3

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2.3 Current Wastewater Disposal Practices

One major change that has occurred to the current wastewater disposal practices since the filing of the 2002 CWMP and Phase 1 Waiver, is the design and construction of the Manchaug Collection System and WWTF. The Manchaug WWTF services a very specific geographic area of Town. Although the Manchaug WWTF is fairly new, the majority of the Town remains unsewered and relies on on-site wastewater disposal systems to manage wastewater. With the exceptions of the population within the serviced areas of Wilkinsonville, South Sutton, and Manchaug, 75 percent of the population in Sutton relies on on-site wastewater disposal systems, as opposed to 85 percent when the 2002 CWMP was completed. While small details in this sub-section have been updated, most of the information remains the same as what was in the 2002 CWMP (Ref: A-27).

The most common types of on-site disposal system serving these unsewered customers remain to be on-site wastewater disposal systems and cesspools. An on-site wastewater disposal is comprised of a collection/settling tank and a leaching field. The leaching field allows the liquid portion of the wastewater to discharge to a larger area than the cesspool system. A cesspool consists of an underground collection tank with either single or multiple discharge ports that allow delivery of the liquid portion of the wastewater to surrounding soil. Cesspools were the standard system used prior to 1964. Under current regulations, they are no longer allowed, but are still found serving some older homes. Since 1964, most on-site disposal systems have consisted of septic systems as opposed to cesspools.

The main purpose of the septic tank and cesspool is to separate the solids from the liquid. These systems reduce the volume of solids through biodegradation. The remaining solids must be pumped out on a regular basis to ensure proper operation of these systems will continue. Like most communities, Sutton relies on the individual property owner to maintain and repair their on-site sewage disposal systems. Lack of proper maintenance, among other factors, contributes to system failures.

2.3.1 Massachusetts Title 5 Regulations

On-Site disposal system design, construction and maintenance in Massachusetts are managed under MassDEP 310 CMR 15.000 and the Town of Sutton's Bylaws and Department of Health Regulations and Policies, which are more stringent than the State Code. Together these regulations serve to protect public health, safety, welfare, and the environment. The Sutton Board of Health is the approving authority under the General Bylaws.

This sub-section was simplified to focus on the current Title 5 Regulations. The related details as they apply to Sutton are described in the sub-sections below (Ref: A-32).

2.3.2 Municipal Sewer Service and Onsite Treatment

Although State regulations typically address wastewater treatment in a community as a whole, as a town covering 34 square miles and discharging to two separate watersheds, Sutton's wastewater needs are served by two completely separate wastewater treatment systems in distant Northeast and Southwest portions of the Town. Management is centralized and rates are identical, but they are geographically isolated systems.

The Wilkinsonville sub-area is the area in Northeast Sutton that has had municipal sewer service for the longest period of time. The original system was constructed in 1977 and 1978. The existing system services approximately 892 accounts. The system consists of separate sewers, which means they are designed to transport only sanitary and industrial/commercial wastewater and not storm water or surface run-off. The system currently includes approximately 18.6 miles of sewer and 5 pump stations. The pipe materials are a mix of asbestos cement (AC), polyvinyl chloride (PVC), ductile iron (DI), and vitrified clay (VC) pipes. Manholes are constructed predominately of pre-cast concrete. A plan of the Wilkinsonville sewer system is presented in Figure 2-4.

Flow from the Wilkinsonville service area is collected and measured at the Blackstone Street Pump Station (BSPS). Flow is then pumped from this station via a force main to the Town of Millbury's main pump station. From this station flow goes north to the UBWWTF. The contractual agreement between Sutton and Millbury allows for an ADF of 589,600 gpd. The ADF for 2017 was approximately 167,646 gpd.

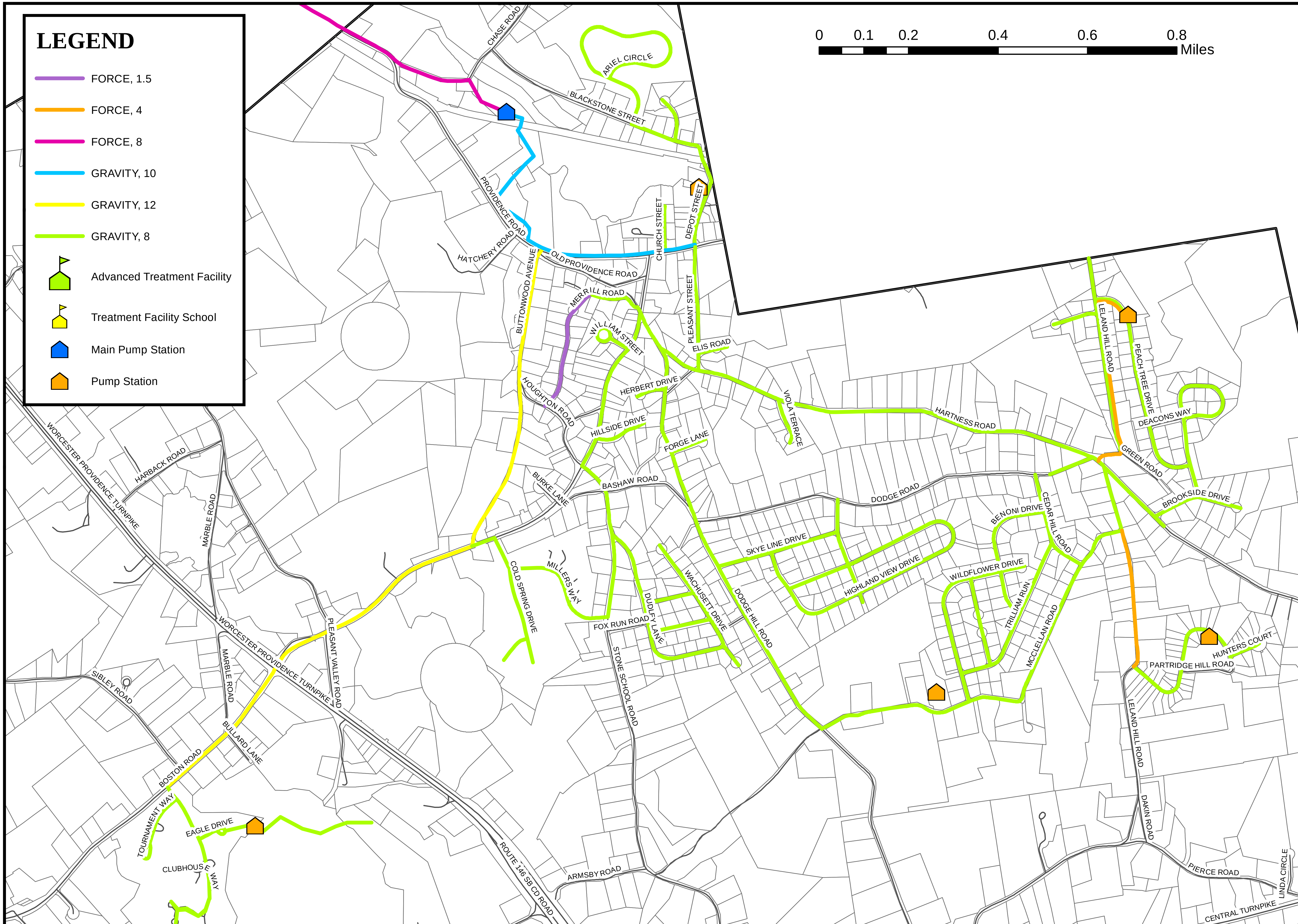
The Manchaug/South Sutton sewer system came online through construction of a municipal wastewater treatment plant on Hough Road in the Fall of 2006. The system currently includes approximately 7.2 miles of sewer and 5 pump stations. The pipe materials are PVC and manholes are constructed of pre-cast concrete. This facility currently has the capability to process 110,000 gpd of wastewater with expansion capability to 185,000 gpd. The ADF for 2017 was approximately 35,420 gpd or about 30% capacity. A plan of the Manchaug sewer collection system is presented in Figures 2-5 and 2-6.

The Sutton School Complex is currently served by an on-site wastewater treatment system with sub-surface disposal featuring a Modified Ludzak-Ettinger (MLE) Membrane Batch Reactor (MBR). This facility was installed in the early 2000s. Wastewater passes from the school into a "trash trap" tank located under the rear school driveway that separates out large solids, then into a second 60,000-gallon equalization tank located underground just west of the WWTP building that spaces out the amount of flow going to the plant. Once the flow enters the plant it goes into the membrane batch reactor (MBR). This tank consists of three components the first removes nitrates, the second is where methanol is added to feed the aerobic digestion/breakdown of wastes, and the third is where flow is forced through membrane filters to remove any final particles. Some of the resulting effluent is recirculated to feed the first component and the remaining gray water then flows to two tanks that can store up to 11,000 gallons. Water passes from these tanks back to the school for use in toilets and other gray water applications is treated with chlorine and blue dye. During the school year this amounts to approximately 4,000 gpd. Any gray water that is not needed back in the school is temporarily stored in a dosing tank underground outside the WWTP adjacent to the methanol storage/facility, which is slowly released to the leach field as this tank tops out. Three monitoring wells exist around the perimeter of the leach field that are monitored monthly for pH, static water level and specific conductance; quarterly for nitrate, total nitrogen, total phosphorus and orthophosphate; and twice per year for Volatile organic compounds (VOCs). All of these operations occur in accordance with a ground water discharge permit issued and monitored by the Massachusetts Department of Environmental Protection. (MassDEP) Increasing or more costly permit standards or the possibility of being required to retire the plant are not anticipated if the plant continues to be operated in compliance with its current permit.

2.3.3 Neighboring Municipal Sewer Systems

Since the 2002 CWMP the Town has worked at various points with neighboring towns to address wastewater needs. Below is a summary of each of these towns' systems and current operational priorities as well as a summary of any wastewater issues the towns have worked on together.

Oxford: Oxford currently has 2 sewer *service areas* – north and south – North service area sewage is pumped through Auburn to the Upper Blackstone Clean Water facility, and the South service area sewage is conveyed through Dudley and Webster to Webster's wastewater treatment plant. The North service area consists of a series of 3 pump stations from the Oxford High School to the intersection of Route 12 and 56 that pump sewage through Auburn to UBCW. There is also a pump station off Route 20 at Thayer Pond Village which pumps through Auburn. Oxford is pursuing Massworks funding for a sewer extension on Route 20 from Route 56 to Oxbow Road. An I&I evaluation is also underway and is independent from the sewer extension project.



WILKINSONVILLE/ROUTE 146 SEWER SYSTEM

Figure 2-4

Grafton: Owns and operates a 2.4 million gallons per day (mgd) treatment facility at 9 Depot Street, with existing flows approximately 1.79 mgd. The potential to tie into to each other's systems currently exists at Leland Hill/Messier in South Grafton if need be in the future subject to an Inter-municipal Agreement. Unfortunately tie in is not likely because the amount of pending development in Grafton which likely absorb any existing available capacity, as well as the fact that Sutton may not be able to take Grafton flow as part of their contributing flow to the UBWPAD through Millbury. Having completed all required upgrades to their WWTF, Grafton is currently focused on I & I assessments and related repairs.

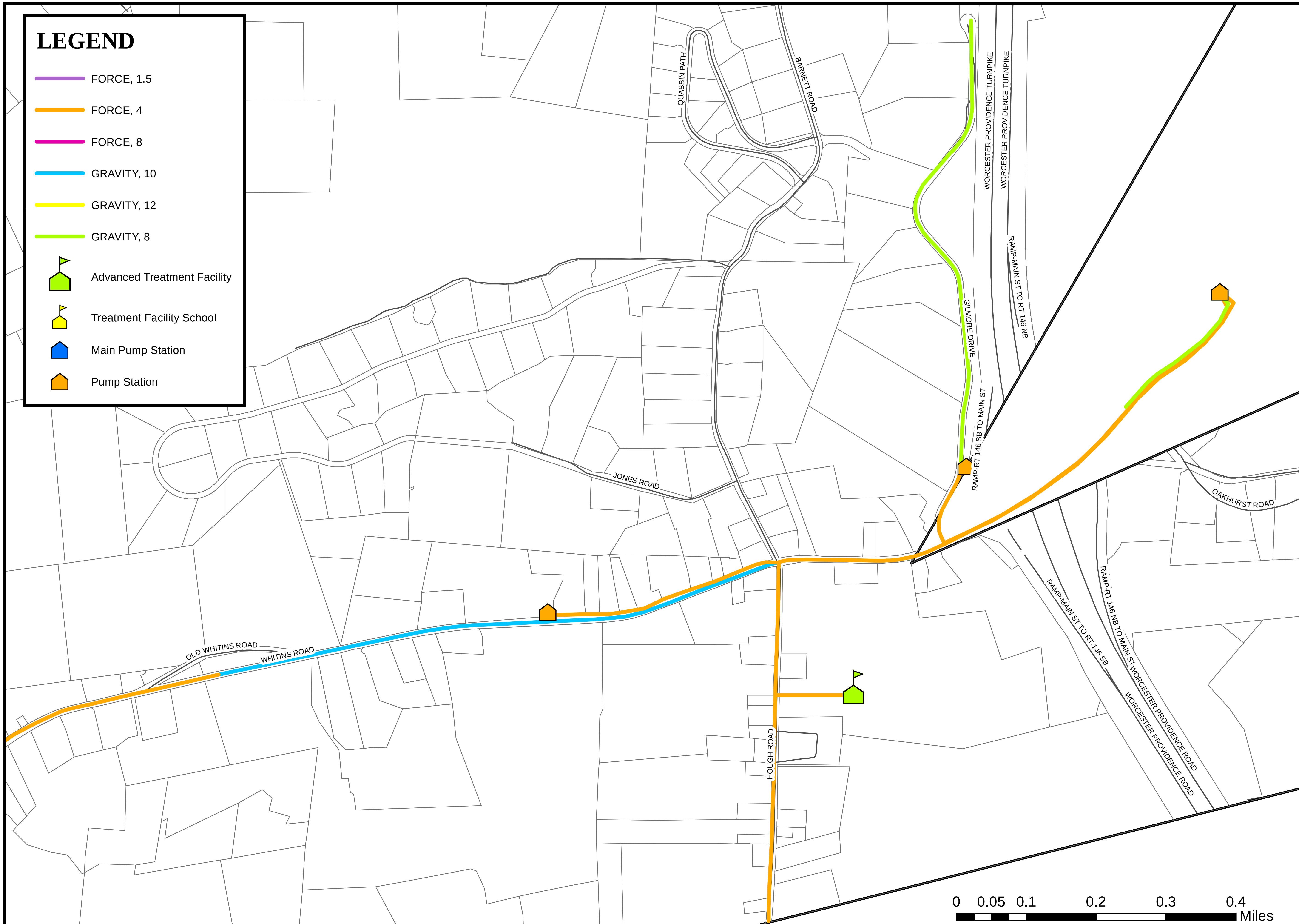
Northbridge: Northbridge has a wastewater treatment plant at 644 Providence Road with a capacity of 2.0 mgd. Current flows average 0.7 mgd. In 2016 the Town of Northbridge and the Town of Sutton negotiated an IMA (Attachment B) to primarily serve Walmart in Northbridge but with the ability to amend the agreement to serve addition parcels up to a flow of 25,000 gpd. To date Sutton has allowed the tie in of Walmart only, which has a flow of about 3,700 gpd. There are no other points in either town's systems that lie within a reasonable proximity to offer an economical wastewater disposal alternative. Northbridge is currently focused on infiltration and inflow assessments and relining aging pipes system wide.

Uxbridge: Uxbridge's wastewater treatment plant at 80 River Road has a capacity of 2.5 mgd and flow currently averages 1.5 mgd. The closest connection points to this system do not lie within a reasonable proximity to Sutton to offer an economical wastewater disposal alternative. Uxbridge is currently focused on infiltration and inflow assessments and the related repair work that is identified.

Douglas: The wastewater treatment plant at 29 Charles Street in Douglas has a capacity of 0.6 mgd with an average daily flow of approximately .18 mgd. Prior to committing to construction of the South Sutton WWTF on Hough Road, Sutton discussed a connection to Douglas. At that time Douglas capacity was only .18 mgd and the projected flow from Manchaug to Douglas was estimated at 40,000 gpd. Due to the limited capacity of the Douglas plant, this alternative was not pursued. Recent development discussions relative to parcels that straddle town lines both east and west of Route 146 have demonstrated the willingness of both Sutton and Douglas to assist each other with wastewater needs if necessary, for the good of both towns. It is likely should development of these areas proceed that the Towns will negotiate an IMA. Douglas' current focus is on flushing and inspecting all lines, conducting necessary repairs as well as digitally mapping the entire system.

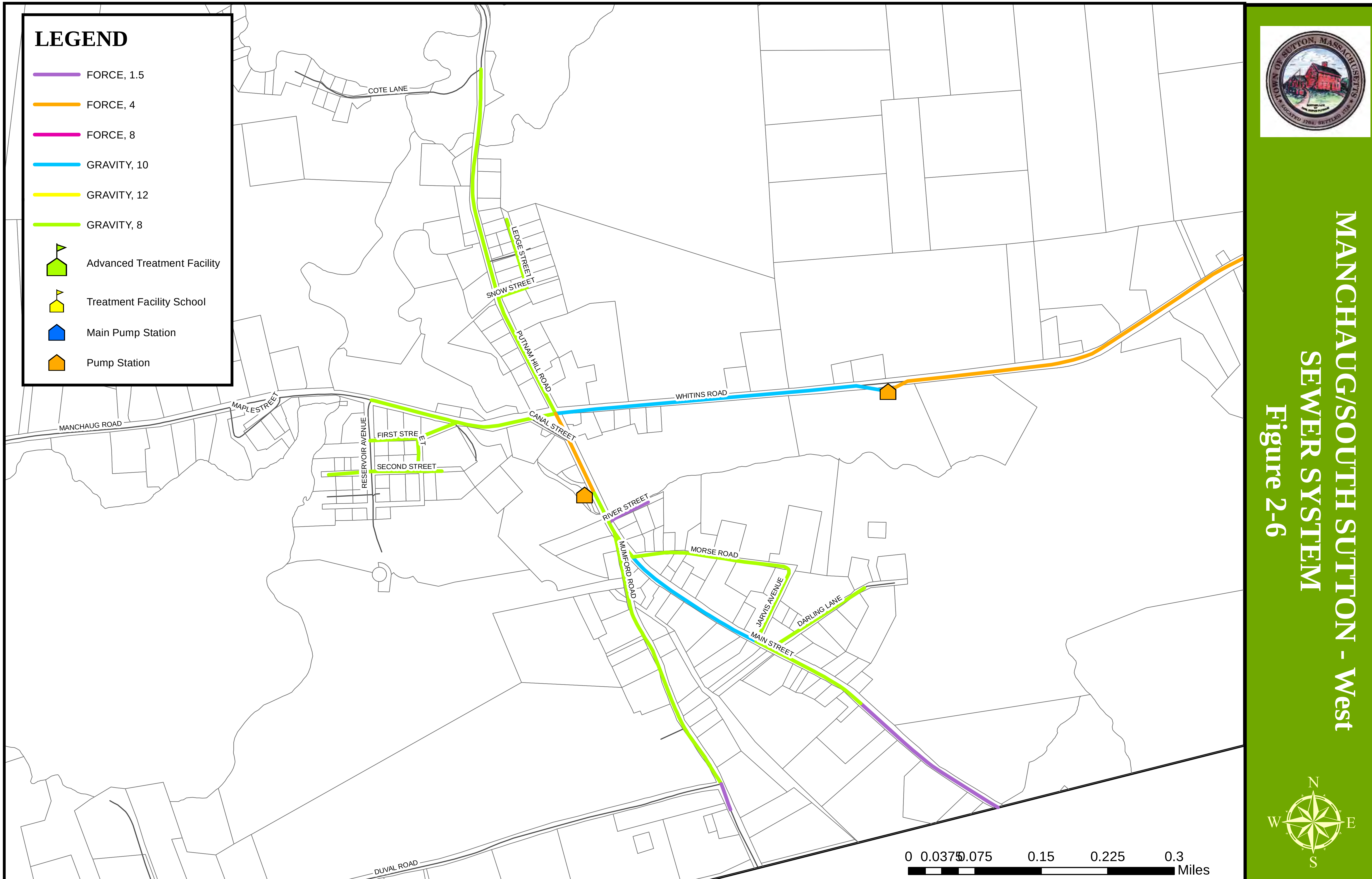
Millbury: In 2004 the Town of Millbury converted their WWTF at 131 Providence Road to a pump station to transport wastewater to the UBWPAD in Millbury/Worcester. Millbury's flow to UBWPAD averages 1.4 mgd including Sutton's flow with no set cap. Suttons flow is pumped from the Blackstone Street pump station to Millbury's Providence Road pump station as a contributing flow to the Town of Millbury. Millbury and Sutton currently have an Inter-municipal Agreement (IMA) that allows Sutton to pump up to .589 mgd to Millbury. With an average daily flow of only about .17 mgd, this IMA provides for plenty of additional development capacity. The current IMA also details Sutton's remaining contribution to this conversion as well as formulas for payment of Sutton's share of operation and maintenance (O&M) costs and future capital costs. (Attachment B) Millbury's current focus is on infiltration and inflow assessment for which they anticipate only minor repairs.

Going forward, Sutton will have to decide if the limited capacity at the Hough Road plant will only be utilized for economic development solely within Sutton, or if it will consider serving portions of abutting towns to promote regional economic development.



MANCHAUG/SOUTH SUTTON - East SEWER SYSTEM

Figure 2-5



MANCHAUG/SOUTH SUTTON - West SEWER SYSTEM

Figure 2-6

3. PROBLEM IDENTIFICATION AND NEED

3.1 General

This section documents the nature and extent of existing wastewater related problems found in the Sutton wastewater collection systems and on-site disposal systems found throughout the unsewered areas of Town. Since the 2002 CWMP, the Town has constructed the Manchaug/South Sutton WTTF and Sewer System to serve portions of South Sutton and the Village of Manchaug.

3.2 Wilkinsonville and Manchaug/South Sutton Wastewater Collection Systems

3.2.1 Infiltration/Inflow Analysis

Infiltration is defined as the groundwater that enters a sewer system through such means as defective pipes, pipe joints, connections, and manhole walls and cones. Infiltration usually varies during the year in relation to the groundwater levels above the sewers. Inflow is directly related to a rainfall event and consists of sources such as roof leaders, cellar drains, yard drains, area and foundation drains, and seepage through manhole covers. As an element of this infiltration/inflow (I/I) study and report, analysis of the existing sewer service area was conducted to determine if excessive quantities of I/I are entering the sewer system.

Infiltration and inflow reduce the effective hydraulic capacities of sewers and treatment facilities by occupying capacity that could otherwise be allotted to system users. I/I renders the WWTF less efficient and its operations more costly by increasing pumping frequencies and necessitating higher chemical dosing. The benefits of removing excess I/I are an increase in the available capacity of the collection system and the WWTF to accommodate future needs, a decrease in energy consumption, and a reduction in the overall cost of processing and treatment. This paragraph is the same as in the 2020 CWMP (Ref: A-36).

As recently as 2018, the Town conducted and evaluation of both the Wilkinsonville and Manchaug/South Sutton systems for I & I issues and found and corrected several system problems. Results of the 2018 Evaluation for I/I are discussed further in Chapter 4.

Wilkinsonville

There are five wastewater pumping stations located throughout the Wilkinsonville collection system.

Manchaug/South Sutton

Since the 2002 CWMP, five wastewater pumping stations were constructed and are located throughout the Manchaug/South Sutton collection system.

A brief description of the current condition of all system stations is provided in Table 3-2A & 3-2B below.

Table 3-2A: Wilkinsonville/Route 146 Pumping Stations

	Blackstone Street	Depot Street	Peachtree Drive	Partridge Hill Road	Wildflower Drive
Civil/Site	Fence – fair, barbed wire rusted Access – narrow, not paved Influent Screening Access – poor Site Pavement – inside fence – fair Forcemain – reported failure	Fence – fair Site Pavement – good Other – Railings on access stairs corroded Structure may be in 100-yr. Flood zone Forcemain – no reported problems	Fence – good Access – paved & stone, good Site Access Inside Fence – paved & Stone, good	Fence – good Access – paved & stone, good Site Access Inside Fence – paved & Stone, good	Fence – good Site Pavement – good Other – vegetative landscape screening not adequate
Architectural/ Structural	Building – (Ground Level) concrete block, fair, some cracks Force Main Level (Second Level) – Well at fuel supply line penetration cracked Third Level (Pump Level) – Concrete – fair Street Spiral Staircase – severely corroded	No Building Elevated Station Area Walls (concrete) – fair Steel Dry Well – corrosion at seams Dry Well Floor – concrete slab, good condition Dry Well Ladder – good; no cages or platforms Pre-cast Wet Well – some gratings broken and some covered with debris. Wet well ladder corroded; no cages or platforms. Other – minor surface settlement; soil loss through weep holes	No Building Pre-cast wet well – good Pre-cast valve chamber – good	No Building Pre-cast wet well – good Pre-cast valve chamber – good	Building – pre-cast concrete – good Pre-cast wet well – good Pre-cast valve chamber – good Floor – concrete slab - good
Mechanical Process	Pumps– operational Flow Tube – new controls Comminuter – good Grit Removal – manual, poor condition Screenings – manual, poor condition. No equipment hoist. Pumps – 6-inch check valve (Pump 1) Upgraded pump seals (both pumps), 8-inch wall casting required replacing.	Pumps – operational Sump Pump – operational No equipment hoist, poor access. Comminuter – good Bar Rack – good Piping – good	Submersible pumps with wet wells Equipment, Piping & Valves – good No bar rack. No equipment hoist.	Submersible pumps with wet wells Equipment, Piping & Valves – good No bar rack. No equipment hoist.	Equipment, Piping & Valves – good No bar rack. No equipment hoist.

	Blackstone Street	Depot Street	Peachtree Drive	Partridge Hill Road	Wildflower Drive
HVAC and Plumbing	Control Building – ventilation & heater operational Second Level – heater & ventilation operational Pump Level – Vent operational; no heater Dehumidifier – operational Wet Well – no ventilation, no heater Backflow preventer – new (-5 mos.)	Dry Well Heater – portable, good No wet well heater. Dry Well Ventilation – good Dehumidifier – operable No wet well mechanical ventilation	N/A	N/A	Heater – good Control Building Ventilation – none Wet Well Ventilation – hooded vent – good Valve Chamber Ventilation – hooded vent – good Pumps - good
Electrical and Instrumentation	Service Cabinet – good Equipment – good Station Electrical – good Control Panel – sealed Alarms – good Flow Recorder – good Electric Generator – good Wet Well – electric may not meet current hazardous installation electrical codes	Service Cabinet – good Equipment – good Station Electrical – good; exposed to weather Control Panel – sealed, good condition Alarms – good Electric Generator – good Bubbler Tubes – poor wet well access	Service Cabinet – good Monitored Scada system Control Panel – sealed Alarms – visual and audible Propane Backup Generator – good	Service Cabinet – good Monitored Scada system Control Panel – sealed Alarms – visual and audible Flow Meter– good Propane Backup Generator – good	Service Cabinet – good Equipment – good Station Electrical – good Control Panel – sealed Alarms – good

Table 3-2B: Manchaug/South Sutton Pumping Stations

	Commerce Park	Main Street (Walmart)	Whitins Road #1 & #2	Main Street
Civil/Site	Fence – chain link, new Access – paved & stone, good Site Access Inside Fence – paved & Stone, good	Fence – chain link, new Access – paved, good Site Access Inside Fence – paved, good	Fence – chain link, new Access – paved & stone, good Site Access Inside Fence – paved & Stone, good	Fence – chain link, new Access – paved & stone, good Site Access Inside Fence – paved & Stone, good
Architectural/ Structural	No Building	No Building	No Building	No Building
Mechanical Process	Submersible pumps with wet wells	Submersible pumps with wet wells	Submersible pumps with wet wells	Submersible pumps with wet wells
Electrical and Instrumentation	Monitored Scada system Control Panel – sealed Alarms – visual and audible Flow Meter – good Propane Backup Generator – good	Monitored Scada system Control Panel – sealed Alarms – visual and audible Propane Backup Generator – good	Monitored Scada system Control Panel – sealed Alarms – visual and audible Flow Meter– good Propane Backup Generator – good	Monitored Scada system Control Panel – sealed Alarms – visual and audible Flow Meter– good Propane Backup Generator – good

3.3 Wastewater Concerns in Unsewered Areas

The construction of the Manchaug/South Sutton Sewer system addressed concerns within the Village of Manchaug, particularly the issues with the combined village septic system and high number of non-conforming Title 5 cesspools. Additionally, in the past fifteen years, the Lake Singletary subarea has been determined to be of low priority, which is discussed further below.

At this time of this Report writing, individual on-site wastewater systems are still the most commonly used throughout the unsewered areas of Sutton. The problems that arise within these systems have remained constant and their issues and severity are described as laid out in the 2002 CWMP (Ref: A-39) as follows:

There are two types of failures which are associated with an individual on-site wastewater disposal system: (1) failure of the system to dispose of wastes; and (2) failure of the system to properly treat the waste prior to entering the groundwater. There are several types of the associated problems, which result from these failures. Some problems, such as overflowing septic tanks, are readily detectable while others, such as a contamination of a surface water body, are not. Examples of typical on-lot system failures and their related problems are given in Table 3-3.

Table 3-3A: On-Site Wastewater Disposal Systems Methods of Failure

Type of Failure	Associated Problem
Disposal Failure	
Blocked pipe	Inability to use bathroom and kitchen facilities
Undersized septic tank/broken baffle in septic tank	Clogged leaching area, overflowing tank and/or odors, surface ponding
Tilted distribution box	A portion of the leaching area clogged, overflowing tank and/or odors, surface ponding
Undersized leaching area	Inability to fully use water facilities in house and overflowing of tank
Treatment Failures	
Coarse/sandy soil	Limited treatment is available and groundwater contamination may occur
Less than 3 feet to groundwater	Partial treatment by the soil in the leaching area and groundwater contamination may occur

A disposal failure occurs when a leaching field is unable to absorb effluent causing breakouts at the soil surface, backup into household plumbing fixtures, and severe odor problems. One of the more common reasons for this is an improper design.

Most of the systems constructed prior to 1964 were cesspools or other systems designed using criteria that have since been upgraded to reflect the more stringent requirements now believed needed to properly dispose of waste. A minimum leaching area is required for proper disposal of wastewater with the size of the area dependent on the type of soil and expected flow. If this minimum area is not provided, the leaching field will eventually become overloaded and the system will backup.

Treatment failure occurs when the wastewater passes through the soil underlying the leaching area so quickly that some contaminants (i.e., pathogens, bacteria, nitrates, etc.) pass directly into the groundwater. Such problems typically occur if soils are coarse or sandy or the distance between the bottom of the leaching area and the groundwater table is less than three (3) feet. Coarse or sandy soils have rapid permeability, which equates to high percolation rates. This type of failure degrades the quality of the underlying groundwater system and may jeopardize the public's health by polluting ground or surface water.

The principal wastewater constituents which pass through a properly functioning leaching field are nitrates and phosphates. More than 90% of the nitrogen in human waste is not removed to any extent in either septic tank or cesspool systems. Nitrogen exists as nitrates, which remain dissolved in wastewater as it percolates through the soil. Phosphates will similarly pass through the leaching field. Through an ion exchange process, phosphates will be absorbed onto soils. However, the ability of the soil to accomplish such removal may become exhausted. Thus, all the nitrates and some of the phosphates will pass through the soil, enter groundwater, and eventually reach surface waters. Where the receiving waters are ponds or lakes, nitrates and phosphates can stimulate algae growth and promote eutrophication. Where groundwater is intercepted for drinking water purposes, nitrates represent a potential health hazard. The drinking water standard for nitrates is 10 mg/L.

Factors which were considered in assessing the problems in unsewered areas of Sutton were:

1. Soil suitability for on-lot disposal systems
2. Density of housing
3. Surface and groundwater quality
4. ISDS failure rates
5. Age of ISDS systems
6. Depth of groundwater

3.3.1 Disposal System Repair Records

Repair and pumping records for existing on-site wastewater disposal systems were obtained from the local Board of Health. These records were used to identify areas that may be experiencing on-site wastewater disposal system problems or failures. Although useful, repair records are not reliable as a sole indicator of need because repairs are frequently the result of inadequate maintenance of an acceptable system. Also, repair or replacement of a cesspool or on-site wastewater disposal system does not necessarily indicate a need for improved methods of wastewater disposal as long as the system can be replaced or repaired to comply with Title 5 requirements. The majority of recorded repairs/failures of on-site wastewater disposal systems were located in the Manchaug, Sutton Center and Wilkinsonville sub-areas of Sutton.

3.3.2 Identification of Needs Areas

The project area consists of six sub-areas listed below for evaluation of wastewater disposal concerns. Significant new perspectives pertaining to the problem needs areas are included in this sub-section. (Ref: A-41 thru A-46).

1. Wilkinsonville
2. Manchaug
3. South Sutton
4. Sutton Center
    a. Sutton Town Center
    b. Sutton School Campus
    c. Lake Singletary

5. Ramshorn Pond
6. West Sutton (Rural Sutton)

Wilkinsonville

The Wilkinsonville sub-area encompasses approximately 2,900 acres located in the northeast corner of Sutton. The area is bounded by Route 146 from the Millbury town line southerly to the Central Turnpike Interchange and continues easterly along the Central Turnpike to the Town of Northbridge. The 2002 CWMP recommended that the Route 146 corridor, which offers Sutton an excellent opportunity to increase the size of its commercial and industrial base, be explored for sewer expansion. Since then efforts have been made to explore various alternatives to extend the existing sewer service area to include this portion of the Town. It is the current position of the Town that there is little benefit versus cost for the Town to extending sewer north and south along Route 146. Additionally, there is no compelling environmental reason to do so. However, the Town is not opposed to developers undertaking such extensions.

There are several interim wellhead protection areas and Zone IIs in the Wilkinsonville sub-area that will limit certain types of development. However, the majority of Sutton's business and industrial zoned land is within Wilkinsonville and has adjacent or very close by sewer and water lines and reasonable growth is expected.

The 2017 ADF from Sutton to Millbury is approximately 167,646 gpd, which is approximately 68% higher than the ADF of 100,000 gpd estimated in the 2002 CWMP. These increases are likely attributed to the Villas at Pleasant Valley, Pleasant Valley Crossing, Leland Hill Estates as well as many smaller flow connections to the system in the Wilkinsonville sub-area. There may be future additional connections along Armsby Road, west of Route 146. This area would likely connect to the existing sewer system through the Villas at Pleasant Valley.

Manchaug and South Sutton

The Manchaug/South Sutton sub-areas were sewered in 2006 through construction of the South Sutton municipal wastewater treatment plant. The Village of Manchaug is a densely developed residential and industrial area in the southern part of Sutton that has some history of sewage disposal problems. The on-site constraints are contributed by adverse soil conditions, as well as a prevalent high groundwater table. As delineated, the northern boundary of this sub-area contains the Zone II protection area for the groundwater source for the Manchaug Water District. Stevens Pond and the Mumford River form the western boundary. The Mumford River also forms the eastern boundary and the Sutton-Douglas town line forms the southern border.

The flow discharged to Millbury from the Wilkinsonville system excludes the Town's Manchaug/South Sutton sewer system, as the nearest connection point to the Wilkinsonville system is nearly 5 miles away with 4 four major elevation changes ranging from 30' to 290' feet in elevation. Therefore, this sewer sub-area flows to the Hough Road Advanced WWTF which has a groundwater disposal permit. Following construction of the Manchaug/South Sutton system, sewer connections occurred at a slower rate than expected, resulting in lower initial sewer revenues. This prompted Sutton to complete a Sewer Rate Study, as well as two subsequent updates, to help balance short-term sewer revenue needs with the projected sewer connection schedule.

Sutton Town Center, Sutton School Campus and Lake Singletary

Sutton Center sub-area and the Lake Singletary section are delineated utilizing the existing topographical features and current development patterns. Boundaries are limited to the northwest shore of the Lake, where severe slopes and small lot sizes impact wastewater disposal practices, and the eastern shore of the Lake, where several pockets of converted summer dwellings are present. Sutton Center also has a cluster of small lots with record of septic failures and recent repairs.

The remainder of the sub-area is sparsely scattered for the majority of the area and lot sizes are adequate to support on-lot disposal systems. Existing zoning will also ensure that future development will continue to have adequate lot sizes. Concerns within this sub-area are specific to waste management in Sutton Center and at the Sutton School Campus and are discussed further in Section 3.3.3.

Ramshorn Pond

Ramshorn Pond encompasses a portion of northwest Sutton and southwest Millbury. This sub-area contains large portions of undeveloped land. Since the 2002 CWMP little has changed within this sub-area, and it is still believed that due to adequate lot sizes, on-site disposal systems are still within Title 5 regulations. There have been no additional reports of issues with on-site disposal systems but given the large areas of still undeveloped rurally and residentially zoned land. Were any large development to occur on the few significant acreage parcels in this sub-area, water and sewer could be provided only through a separate extension from the Town of Millbury if they were open to this consideration.

West Sutton (Rural Sutton)

This rural section of Sutton is typical of and encompasses the remaining land in Sutton not specifically contained within the above listed sub-areas. These areas were grouped together in the 2002 CWMP and within this update due to their similarities regarding topography, soil conditions, zoning, existing development, and historical on-site disposal problems. This sub-area includes rural residential zoned areas of central, south, east, and north Sutton as well as the suburban residential areas of Sutton.

To date no additional widespread indications of on-site problems with wastewater disposal systems have been reported in these areas nor have water quality problems been evident. Existing development is scattered for the majority of the area and lot sizes are adequate to support Title 5 systems.

3.3.3 Summary of Problem Areas and Needs

Improved wastewater disposal means are still needed in parts of Sutton. With many of the concerns within the Manchaug/South Sutton sub-areas addressed through the construction of its collection system and WWTF, the Town is now focused on three current areas of concern which include upgrades to the existing sewer interceptor in Wilkinsonville, possible solutions to issues with the sub-surface disposal system at the Town Hall Municipal Complex, and addressing issues with the on-site wastewater treatment system (WWTS) at the Sutton Schools Campus. This sub-section has been updated to reflect current problems and needs areas; however, the recommended wastewater management practices for the unsewered areas as indicated in Table 3-4 remain the same as in the 2002 CWMP (Ref: A-50).

Table 3-3B presents the recommended actions for each of the six sub-areas. Alternative wastewater management solutions will be considered in succeeding chapters. A "no action" course on the part of the Town would result in continued degradation in existing problem areas. No action is considered unacceptable in terms of maintaining and improving the quality of life in Sutton with respect to public health, preservation and protection of the environment, and the aesthetic qualities of private and public property. Conversely, the construction of sewers to the entire Town is unwarranted based on existing needs, extreme costs, and the potential for adverse environmental impacts. The recommended plan must solve the problems in the most economic manner to preclude or minimize future problems.

Table 3-3B: Recommended Wastewater Management Practices

Area	Proposed Action On-site Wastewater Treatment Plant/ Rehab	Proposed Action New or Rehabbed Public Sewers	Proposed Action Title V Systems/ Repairs
Wilkinsonville	O	X	
Manchaug/South Sutton		X	
Sutton Center/School Campus/Lake Singletary	X	O	
Ramshorn Pond			X
West Sutton			X
Rural Sutton			X
X = Primary Recommendation O = Secondary Recommendation			

The most significant constraints and needs include:

Aging Treatment Facility and at Sutton Schools Campus

One of the most pressing wastewater management needs is at the Sutton Schools Campus. An on-site wastewater treatment system (WWTS) with sub-surface disposal was constructed at the site over 15 years ago. Major components of the system are nearing end of life with significant capital replacement costs. Plant performance has been compromised periodically due to toxicity issues in the discharge. In addition, the lack of flows results in operational challenges when the schools are not in session (summertime). Due to these concerns, alternatives for wastewater and maintaining water supply need to be considered for this site.

Inadequate Sub-surface System and High Groundwater in Town Center

Another wastewater management need exists in the Town Center at the Town Hall Municipal Complex, where the existing sub-surface disposal system has exceeded its useful lifespan and is both an environmental concern and a limiting factor on renovation of the Town's administrative complex and emergency response facility. The high groundwater at the site is a significant issue in terms of replacement alternatives and ongoing functioning of a Title V system on this constrained site.

Additionally, there are several adjacent high ground water areas with past septic failures and environmentally sensitive Town owned land directly adjacent to Sutton Center which should be considered.

The Town has to determine whether rehab of the existing WWTS at the school and replacement of the septic system at Town Hall is a better option or extending the existing sewer line approximately 2 miles and decommissioning the Town Hall septic system and School WWTS.

Aged and Undersized Infrastructure in Wilkinsonville

The existing original 10" transite pipe that transports all effluent cross country to the Blackstone Street pump station from the Wilkinsonville/Route 146 and the potential Sutton Center/School Campus needs areas has experienced a crack in years past and as a vital component of this system, the Town cannot afford for this pipe that currently transports nearly 170,000 gpd of effluent, to experience a failure. Additionally, this pipe in undersized for anticipated flows and is already a bottleneck for the connecting newer 12" main.

4. FUTURE CONDITIONS

4.1 General

For wastewater facilities planning purposes, future conditions within the planning period must be defined so that alternative means of wastewater management may be evaluated using common parameters. Future conditions considered include population projections, projected residential, industrial, commercial and institutional development and its related flow projections, and evaluation of individual site constraints on vacant parcels likely to affect developable area. This Update covers the planning period of 2017 to 2035.

This CWMP Update focuses primarily on the sub-areas of Sutton that are in the greatest need for wastewater management considerations due to high density development and problematic conditions and structural enhancements. These areas include: Wilkinsonville/Route 146 Corridor; Manchaug/South Sutton; and Sutton Center/School Campus. Within these areas, several developments are currently under construction and/or in the approval process. The projected wastewater flow from these developments total approximately 58,000 gpd. The developments are listed below:

Table 4-1: Flow from Specific Permitted or Anticipated Development

Wilkinsonville/Route 146	
Under Construction:	• Villas at Pleasant Valley – 111 condominium units off Armsby Road – 25,000 gpd. (4/5 by 2017, all by 2020)
Approved or in the process of being approved:	• Pleasant Valley Crossing – Restaurant, retail and medical and personal services on Route 146 north – 21,257 gpd (1/2 completed on or before 2017, all expected to be completed by 2025) • Wedgewood Farms – 93 Unit 55 and over on Armsby Road. 13,390 GPD (expected completion 2025)
Manchaug/South Sutton	
Under Construction:	• Primetals (Lot 9 Gilmore Drive) – 3,375 gpd (expected completion Spring 2020) • IBA (Lot 10 Gilmore Dive) – 1,327 gpd (expected completion Fall 2020)
Sutton Center/School Campus	
Future Planning:	• Town Hall Municipal Complex – 1,090 gpd (by 2021) • School Campus – 21,517 gpd (by 2022) • Shaw Farm – 1,000 gpd (by 2030) • Marion’s Camp – 1,000 gpd (by 2030)

As these project flows are clearly defined, they will be utilized directly for needs calculations later in this section.

4.2 Population Projections

The US Census Bureau 2014-2018 ACS Five Year Estimates assign Sutton a per person household value of 2.72. As there are not a significant number of retirement housing developments at this point and/or two-bedroom projects that could bring the average of persons per household down, large fluctuations in this average over the planning period are not expected. Therefore, this rate of 2.72 was utilized for wastewater flow projections.

4.3 Residential Build-Out

Future wastewater needs are directly related to development that will occur within the needs area during the planning period. Analysis of residential wastewater needs is based on consideration of several types of parcels. The first type is the stand-alone parcel or small individual unit that exists along an existing line but has not tied into the system yet. The second type is a small vacant parcel that is only large enough for one unit. The last type is a parcel that is large enough to be subdivided into individual residents or condominium/retirement units. While this structure for the analysis is similar to the perspectives in the 2002 CWMP (Ref: Page A-52), the analysis herein is more definitive as it incorporates actual per person water usage and a more comprehensive evaluation of vacant parcels to assess their actual development potential considering topographical and environmental constraints.

Increases were derived by examining detailed land use and wastewater system mapping, incorporating knowledge of development constraints and land regulation requirements, and estimating the percentage of these areas that would build out over the planning period. For this plan update, it was assumed 75% of existing units that are not currently tied in will tie in during the planning period. It was also assumed that of the remaining potential build out that 50 percent would be built out in the planning period.

Table 4-3A: Existing and Potential Residential Connections

Sub-area	Connections and Not Currently Serviced
Wilkinsonville/ Route 146	Current sewer connections – 892 Existing residential units not currently serviced – 24 Potential residential units- 311
Manchaug/South Sutton	Current sewer connections – 155 Existing residential units not currently serviced – 16 Potential residential units – 25
Sutton Center	Current sewer connections – 0 Existing residential units not currently serviced – 67 Potential residential units – 35

Table 4-3 summarizes the current sewer connections and the estimated growth in residential sewer connections over the planning period. The table indicates that a total of 267 additional residential sewer connections are likely to occur over the course of the planning period as residential housing growth is realized and the sewer system is expanded. Added to the current residential sewer connections (1,047), the total number of residential sewer connections in the year 2035 is projected to be approximately 1,314.

Table 4-3B: Estimated Residential Service Increase During Planning Period

Needs Area	Units Served 2017	Increase Existing Units (75%)	Increase New Units (50%)	Total Increase Units	Total in 2035
Wilkinsonville/Route 146	892	18	156	174	1066
Manchaug/South Sutton	155	12	13	25	180
Sutton Center	0	50	18	68	68
Total	1047	80	187	267	1314
Anticipated increase of 75% existing units and 50% potential units					

The current estimates for residential service increases during the planning period are substantial less than the projections in the 2002 CWMP. The current number of units served in the aggregate is 103 less than the number for 2005. Most importantly, the current projections for total in service through 2035 indicate the current number is expected to be 432 fewer units (Ref: A-53).

4.4 Commercial/Industrial Build-Out

The commercial and industrial build-out analysis is based on an inventory of the undeveloped commercial and industrial-zoned land within the boundaries of the study areas. There is currently no commercial- or industrial-zoned land in the Sutton Center area. However, the Town of Sutton indicates that there are 2 commercial businesses in this area. Additionally, flows for projects that are permitted but not currently on the system as shown in Table 4.1 have been included in projections.

Table 4-4 presents a summary of existing sewer connections, existing businesses not currently serviced and vacant commercial and industrial land as compiled by the Town. Net vacant land area has been derived utilizing information about the topographical and environmental constraints of vacant land to more accurately represent the actual land area likely to be developed.

Table 4-4: Existing & Potential Commercial & Industrial Connections & Vacant Land

Needs Area	Connections and Vacant Land Summary
Wilkinsonville/Route 146	Current sewer connections – 24 (10 Ind., 14 Comm.) Existing commercial not currently serviced: 1 Existing industrial not currently serviced: 0 Net vacant commercial land: 43 acres Net vacant industrial land: 125 acres
Manchaug/South Sutton	Current sewer connections – 19 (13 Ind., 6 Comm.) Existing commercial not currently serviced: 1 Existing industrial not served: 0 Net vacant commercial land: 14 acres Net vacant industrial land: 88 acres
Sutton Center	Current sewer connections – 0 Existing non-residential uses not currently serviced: 4 – 2 Comm., 2 Institutional (churches) No Commercial or Industrial Zoned Land

The data presented in the 2002 CWMP provided information based on the commercial and industrial acres in the needs areas Listed in Table 4-4. However, the information provided did not specify the number of connections, businesses not served or vacant land.

4.5 Estimated Wastewater Flows and Criteria

Estimated wastewater flows are a composite of various components: existing flows; un-serviced residential, commercial, industrial, and institutional flows; and I/I. Flow contributions for each component are based upon typical industry standards for wastewater generation rates. This section will define these components and outline the criteria utilized for estimating the projected flow from each needs area. Estimates in the Tables provide additional details pertaining to the potential flow from vacant land unlike the 2002 CWMP.

4.5.1 Residential Flow

Residential flow is that portion of wastewater that is generated from single-family homes, apartments and/or condominiums, and residential communities. Table 4-5 presents the projected increase in wastewater flows by needs based on the estimated residential sewer connections in Table 4-3. Since Sutton Center/School Campus is not currently sewered, no current flow is reported. The estimated wastewater flows are calculated as the product of the number of housing units times the occupancy rate of 2.72 persons per housing unit multiplied by the gallons per person per day rate of 53 taken from 2017 Sutton water district reporting.

The flow projections represent an average annual increase in residential sewer connections in the Manchaug/South Sutton area, the Sutton Center/School Campus area, and the Wilkinsonville/Route 146. Additional flows are anticipated to occur at 10% by 2020, and an additional 30% built out in each successive period of the study period.

Table 4-5A: Estimated Residential Wastewater Flow Increase (GPD)

	Wilkinsonville	Sutton Center	Manchaug/ South Sutton	Approved Table 4-1 (Wilks)	Totals
2020	2,508*	980	360	5,000	8,849
2025	7,525	2,941	1,081	13,390	24,937
2030	7,525	2,941	1,081	0	11,547
2035	7,525	2,941	1,081	0	11,547
Totals	25,084	9,803	3,604	18,390	56,881
District Totals	53277		3,604		

*Increase = (# units (Table 4-3) X %) X (2.72 US Census pph X 53 RGCP from 2017 Wilks Water District ASR)

Based on Table 4-5, an average annual increase in residential wastewater flow of approximately 3.8 percent is projected over the remaining 15 years of the CWMP.

The estimated increase in residential wastewater flow of the Needs Areas may appear substantial but it is significantly less than the projections presented for 2025 in the 2002 CWMP. Whereas the 2002 CWMP had an estimate of 354,800 gpd in total largely due to anticipated flows from the new Manchaug system, the current residential increase estimate for 2025 is 24,937 gpd (Ref: A-55).

4.5.2 Commercial Flow

Wastewater generated in stores, restaurants, motels, and small businesses is defined as commercial flow. Typical design values for commercial wastewater generation rates are within the range of 800 to 1,500 gallons per acre per day (gal/acre/d)[1]. Because some of the approved and pending commercial development includes “big box” buildings (Stop & Shop, Lowes. etc.) with restaurant and accessory retail stores, a conservative value of 1,000 gal/acre has been used to in this report to estimate the anticipated volume of commercial wastewater.

[1] Metcalf & Eddy, *Wastewater Engineering, Treatment, Disposal, Reuse,* Third Edition, 1991.

4.5.3 Industrial Flow

Wastewater generated from manufacturing facilities, truck terminals, etc., is defined as industrial flow. Typical design values for estimating industrial wastewater generation are within the range of 1,000 to 3,000 gallons per acre per day (gal/acre/d)[1] depending on type of industry. The low end is typically industries that utilized no or little process water. For this study, a value of 1,500 gal/acre/d was used.

For the purposes of flow calculations, it was assumed 100% of existing units that are not currently tied in will be by 2025. It was also assumed that of the remaining potential build out that 50% would be built out during the planning period at a rate of 10% by 2020 and 30% in each of the remaining increments.

Table 4-5B: Estimated Commercial & Industrial Wastewater Flow Increase (GPD)

	Wilkinsonville/Route 146			Sutton Center			Manchaug/South Sutton			Totals
	Table 4-4 Acres		Table 4-1 & 4-4	Table 4-4 Acres		Table 4-1 & 4-4	Table 4-4 Acres		Table 4-1 & 4-4	
	Com	Ind		Com	Ind		Com	Ind		
2020	2,150*	9,375**	0	0	0	0	700	7,575	4,702	24,502
2025	6,450	28,125	11,629***	0	0	1,500	2,100	22,725	1,000	73,529
2030	6,450	28,125	0	0	0	0	2,100	22,725	0	59,400
2035	6,450	28,125	0	0	0	0	2,100	22,725	0	59,400
Totals	21,500	93,750	11,629	0	0	1,500	7,000	75,750	5,702	216,831
District Totals	128,379						88,452			216,831

*Commercial flow = 50% acres x 10% x 1,000 g/ac/day = flow gpd.
**Industrial flow = 50% acres x 10% x 1,500 g/ac/day = flow gpd.
***All of Existing Not Tied – In uses are estimated to be tied in by 2025.

4.5.4 Institutional Flow

Institutional wastewater flows are generated by schools, assembly halls, public buildings, etc., are typically based on the type and the unit of measure, e.g. per student, per resident, per employee, and are estimated as gallons per unit per day (gal/unit/d). Institutional flow within the study area is primarily generated by uses like the Town Hall Municipal Complex, fire stations, and schools. Where flows from these uses are anticipated to be part of a flow increase, their gallon per day rate estimate has been calculated using standard Title V methodology or from actual usage of similar facilities in Sutton. Additions of known institutional uses and their anticipated flows are found in Table 4.1.

[1] Id.

Table 4-5C: Estimated Institutional Flow Increase (GPD)

	Wilkinsonville/ Route 146	Sutton Center/ School Campus	Manchaug/ South Sutton
2020	0	0	0
2025	0	22,807*	0
2030	0	2,000**	0
2035	0	0	0
Total	0	24,807	0

*Addition of Town Hall Municipal Complex, School Campus and 2 churches

**Addition of Shaw Farm and Marion's Camp

4.5.5 Flow from Infiltration and Inflow (I/I)

Water that enters the sewer system through indirect and direct means is considered infiltration and inflow, respectively. Infiltration & Inflow is typically only anticipated on gravity components of a sewer system. Force main, or pressurized components, of a sewer system would not function at all if they were experiencing infiltration or inflow. Infiltration is groundwater that enters the sewer system through defects in pipes, manholes, and service laterals. Inflow is water that enters the sewer system through manhole covers, roof leaders, cross-connections, and basement sump pump discharges, and driveway and area drains.

It is extremely difficult to calculate I/I directly due to the fluctuation of groundwater elevations and rainfall through the seasons. The amount of I/I can range from as little as 100 to more than 10,000 gallons per day per inch-mile[1] (gpd/IDM). Generally, the older the sewer system the higher the rate of infiltration. In newly constructed sewers, infiltration is typically minimal, assuming proper construction techniques and oversight are employed when installing the pipe. For new sewers, common practice is to include an allowance of between 250 to 500 gpd/IDM.

The 2018 Sewer System Evaluation Survey divided the Wilkinsonville/Sutton Center and Manchaug/South Sutton Systems into 7 subareas and their individual pump stations. The evaluation studied flows during high and low ground water seasons as well as during dry and wet weather periods. Preliminary analysis was followed with additional flow metering and rainfall gauging as well as CCTV evaluations of suspect areas.

The Evaluation concluded that that neither of the Towns two systems nor any individual subarea exhibits excessive infiltration under MassDEP guidelines of 4,000 gpd/IDM. Further, only two subareas showed any marked increase in flow. The Main Street subarea within the Manchaug /South Sutton System showed a calculated rate of approximately 1,000 gpd/IDM. The Whitins #2 subarea within the same system showed some increase due to rainfall although less than the Main Street subarea. Subsequent CCTV evaluation of the Main Street system identified two locations in need of repair that were immediately undertaken.

[1] Inch-miles (IDM) of sewer is calculated by taking the total length of sewers in miles and multiplying that number by the diameter of the pipe in inches.

Based on information obtained through the Sutton Sewer System Evaluation Survey and the fact that the deficiencies in the Main Street station system have been repaired, we utilized an I&I rate of 250 gpd/IDM for both systems in our future needs flow projections.

Wilkinsonville/Route 146 Needs Area

Based on the Town's GIS sewer system mapping data, the Wilkinsonville/Route 146 sewer system currently consists of approximately 89,378 LF or 16.9 miles of gravity pipe including 76,466 LF of 8-inch pipe, 4,561 LF of 10-inch pipe, and 8,351 LF of 12-inch pipe, which equates to approximately 143.48 IDM of sewer. Using an I/I allowance of 250 gpd/IDM of sewer, the total I/I for existing sewers equates to 35,869 gpd. An increase of 4,386 gpd is estimated for new lines during the study period bringing the total projected I/I for Wilkinsonville/Route 146 to 40,254 gpd by the end of the study period.

Table 4-5D: Estimated Infiltration/Inflow (I/I) Increase Wilkinsonville/Route 146 Needs Area

	I/I Estimate (gpd/IDM)	New. Sewer (feet) -8"	New. Sewer (feet) -10"	New. Sewer (feet)- 12"	IDM of Sewer (Total)	Total Flow (gpd)
2020	250.00	1900.00	0.00	0.00	2.88	719.70
2025	250.00	6648.00	0.00	690.00	11.64	2910.23
2030	250.00	0.00	0.00	0.00	0.00	0.00
2035	250.00	0.00	0.00	0.00	0.00	0.00
Total	250.00	8548.00	0.00	690.00	14.52	3629.92

2020 Villas - 1,900' - 8" gravity
2025 PV Crossing - no new line
2025 Wedgewood - 5,628' - 8" gravity
2025 BS Street line replacement 690 - 12" gravity, 1,020 8" gravity

Manchaug/South Sutton Needs Area

The Manchaug/South Sutton area sewer system is comprised of approximately 22,598 LF of gravity sewers consisting of 15,373 LF of 8-inch diameter pipe and 7,225 LF of 10-inch diameter pipe, which equates to 23.3 and 13.7 IDM of sewer, respectively. Using an I/I allowance of 250 gpd/IDM of sewer, the total I/I for existing sewers equates to 9,244 gpd. An increase of 311 gpd is estimated for new lines during the study period bringing the total projected I/I for Manchaug/South Sutton to 9,555 gpd by the end of the study period.

Table 4-5E: Estimated Infiltration/Inflow (I/I) Manchaug/South Sutton Needs Area

	I/I Estimate (GPD/IDM)	New Sewer (feet) 8-inch	New Sewer (feet) 10-inch	New Sewer (feet) 12-inch	IDM of Sewer (Total)	Total Flow (GPD)
2020	250	0	0	0	0.00	0
2025	250	820	0	0	1.24	311
2030	250	4,354	0	0	6.60	1,649
2035	250	0	0	0	0.00	0
Total	**250**	5,174	0	0	7.84	1,960

2025 - Primetals and IBA – 820 LF – 8-inch gravity
2030 - Potential service lines East (1,932 LF – 8-inch) and West (2,413 LF – 8-inch) of Route 146

Sutton Center/School Campus Needs Area

Currently, there are no sewers in the Sutton Center area. Table 4-10 presents I/I valves anticipated from new sewer construction totaling 2,300 LF of 8-inch diameter pipe. Using an I/I allowance of 250 gpd/IDM of sewer, the total I/I for existing sewers equates to 871 gpd.

Table 4-5F: Estimated Infiltration/Inflow (I/I) Sutton Center/School Campus Needs Area

	I/I Estimate (GPD/IDM)	Existing Sewer (feet)	New Sewer (feet) 8-inch	IDM of Sewer (Total)	Total I&I Flow (GPD)
2020	250	0	0	0	0
2025	250	0	2,300	3.48	871
2030	250	2,300	0	3.48	871
2035	250	2,300	0	3.48	871
Total	250	2,300	2,300	3.48	871

2025 School Campus & Town Hall Complex – 2,300 LF – 8-inch gravity

2030 Shaw and Marion's – all force main

4.6 Total Projected Wastewater Flows

Tables 4-11A - 4-11C present a summary of the existing flows added to projected residential, commercial/industrial, institutional, and I/I average-daily wastewater flows within the needs areas, based on the sources developed in the preceding sections over the remaining study period of 2020 to 2035.

Table 4-6A: Projected Total Flows Wilkinsonville/Route 146 + Sutton Center/Schools Complex (GPD)

	Existing Flow	Res Flow Increase	Ind/Com Flow Increase	Institutional Flow Increase	I/I Increase	Increase in Flow Subtotal	Total Projected Flow
2020	167,646	8,489	11,525	0	720	20,733	188,379
2025	188,379	23,856	47,704	22,807	4,537	98,904	287,283
2030	287,283	10,466	34,575	2,000	871	47,912	335,195
2035	335,195	10,466	34,575	0	871	45,912	381,107
Totals		53,277	128,379	24,807	6,999	213,461	

Table 4-6B: Projected Total Flows Wilkinsonville/Route 146 without Sutton Center/Schools Complex (GPD)

	Existing flow	Res Flow Increase	Ind/Com Flow Increase	Institutional Flow Increase	I&I Increase	Increase in Flow (gpd)	Total Projected Flow
2020	167,646	7,508	11,525	-	720	19,753	187,399
2025	187,399	20,915	46,204	-	2,910	70,029	257,428
2030	257,428	7,525	34,575	-	-	42,100	299,528
2035	299,528	7,525	34,575	-	-	42,100	341,628
Totals		43,474	126,879	-	3,630	173,982	

The flow projections for the Wilkinsonville/Route 146 area indicate at the end of the planning period that the total flow of 381,107 gpd will be at approximately 65% of the permitted ADF of the Inter Municipal Agreement with the Town of Millbury. However, as the flow will be over 75% of the pump station capacity of .504 mgd, if the station has not been upgraded in the interim plans should be underway for this eventuality.

If the Town decides not to extend the sewer line 2 miles to the school complex, flow can be backed out for potential residential, commercial and institutional flow from Sutton Center/School Complex along with the anticipated I & I flows, resulting in a total increase in flow of 173,982 and a total projected flow by 2035 of 341,628 gpd.

Table 4-6C: Projected Total Flows Manchaug/South Sutton (GPD)

	Existing Flow	Res Flow Increase	Ind/Com Flow Increase	Institutional Flow Increase	I/I Increase	Increase in Flow Subtotal	Total Projected Flows
2020	35,420	360	12,977	0	0	13,337	48,757
2025	48,757	1,081	25,825	0	311	27,217	75,974
2030	75,974	1,081	24,825	0	1,649	27,555	103,530
2035	103,530	1,081	24,825	0	0	25,906	129,436
Totals		3,604	88,452	-	1,960	94,016	

The flow projections for the South Sutton Wastewater Treatment Plant indicate at the end of the planning period that the flow, 129,436 gpd will exceed the current capacity of the advanced wastewater treatment plant. The existing WWTP capacity of 110,000 gpd will be exceeded sometime after 2030, therefore the Town should consider pump upgrades and other necessary improvements as new development comes online to determine if this development should share in these costs.

The projected wastewater flows for Wilkinsonville/Route 146/Sutton Center/Schools are much lower than the 2002 CWMP estimates and the projected flows for Manchaug/South Sutton are slightly higher. (Ref: A-58) This is likely because of more detailed land assessments that have been done in the Wilkinsonville/Route 146/Sutton Center/Schools needs area that have provided the Town with a more realistic estimation of the actual land area that is suitable for and likely to be developed.

4.7 Inter-Municipal Agreements

Town of Millbury

The Town of Sutton executed a new IMA with the Town of Millbury in June of 2008 that covers the period of 2008 through 2032. The IMA allots flow in both ADF and peak flow. The IMA allows discharge of an ADF of 589,600 gpd and a peak of 1,568,000 gpd to the UBWPAD via the Millbury sewer system. The agreed to flows were based on estimates from the 2002 CWMP Update (Ref. A – 58). The updated IMA utilizes a peaking factor of 2.66 times ADF to determined peak flow. This peaking factor was established based on the most conservative actual metered flows at the BSPS, over the period January 2005 through January 2007.

Under the IMA, the Town of Sutton pays 18.8 percent of all capital costs for improvements to the Millbury sewer system. Sutton also pays a percentage of the cost of operating and maintaining the Millbury sewer system. The current IMA does not include a fixed percentage. Payment is based on costs multiplied by the ratio of Sutton's wastewater flow to Millbury's and Sutton's combined wastewater flow.

The Town should keep this in mind the substantial capital costs discussed in chapter 6 that may be necessary to handle flows as they increase and ensure that development that increases flow substantially also undertakes or participates in funding necessary upgrades. The Town should start development and flow updates and evaluations by 2030 relative to extension of the IMA with the Town of Millbury and begin discussions with Millbury well in advance of the 2032 end date of the agreement. Refer to Attachment B for the IMA.

Town of Northbridge

The Town of Sutton executed an inter-municipal agreement with the Town of Northbridge in 2016 to accommodate flow from Walmart and several Priority Development Site properties at the South Sutton Advance Wastewater

Treatment Plant. As projections show there may be some room to accommodate out of Town flow within the expansion capability of this plant, the Town should consider whether this is beneficial to the operation of the plant and/or finances of the Town.

Town of Douglas

While the Town of Sutton does not currently have an inter-municipal agreement with Douglas, it may be beneficial to consider such an agreement depending on proposed development in South Sutton. Developers may see a benefit to pumping flow from structures that straddle town lines or even those wholly within Sutton but close to town lines to Douglas instead. The Town will need to consider the benefits of being flexible in accommodating these requests noting the job and tax base benefits the Town of Sutton may be able to gain.

5. WASTEWATER MANAGEMENT METHODS

5.1 General

Priorities for providing solutions to wastewater disposal problems can be established on the basis of need, economic feasibility, and public demand for improvements. Viable alternatives will differ from area to area based on the type of problem, physical and environmental constraints, and cost considerations and impacts. For example, the construction of sewers in areas experiencing on-lot system failures may be the most feasible solution in some cases. However, in other areas, particularly areas not fully developed, there may be some potential for other alternatives. Alternatives may include on-lot system construction or rehabilitation and cluster or package treatment facilities designed to handle wastewater generated from specific neighborhoods. An evaluation of each area must consider the ability of any alternative to reliably achieve the goals of protection of public health and maintenance of water quality. On-site disposal systems must be held to the same standards of treatment and disposal that public sewerage systems are expected to achieve.

5.2 Individual Sewage Disposal System

The details provided in this sub-section are the same as in the 2002 CWMP, except that percent of the current population with individual sewages disposal systems has changed for 85 percent in the 2002 CWMP to 75 percent currently (Ref: A-59). It is important to note that these aspects have not changed significantly over the last 15 years.

Approximately 75 percent of the current population in the Town of Sutton is dependent on on-site wastewater disposal systems. Due to limitations on the Town's sewer service area, on-site disposal systems will continue to play an important role in the Town's overall wastewater management plan. Unfortunately, negligence or improper operation on the part of the property owner, along with unsatisfactory site conditions, can lead to early failure of a system, potentially threatening the health of residents and adversely impacting the environment. Failure of a system can be attributed to any or all the following factors:

- Improper siting
- Inadequate sizing
- Hydraulic overloading
- Introduction of large quantities of non-biodegradable solids
- Failure to pump the system regularly
- Improper installation or substandard construction materials
- Adverse activities around the leaching field (i.e. planting trees)

Failed systems must be rehabilitated or replaced to comply with Title 5 Regulations. Existing cesspools, which when failed must be replaced with an approved disposal system since they do not comply with the current Title 5 requirements. On-site system improvements may be achieved by upgrading or replacing existing individual systems or by implementing a shared system serving several homes and/or businesses.

For on-site wastewater disposal, the required level of treatment depends on the design flow of the system. According to Title 5, systems with wastewater flows less than 10,000 gpd only require treatment by a conventional on-site wastewater disposal system. New systems with wastewater flows equal to or greater than 10,000 gpd are considered large systems that require advanced treatment and a MassDEP groundwater discharge permit. Zone II Wellhead Protection areas have more stringent requirements for the siting of on-site wastewater disposal systems. Systems located within Zone II protected areas with wastewater flows less than 2,000 gpd only require treatment by a conventional on-site wastewater disposal system. Systems in Zone II with flows between 2,000 and 10,000 gpd are required to reduce nitrogen as part of the treatment. Since groundwater discharge permits are generally not issued in Zone II protected areas, an advanced treatment facility for flows greater than 10,000 gpd would most likely note approved unless no other feasible alternatives are available.

5.2.1 Conventional Upgrades or Replacement Systems

Conventional on-site wastewater disposal systems may be replaced or upgraded in sections of Sutton where centralized wastewater collection is cost prohibitive or where acceptable conditions for on-site wastewater disposal exist. Acceptable conditions include suitable soil percolation rate, low groundwater table, seasonal high-water table at least 7 feet below grade, relatively level topography, adequate lot size for soil absorption system, adequate distance to bedrock, and proper distance of disposal system components to natural resources.

A typical Title 5 on-site wastewater disposal system consists of three components: a septic tank, a distribution box, and a soil absorption system. Pretreatment of the wastewater occurs in the septic tank. The distribution box directs the septic tank effluent evenly to the absorption system, which typically consists of trenches containing perforated PVC pipe backfilled with gravel.

5.2.2 Innovative/Alternative Systems

The Commonwealth of Massachusetts allows the use of approved Innovative and Alternative (I/A) treatment and disposal systems as replacements for conventional systems. These systems are becoming more widely used for cost effective upgrades of old failing systems on difficult sites with high water tables, poorly drained soils, and restricted areas that cannot support a conventional system. They are also used for new construction, particularly in environmentally sensitive areas where enhanced treatment is beneficial. The MassDEP maintains and publishes a list of approved alternative systems. Some of these systems are described below. Refer to the MassDEP website for a list of approved I/A Systems https://www.mass.gov/guides/approved-title-5-innovativealternative-technologies.

<u>Alternative Systems for Treatment</u>

Recirculating Sand Filters – The overall system consists of a septic tank, a recirculation tank, and an under-drained open sand filter. Effluent from the septic tank is collected in the recirculation tank, where it is mixed with effluent from the sand filter. The mixture is periodically pumped onto the sand filter. Overflow from the recirculation tank is directed to a leaching field. Benefits of this system are possible leaching field reduction of 50 percent, a 2-foot reduction in groundwater separation, and nitrogen removal.

Ruck System – A proprietary system designed to treat domestic sewage by means of parallel septic tanks, receiving gray water and black water, respectively, a nitrifying sand filter and a leaching field. Effluent from the black water septic tank is nitrified on the sand. Filter. Effluent from the sand filter is then mixed with gray water, promoting denitrification in the leaching field. This system reduces nitrogen concentrations, which will provide benefit to ground water recharge areas and regions adjacent to sensitive surface water bodies.

AWT Bioclere System – This is a proprietary system, which uses a modified trickling filter concept for wastewater treatment. The filter consists of a bed of highly permeable plastic media, to which microorganisms are attached and through which septic tank effluent is trickled. The base of the unit serves as a final settling tank that discharges to a leaching field. Nitrified effluent from the settling tank can be returned to the septic tank for passive denitrification. A 50 percent reduction in leaching field area or a 2-foot reduction in groundwater separation is allowed with the use of this system.

Smith and Loveless Fast System – This proprietary fixed activated sludge process consists of a primary settling zone and an aerobic biological zone. Solids are trapped in the primary zone where they settle. In the aerobic zone, bacteria attach to the surface of a submerged media bed, feeing on the sewage as it circulates. Both single home and modular units are available. Use of this system allows for a 50 percent reduction in leaching area or a 2-foot reduction of the groundwater separation. Nitrogen reduction can also be accomplished by adding an effluent recirculation loop to the system.

Saneco Intermittent Sand Filter – Intermittent sand filters are beds of medium to coarse sand, 24 to 36 inches deep, to which effluent from the septic tank is intermittently applied. Underdrains collect the filtrate and convey it to the leaching field. Use of this system allows for a 50 percent reduction in leaching area or a 2-foot reduction of the groundwater separation.

<u>Soil Absorption Systems</u>

Mound Systems – Mounds are a type of fill system designed to elevate the infiltration surface above wet, slightly permeable natural soil. Natural topsoil is plowed or furrowed to facilitate infiltration. Permeable fill material distributes effluent from a septic tank over a large area preventing excessive clogging and reducing the loading rate on natural soils. This sub-section is the same as in the 2002 CWMP (Ref: A-63).

Infiltrator – This proprietary leaching field is designed for use without stone. The system consists of an open bottom leaching chamber molded from high density polyethylene. This sub-section is the same as in the 2002 CWMP (Ref: A-63).

Table 5-2: Costs for On-Lot Disposal System

	Capital Cost $ (1)	Annual O&M Cost (2)	Amortized Cost (3)
Systems (4)			
Conventional	12,000	100	1,300
Recirculation Sand Filter	28,200	150	2,970
Ruck System	26,100	150	2,750
Bioclere-Trickling Filter	23,800	1020	3,380
Fast System-Activated Sludge	20,000	300	2,300
Saneco ISF	21,400	340	2,480
Leaching Fields (5)			
Mound System	1,025	--	820
Eljen In-drain	7,700	--	750
Infiltrator	7,700	--	750
Miscellaneous			
Compost Toilets	15,200	400	1,920

(1) Cost based on ENR index of 5,895 (1998) as updated by a factor 1.6 for 2017
(2) Septic tank assumed to be pumped once per 3 years. Power and labor costs included.
(3) Interest = 7-7/8%, system life = 20 years
(4) Includes treatment system and leaching field
(5) Includes replacement cost for field only.

Miscellaneous

Composting Toilets – Waterless toilets utilize biological oxidation to stabilize and reduce the volume of waste material. A separate on-site wastewater disposal system must be installed to treat gray water waste streams. The installation of composting toilets is most economically done in new houses. The size of the unit and radical plumbing changes make retrofitting very difficult. This sub-section is the same as in the 2002 CWMP (Ref: A-63).

5.2.2.1 Capital and O&M Costs

Typical costs associated with the installation and operation of various on-site components and systems are presented in Table 5-1. For a conventional leaching field, a minimum area of 750 square feet for a three-bedroom home with soils having a percolation rate of 25 minutes per inch has been used to estimate the cost. Costs will vary with the individual installation and could be considerably higher than those shown in some cases. According to MassDEP, engineering and construction costs of an I/A upgrade to meet Title 5 range from $10,000 to $38,000, depending on site conditions.

5.2.3 Tight Tanks

A tight tank system can be considered an option when an existing system cannot be upgraded or repaired to meet Title 5 regulations. A tight tank system consists of a storage or holding tank installed before or after a septic tank to collect the wastewater which eliminates the need to discharge wastewater to the ground. The holding tanks must be sized at a minimum of 500% of the system sewage design but shall have a minimum storage capacity of 2,000-gallons. This creates a necessity for pumping out the stored sewage on a regular basis. Although this alternative is environmentally acceptable and meets Title 5 requirements, the O&M costs are high due to the frequent pumping. This option should only be considered feasible as a last resort where all other options have been examined and eliminated.

5.3 Shared Local Wastewater Treatment and Disposal Systems

Locally shared systems may be viable option for areas where conventional systems and individual systems are not feasible or cost prohibitive. This type of system requires a parcel of land with suitable environmental conditions such as soil type, geologic conditions, and groundwater conditions for on-site wastewater disposal located relatively close to the cluster of homes to be served.

5.3.1 Shared Leaching Systems

A shared leaching system is designed to utilize a vacant parcel of land near a group of problematic existing systems that is suitable for wastewater disposal. This alternative is used for existing systems that can accommodate a septic tank but can no longer effectively use a soil absorption system. Effluent from the existing septic tanks is conveyed to the shared leaching system via gravity sewers or low-pressure septic tank effluent pumping (STEP) systems. Shared leaching systems involve proper facility siting, modifications to existing systems, and the creation of a community organization that will be responsible for O&M of the system.

5.3.2 Shared Treatment and Disposal Systems

Shared treatment and disposal systems can be used where lot size constraints and environmental conditions make upgrades of both septic tank and leaching fields unfeasible. This alternative includes all the components of a conventional on-site wastewater disposal system (i.e., septic tank, distribution box, and absorption field). Existing on-site disposal systems are abandoned and the sewage from the existing systems is conveyed to the shared system location via gravity or low-pressure individual grinder pump systems.

5.4 Central Wastewater Collection

Central collection is a structural alternative, which provides the most positive means of removing wastewater from densely developed areas. The types of collection systems available are gravity (conventional), small diameter gravity sewers, and pressure sewers. Each of these systems is explained below.

The sub-section is descriptive information that is the same as in the 2002 CWMP (Ref: A-66).

5.4.1 Gravity Systems

This alternative has been universally employed for collection of wastewater. The system is the simplest conceptually, in that natural topography is used to allow the wastewater to flow by gravity through a network of pipes to a desired point. There is little maintenance with these systems, except a yearly inspection and occasional cleaning and flushing. The systems can be limited by natural topography and pumping is required in some gravity systems as an alternative to unreasonably deep sewer construction.

5.4.2 Pressure Sewers

There are two major types of pressure sewer systems: the STEP system and the grinder pump system. In both designs, wastewater is collected via the building sewer and conveyed by gravity to the pumping facility. Neither system required any modification of household plumbing. The on-site piping arrangement includes at least one check valve and one gate valve to permit isolation of each pump from the main pressure sewer. Both systems have the advantage of relatively low capital cost for pipeline construction, as pressure sewers are smaller and shallower than gravity sewers. Because of their shallow depth, pressure sewers may also be constructed more easily in densely developed areas than gravity sewers. The major difference between these alternate systems is in the on-site equipment and layout.

In the STEP systems, wastewater receives intermediate treatment in a septic tank and the effluent flows to a holding tank, which houses the pump, control sensors, and valves required for the system. Small centrifugal pumps pump the effluent from the tank to the pressurized system. The primary disadvantage with this system is that the septic tank must still be pumped out periodically, just as with a conventional on-site disposal system.

In the grinder pump system, wastewater from the building sewer flows by gravity to a grinder pump. The pump can be located either inside or outside the building, although the basement location is preferable for easier access and maintenance. The grinder pump grinds all solids and the effluent is discharged into the pressurized pipe conveyance system. This system has been used in numerous locations throughout the United States and is considered very reliable. Thus, the grinder pump system is considered a viable alternative under appropriate conditions, such as when there is inadequate space in which to construct a conventional gravity wastewater collection system and where topography requires isolated areas to be pumped.

5.4.3 Small Diameter Gravity Sewers

Small diameter gravity sewers are used in conjunction with a septic tank at each individual lot to be served. The septic tank retains solids, which allows the use of smaller diameter pipe. The minimum diameter is usually 6-inches and piping is generally PVC. One disadvantage of this system is the maintenance and pumping of the septic tank at each lot. These systems are most applicable when the effluent needs to be clarified because conveyance is to a common leaching system and where a new treatment plant is to be constructed without facilities for primary treatment.

5.4.4 Pump Station and Force Mains

Pumping stations are typically used in conjunction with gravity sewer alternatives. Gravity sewer systems collect and transport wastewater from service connections to the treatment facility. Areas within the wastewater collection system that have topographical constraints utilize pump stations and force mains in conjunction with gravity sewers to transport wastewater to the desired location.

Pump stations must be designed to handle the peak wastewater flow. The costs for pump stations can be a considerable portion of a gravity sewer construction project. Each pump station requires a backup pump, emergency power (generator), and in some cases, odor control measures.

5.5 Satellite Treatment Facilities

Treatment facilities in Massachusetts designed to handle flows more than 10,000 gpd and with a land disposal alternative are required to obtain a groundwater discharge permit. At present, it is not considered feasible to obtain a new surface water discharge permit in Massachusetts, particularly if other discharge alternatives are available. If design flows exceed 40,000 gpd, the MassDEP requires that redundant treatment units be provided. Treatment facilities exceeding 40,000 gpd become more complex, require more operator attention, and are more expensive.

Wastewater collection and disposal facilities of this nature can handle flows from larger needs area than that of a shared local system. In the Town of Sutton, there is no need to service the entire town or large expanses of developed land with a satellite treatment facility. Several options for treatment and disposal are compatible with these larger treatment systems. These are described below.

5.5.1 Disposal Alternatives

Three methods of effluent disposal to groundwater were considered. These included rapid infiltration, spray irrigation, and subsurface disposal. Disposal site screening criteria include the type of soil, current land use, and the required land area. Specific criteria related to soil type are percolation rate, depth to bedrock, topography, and depth of groundwater. Preliminary determinations of these criteria can be made from data available from Soil Conservation Service and from USGS topographic maps. Land use can be determined from Town maps, conversations with Town personnel, and site visits. Land area requirements are estimated based on standard buffer zones, projected flows, and application rates for the specific disposal system. The size of the property can then be compared to undeveloped sites with suitable soils. Sites with adequate land area and in close proximity to the study area should be recommended for further evaluation. Criteria used to determine where suitable soil is located are given in Table 5-2 (below).

<u>Rapid Infiltration</u>

In rapid infiltration systems, wastewater effluent is applied to deep and permeable basins, where it percolates through the soil matrix and into groundwater. The distribution system applies wastewater at a rate that constantly floods the basin throughout the application period of several hours to a couple of weeks. A cycle of flooding and drying helps maintain the infiltration capacity of the soil material. Infiltration diminishes slowly with time due to clogging. However, it is readily restored by occasional tillage of the surface layer. Treatment to remove solids improves distribution system reliability, minimizes nuisance conditions, and reduces clogging rates. Rapid infiltration is less land intensive than other land application systems and provides a means of groundwater recharge. No storage is required.

<u>Spray Irrigation</u>

Spray irrigation is the application of wastewater effluent to vegetated soils that are low to moderate in permeability. Wastewater is taken up by the soil matrix and plant bio-systems, with additional losses through evapotranspiration and percolation to groundwater. This type of system requires the largest land area, creates possible air transport of pathogens if disinfection is not provided, and limits application periods to growing seasons, which makes it necessary to provide storage. For purposes of this study, it was assumed that three months of storage would be required.

Subsurface Disposal

In subsurface disposal systems, treated wastewater is discharged below the ground surface, where it is absorbed by the soil as it percolates to groundwater. Several alternatives are available including trenches and beds, seepage pits, mounds, and artificially drained systems. All are covered excavations filled with porous media. For the purpose of this study, a trench system is evaluated as the disposal system. A trench system includes shallow, level excavation, usually one to five feet deep and one to three feet wide. Gravel or crushed rock fills six inches of the bottom. Perforated distribution piping is laid over the gravel and more rock is placed over the pipe.

Table 5-5: Alternate Disposal Systems Soil Suitability

Disposal Technique	Criteria				
	Percolation Rate (in/hr)	Depth of Bedrock (ft)	Topography	Groundwater Depth (in)	Land Use
Rapid Infiltration	>0.2	>5	<10% Slope	>72	Open Space Crop Land
Spray Irrigation	>0.06	>5	<15% Slope	>72	Open Space Crop Land Partially Forested
Subsurface	>2.0	>5	<10% Slope	>36	Open Space Crop Land

The following assumptions are also used to estimate land area requirements:

- Rapid infiltration systems – loading rate of 2.5 gal/day/ft^2
- Spray irrigation systems – application rate of 0.2 gal/day/ft^2
- Subsurface disposal systems – loading rate of 1.2 gal/day/ft^2
- Rapid infiltration and spray irrigation systems include a 200-foot buffer zone on all sides.
- Subsurface disposal systems require a buffer of 50 feet on all sides.

5.5.2 Wastewater Treatment Plants

Commercially available wastewater treatment plants or "package plants" are sold as pre-fabricated units or in easily assembled components. They are available capacities up to 1.0 mgd but are not commonly used for flows of greater than 200,000 gpd. These units have higher manpower requirements associated with their use than other community systems. They cannot be installed and expected to run by themselves. Daily attention is required, and anything less will result in an inefficient operation. Although these systems are capable of providing nitrified/denitrified effluents, it is assumed that a secondary effluent will be the required treatment level at this time.

With consideration to the large number of treatment alternatives available, a screening level evaluation would have to be conducted to include those alternative technologies that have a history of use in similar applications, have gained regulatory approval, have reliably met discharge limits and are comparatively cost effective. Alternative treatment technologies considered in this study include fixed activated sludge (FAST), rotating biological contactors (RBC), and sequencing batch reactors (SBRs).

Fixed Activated Sludge Treatment (FAST)

The FAST system is a submerged aerobic fixed film process using corrugated PVC media as the site for microbial growth. Airlifts are used to circulate and transfer oxygen into the tank contents. The turbulent, completely mixed process provides high-rate circulation and excess oxygen to the biota. Sludge settles and is stored in a zone below the media. A separate clarifier is not required. The complete treatment system includes anoxic tanks to settle solids, FAST units for biological treatment, ultraviolet disinfection, and effluent disposal to a ground discharge site. Liquid sludge is treated off-site at an incinerating facility.

Rotating Biological Contactors (RBC)

A rotating biological contactor is a fixed film biological reactor consisting of plastic media mounted on a horizontal shaft placed in a rectangular tank. Common media forms are disc-type made of Styrofoam and a denser, lattice-type made of polyethylene. While wastewater flows through the tank, the media, which is 40% submerged, is slowly rotated to provide contact of the biofilm that develops in the media with the wastewater. Rotation results in exposure of the film to the atmosphere and serves as a means of aeration. Excess biomass is stripped off by rotational shear forces and remains in suspension by the mixing action.

The overall treatment process consists of primary settling tanks for pretreatment, a flow equalization basin, RBCs, secondary clarifiers, and ultraviolet disinfection. Sludge produced is stored in an aerated holding tank. Liquid sludge is then trucked off-site for disposal by incineration.

Sequencing Batch Reactors

A sequencing batch reactor, often referred to as an SBR, is a form of the activated sludge process, the most widely accepted biological treatment method. It consists of a concrete tank, approximately 20 to 28 feet in depth, in which mixing, aeration, and sedimentation occur in various stages for a specific volume of wastewater.

Wastewater flows into a basin during a static fill stage and is succeeded by a mixing stage and a mixing/aeration stage, which both occur while the filling of the basin continues. Once the basin is filled, mixing and aeration continue just like in an aeration tank. The organic material contained in the wastewater is used by microorganisms as a source of food and energy to support their metabolic functions. Growth of the desired microbial populations is encouraged by maintaining aerobic conditions. Waste material is converted to cell growth, which is settled out during sedimentation just like in a secondary clarifier. This is followed by a decant stage in which treated wastewater can be recycled for additional treatment or can continue for disinfection and discharge. Sludge is collected and is returned to the primary clarifiers or is disposed of as excess sludge. Experience indicates that using SBRs followed by conventional sedimentation can result in removal rates greater than 90 percent for Biochemical Oxygen Demand (BOD) and suspended solids.

6. ALTERNATIVE ANALYSIS

6.1 General

This chapter discusses the wastewater treatment alternatives available for wastewater treatment for the critical needs areas identified in Chapter 3. Including average operational costs where they are part of a consideration and estimated capital costs for recommended sewage treatment for each of the critical needs areas.

6.2 Wilkinsonville/Route 146

Per earlier commentary, prior to the construction of sewerage facilities in the Manchaug/South Sutton area, the Wilkinsonville/Route 146 sub-area was the only sewered area. In 2002, approximately 8,000 LF a 12-inch diameter gravity sewer was constructed along Boston Road and Buttonwood Avenue between Club House Way and Route 122A (Providence Road). This sewer was installed by the developer of the Villas at Pleasant Valley condominium project. The 12-inch diameter sewer in Buttonwood Avenue flows into a manhole where the existing 10-inch diameter sewer picks up the flow and continues to the Blackstone Street Pump Station (BSPS). This pipe and the 8-inch force main that takes flow from the pump station into Millbury sewer connection are the critical links in the sewer system because they convey all of the flow generated within the Wilkinsonville/Route 146 sewer system to and from the BSPS. The existing 10” gravity line (See Figure 3-2) will need to be upgraded to a larger diameter pipe to handle future projected flow. Additionally, both this 10” gravity line and the 8” force main from the Sutton BSPS to Millbury are asbestos-cement (AC) pipes with a projected life span of 70 years max. At over 50 years old, and with one crack already, they need to be replaced to maintain uninterrupted service. To address the pipe age, location, and projected flow increase, one of two alternatives is recommended.

Alternative 1: Abandon the AC mains in place and install new properly sized PVC replacement mains next to the old lines. In addition, the existing pump station would be upgraded to handle projected flows.

Alternative 2: Construct a new properly sized pump station at the low spot on Providence Road and install new PVC force main from this pump station to Millbury. Additionally, a section of 12” gravity line would be installed from the existing manhole across from Buttonwood Ave. to the new pump station and a second length of gravity line would also be installed along Providence Road to pick up existing businesses north of the pump station including flow from the development of the 400+ acre former Aggregate property.

Approximate costs are shown in Table 6-2 A & B but there are other considerations as discussed below.

Table 6-2A: Cost Estimates Blackstone Street – Line Replacements & Upgrade Pump Station

	Quantity	Unit	Unit Price	Total
12-inch Gravity SDR-35 PVC	2,205	LF	$215	$474,075
8-inch Force SDR-21 PVC	4,785	LF	$130	$622,050
Pump Station Upgrade – 700 gpm				$342,000
Pumps & Motors (700 gpm, 35 hp each)	2	EA	$77,000	$154,000
Level Control System & Pump Control Panel	1	LS	$15,000	$15,000
Replace 14’ Slide Gate	1	LS	$4,000	$4,000
Telemetry System	1	LS	$5,000	$5,000
LP Generator, Pad, Fuel Tank & Auto Transfer Switch	1	LS	$46,000	$46,000
Variable Frequency Drive	2	EA	$12,000	$24,000

Electrical Service & Panel Upgrades	1	LS	$26,000	$26,000
Demo Existing Equipment	1	LS	$50,000	$50,000
Subtotal				$1,438,125
Contingency (20%)				$215,719
Potential Cost				$1,653,844

Table 6-2B: Cost Estimates Blackstone Street – New Lines & Providence Road Pump Station

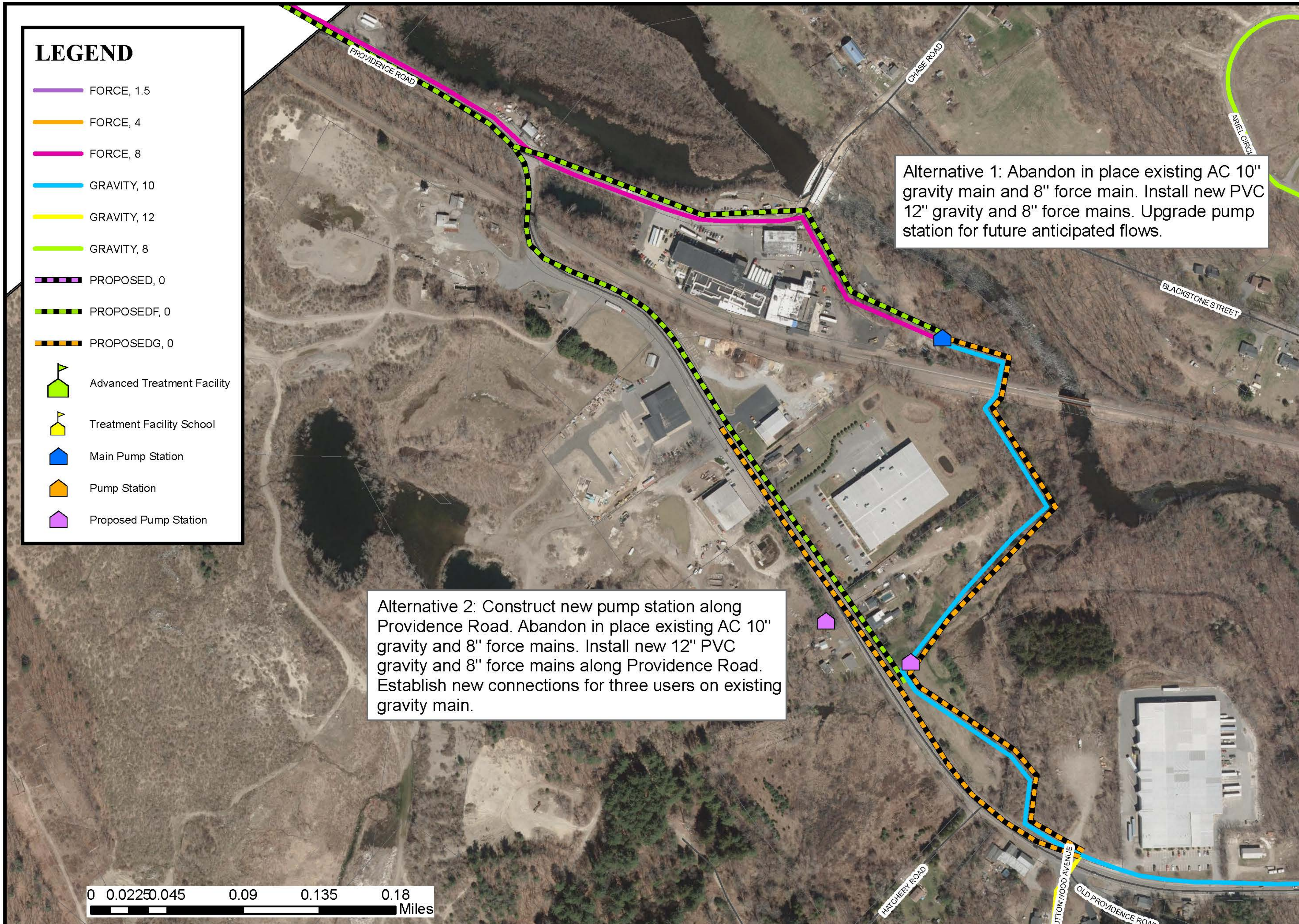
	Quantity	Unit	Unit Price	Total
12-inch Gravity SDR-35 PVC	691	LF	$215	$148,565
8-inch Gravity SDR-35 PVC	1,016	LF	$190	$193,040
8-inch Force SDR-21 PVC (Sutton Section)	2,923	LF	$130	$379,990
8-inch Force SDR-21 PVC (Millbury Section)	2,518	LF	$130	$327,340
4' diameter manholes 6-10'	10	EA	$8,000	$80,000
Air release manhole	2	EA	$4,800	$9,600
New Pump Station	1	EA	$830,000	$830,000
Abandon in place AC Gravity and fill with flowable fill	2,205	LF	$4	$8,820
Abandon in place AC Force cut and capped	5,085	LF	$3	$15,255
Plug & Fill Existing Manholes to Abandon	14	EA	$2,500	$35,000
Demo Pump Station fill with gravel and loam/seed	1	EA	$47,000	$47,000
Traffic control, police detail, and signage				$100,000
Paving incl. sawcut, cold plane, gravel base, trench pave, and curb to curb overlay				$827,480
Subtotal				$3,002,090
Contingency (20%)				$450,314
Total Probable Cost				$3,254,404
This is a 2021 estimate from an actual construction company bidding in today's conditions.				

In addition to costs the following factors need to be considered with respect to these alternatives:

Alternative 1: The existing AC pipe runs under the railroad and is not sleeved. To install an additional main and undertake construction within railroad property permissions will have to be obtained from the new owners of the railroad Genesee-Wyoming. Based on past attempts to communicate with the railroad and numerous reports from other local and regional officials, this task will be difficult and costly at best and not possible at worst. Also part of the consideration for Alternative 1 is undertaking construction of new lines and alterations to the pump station very close to the Blackstone River and its tributary Cold Spring Brook which will also involve permitting time and additional funds.

Alternative 2: Will require an enlarged easement from the same parties to the current sewer easement or an easement from the owners of the Aggregate properties. There is preliminary agreement from the new owners of Aggregate that should the existing easement grantors not wish to expand the easement to accommodate a new pump station, they will grant the easement on their property as it is of benefit to them. This alternative will also involve wetland permitting but other than getting a new line over or under Cold Spring Brook, this alternative moves the pump station over 700' from the Blackstone River and with nearly all of the line work anticipated to occur within the existing roadway right of way and much under existing pavement, wetland permitting is expected to be less costly and time consuming.

It is likely development flows from the businesses north of Buttonwood Ave. as well as the former Aggregate property can be accommodated with either alternative, although there are two or three that may be left out if only a gravity line runs along Providence Road.



WILKINSONVILLE/ROUTE 146 ALTERNATIVES

Figure 6-1

6.3 Sutton Center, Sutton School Campus, and Lake Singletary

Sutton Center is a critical needs area due to the severe slopes, clusters of smaller lot sizes, high groundwater, and depth to bedrock. Like several residential homes in this area, the Sutton Town Hall onsite septic has been compromised in part by these constraints. This issue must be dealt with to prevent environmental and operational issues. Additionally, due to maintenance and looming capital costs of the aging on-site wastewater treatment plant that services the school complex, the Town has undertaken a careful evaluation of alternatives for wastewater treatment in this critical needs area.

The Town of Millbury constructed an 8-inch diameter sewer to extend sewer service to the Sutton Town line at Singletary Road a few years ago. Due to capital costs, the Town of Millbury installed the sewer at a higher elevation than that which would have allowed the Town of Sutton to make a gravity sewer connection – The Town of Sutton attempted to negotiate with the Town of Millbury to pay 100% of the added cost of installing the sewer deeper, at an elevation that would allow Sutton to connect to the sewer without the need for pumping. However, Millbury also wanted Sutton to pay 60% of the capital cost of constructing lateral sewers in Millbury including most that would not carry Sutton's flow. Negotiations reached an impasse and Millbury proceeded with the shallower sewers. Therefore, all flow from this needs area will flow east on Boston Road and ultimately discharge to the BSPS.

Alternative 1: Rehab of the on-site waste water treatment plant at the Sutton School Campus and installation of a new septic system at Sutton Town Hall.

Alternative 2: Extension of existing public sewer from its terminus along Boston Road approximately 2 miles through Sutton Center to the School campus including a new pump station along Boston Road and at the School Complex.

Table 6-3A: Cost Estimates for Sewer Line to Sutton Center/School Campus & Adds

Sutton Center/School Campus Sewer Cost Estimate 2019 (Core Project)

	Quantity	Unit	Unit Price	Total
8-inch Gravity SDR-35 PVC	2,300	LF	$413.83	$951,809
4-inch Force SDR-21 PVC	7,650	LF	$287.00	$2,195,550
Boston Road Pump Station				
Wet Well				$65,000
Valve Pit				$48,750
Pumps & Electrical				$113,750
Generator				$32,500
Site Work				$65,000
School Campus Pump Station				
Wet Well				$35,000
Valve Pit				$26,250
Pumps & Electrical				$61,250
Generator				$17,500
Site Work				$35,000
Subtotal:				$3,647,359
Contingency (15%)				$599,839
Total Probable Cost				$4,247,198
This is a 2019 estimate from On-Site Engineering. The unit cost include construction related costs like manholes, traffic control, and paving.				

Sutton Center/School Campus Sewer Line Cost Estimate 2019 (Adds)

	Quantity	Unit	Unit Price	Total
Uxbridge Road 8-inch Gravity SDR-35 PVC	780	LF	$422	$329,160
Singletary Ave. 2-inch Force SDR-21 PVC	1,730	LF	$296	$512,080
Subtotal				$841,240
Contingency (15%)				$126,186
Total Probable Cost				$967,426
This is a 2019 estimate from On-Site Engineering. The unit cost include construction related costs like manholes, traffic control, and paving.				

Table 6-3B: Cost Estimates for Rehab of Onsite WWTP at School Campus and Adds

Cost Estimates for Rehab of Onsite WWTP at School Campus (Core Project) & Town Hall Septic Rehab

ITEM	Quantity	Unit	Cost	Notes
MBR Tank Rehab	1	EA	$170,000	Clean & Re-coat
MBR Tank Replace	1	EA	$1,000,000	New Tank - $460,000 + $40,000 transport Plus tank demo or tank removal with roof removal, install costs including electrical and other labor and materials as well as pumping during replacement
Town Hall Septic Rehab	1	EA	$150,000	Includes engineering cost

Cost Estimates for Rehab of Onsite WWTP at School (Adds)

SCHOOL WWTP REHAB	Quantity	Unit	Cost	Notes
Control Panel Upgrade MBR	1	EA	$20,000	20-25 y.o. upgrade will provide for remote monitoring and operation other benefits?
Control Panel Upgrades - Gray Water	1	EA	$20,000	20-25 y.o. upgrade will provide for remote monitoring and operation other benefits?
Chlorine Dosing System	1	EA	$12,500	System that reduces running time of pump to reduce pump rehab and replacement costs
Methanol Dosing System	1	EA	$5,000	This is the biggest permit compliance issue. Due primarily to issues with the feed pump, methanol is inconsistently fed to the plant causing permit violations for

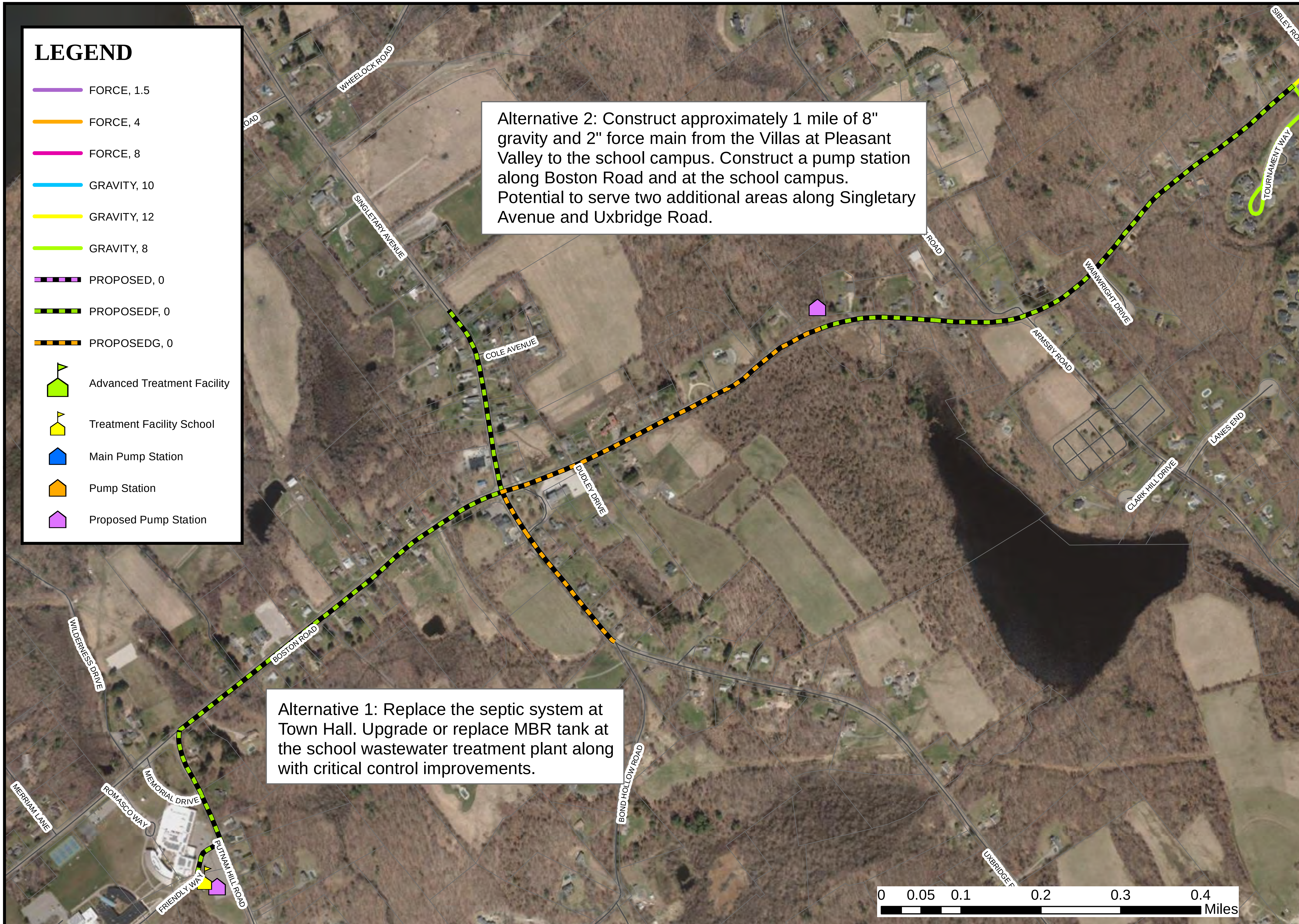
Alternative 1:

In depth evaluation of wastewater treatment plant related expenditures by the Schools accounts payable department for the period of FY18-FY20 shows average expenditures of $145,000 annually. These costs include the contract for operation of the plant as well as regular maintenance and equipment costs such as replacement of membrane filters, electricity, pump and blower maintenance/replacement, replacement of UV disinfecting bulbs, building maintenance, and so forth. These costs will be maintained and likely increase at least incrementally over time.

Comprehensive rehab of the on-site treatment plant would provide another 15-20 years of service. Additionally, recent evaluation of testing results from the leach field for the system indicates it is still performing well. Continued utilization of the schools on-site WWTP will retain the ability to continue use of gray water in the school complex and will also return water utilized at the school campus directly back onto the on-site aquifer and into the sub-watershed from which it is being withdrawn. Reuse of wastewater will also eliminate the need to draw from a new on-site well.

Alternative 2:
The $145,000 in annual expenses related to WWPT operation will be eliminated. These expenses will be partially replaced mainly within with expenses related to the maintenance of a new well and more substantially within the sewer department budget with the expense of operating and maintaining two new pump stations and 2 miles of sewer lines.

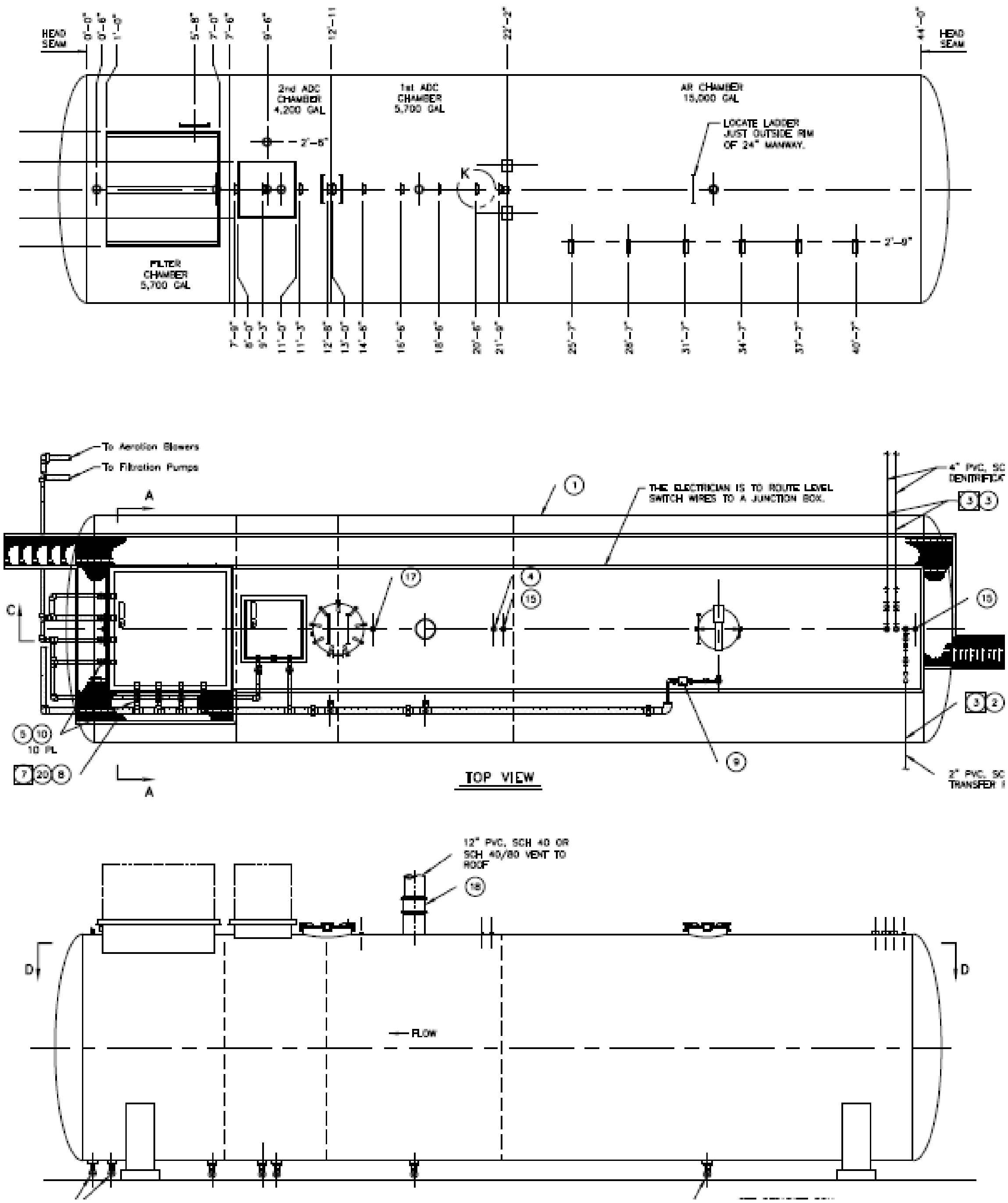
Water withdrawn from on-site wells will be discharged ultimately to the Upper Blackstone Water Pollution Abatement WWTP and while it will remain within the larger Blackstone River Watershed post treatment, it will be lost from this sub-watershed and the on-site aquifer which would likely effect water levels on the site and in this sub-watershed over time. Eliminating processed gray water will also require the use of a new well on this site.



SUTTON CENTER/SCHOOL CAMPUS ALTERNATIVES

Figure 6-2

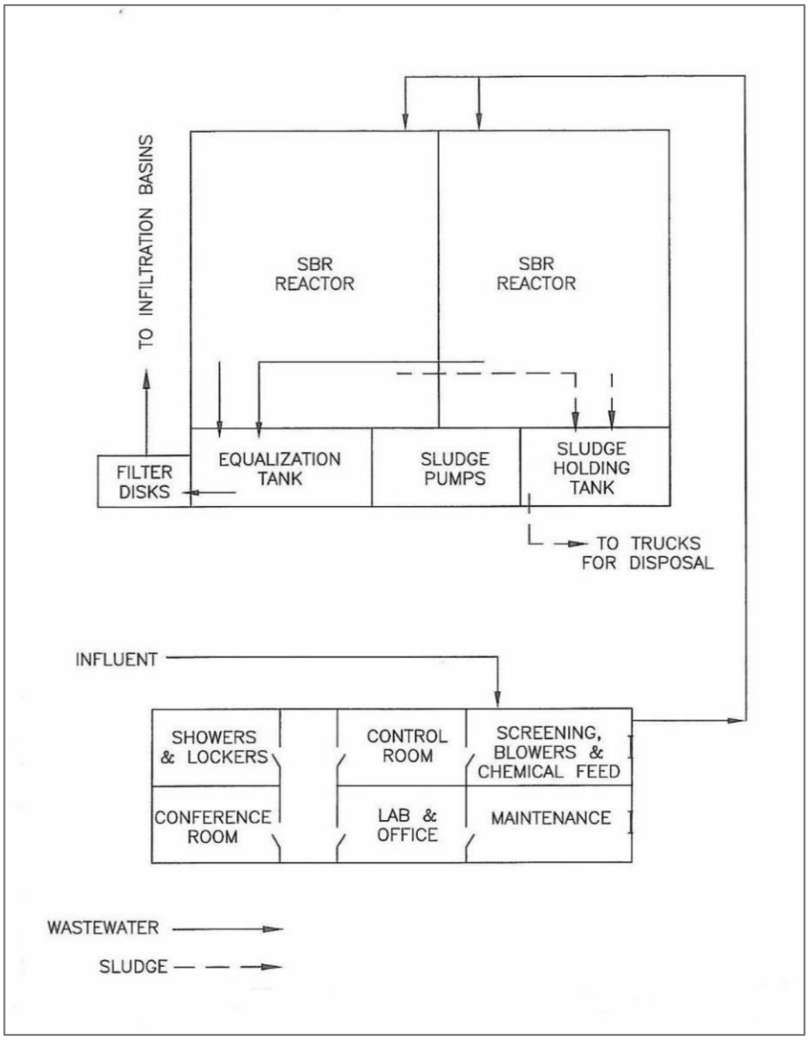
Figure 6-3: MBR Tank at School Campus WWTS



6.4 Manchaug/South Sutton

The existing sewer system in the Manchaug/South sub-area is comprised of 15,373 LF of 8-inch gravity sewer, 7,225 LF of 10-inch gravity sewer, 15,183 LF of mostly 4-inch force main, five pump stations, and an 110,000 gpd capacity SBR wastewater treatment plant. A schematic layout of the treatment process is illustrated on Figure 6-3.

Figure 6-4: Schematic Diagram of Sequencing Batch Reactor Treatment Process



The plant has a Groundwater Discharge Permit. The discharge limits are 30 mg/L BOD, 30 mg/L suspended solids, 10 mg/L Total Nitrogen, and 200 colonies/100 ml Escherichia coli. Because the site is in a designated Zone III, there is no requirement for disinfecting the wastewater prior to discharge. Plant effluent is discharged into the ground via infiltration basins. Sludge generated in the treatment process is removed from the plant's sludge holding tanks and trucked to the Upper Blackstone Valley Treatment Plant where it is processed. Approximately 7,700 to 8,000 gallons of sludge is removed five times per year.

In 2016 the Town allowed a sewer extension to Walmart, in Northbridge, but anticipates reserving the remainder of existing flow to serve development primarily within Sutton. Potential flows from open areas both east and west of Route 146 are included in the calculations in Chapter 4. Based on these projections, the design capacity of wastewater treatment plant may likely be exceeded sometime beyond the year 2030. Sewer line extensions and necessary plant upgrades in this needs area are anticipated to be precipitated by private commercial and industrial developments, therefore the Town will look to these entities to fund these improvements and/or partner with them to apply for grants if they bring beneficial job and tax base growth.

7. PROJECT FINANCING

7.1 Funding/Financing Information

This section is intended to discuss various methods currently available to fund the capital improvements outlined in the rest of this CWMP.

As the capital cost of all of the proposed projects is significant, the Town will need to develop a Capital Cost Recovery Plan. Typically, large wastewater infrastructure projects are funded over time through loans or one-time grants. Projects could also be funded by private developers and /or through partnerships with private developers. Loan and grant options are detailed below. This section is substantially different than what was presented in the 2002 CWMP. It covers the main state and federal loans and grant programs that are available for Towns to fund for wastewater projects. It also covers how the towns can apply the funds.

7.2 Funding/Financing Options

Loans are generally payable over a designated time frame and at given interest rate based on the specifics of each program. The time periods vary, but they are usually between 20 and 30 years. The interest rates also vary with the specific programs and how they are bonded. There are several loan mechanisms available.

The major programs used for wastewater in Massachusetts include the following:

State Revolving Fund (SRF) and Massachusetts Clean Water Trust (MCWT)

SRF is a fund administered by a U.S. state for the purpose of providing low-interest loans at a current rate of 2.0 percent, for investments in water and sanitation infrastructure (e.g., sewage treatment, storm water management facilities, drinking water treatment) as well as for the implementation of nonpoint source pollution control. MassDEP oversees the SRF Program with applications submitted for funding in late summer of each year. The SRF is the largest Program used for Massachusetts wastewater infrastructure, as well as planning.

The SRF Program, working in conjunction with the MCWT provides and manages the Community Septic Management Program (CSMP). CSMP provides loans to Massachusetts' communities to assist homeowners in repairing failed on-site wastewater disposal systems. The Trust makes low interest rate loans to communities and the communities, in turn, loan the funds directly to homeowners for up to 20 years. Loans to homeowners are secured through a lien on the property. This program allows municipalities to provide access to capital for home repair at a subsidized interest rate. The Trust has been able to finance over $93 million in loans since the program's inception, resulting in more than 7,000 on-site wastewater disposal system repairs.

Refer to the MassDEP website for additional information on the SRF Program here https://www.mass.gov/state-revolving-fund-srf-loan-program.

U.S. Department of Agriculture (USDA) Rural Development Loans

The USDA provides loans and grants for environmental projects, including wastewater management for those rural communities that meet income and population guidelines. Terms go out 40 years with rates following market trends. There are grant components to this financing, with all dependent on socioeconomics of the community as well as population trends. Refer to the USDA website for additional information on this Program here https://www.rd.usda.gov/.

7.3 Capital Cost Recovery Options

Betterment Assessment or Equalized Individual Units (EIU)

If a community expects the new users to cover capital costs of the sewer, a special “tax” is typically assessed to each property. Communities are allowed, under Massachusetts law, to charge a one-time "betterment" fee for construction of lateral sewer systems. These fees can be paid by the owner of the bettered property either as a one-time payment or it may be amortized over time, typically with the same terms as the borrower's that the Town uses to finance the construction. Betterments can be calculated based on the front footage (frontage) of the property bettered or on an equivalent dwelling unit basis.

At the local level, loans are currently funded via a tax assessment on all town taxpayers approved through the Town Meeting process. The reasoning for spreading costs over the entire tax base is that these investments provide benefits to the whole Town and to individual properties serviced by the facilities.

Under the frontage method, the total costs of the construction are spread equally over the total frontage of the project. The betterment to each lot will vary in proportion to the frontage of the lot. For corner lots, where betterment lays on two frontages, the longer frontage is used. Under equivalent dwelling unit basis, each single-family property abutting the new sewer pays the same amount. Commercial or other properties are converted to "equivalent" residential units based on the Title 5 standards. The Sutton betterment fees are proposed to be based on the equivalent unit basis.

Some communities obtain revenue for both capital construction costs and operation costs through the general tax rate. Debt service for construction of capital sewerage facilities is currently spread over the Town’s overall tax base and is not allocated directly to sewer system users. The explanation for this option is that these investments provide benefits to the whole Town of Sutton and to individual properties serviced by the facilities.

The Betterment process is complex and requires a thorough vetting with not only the Town staff that will manage the Program, but also the users who will be assessed. This process is recommended to be part of the Public Outreach Program.

General Tax Revenue

7.4 Grants

The MassWorks Infrastructure Grant Program

This program provides a one-stop shop for municipalities and other eligible public entities seeking public infrastructure funding to support economic development and job creation. The MassWorks Program represents an administrative consolidation of several, smaller former grant programs:

- Public Works Economic Development (PWED)
- Community Development Action Grant (CDAG)
- Growth Districts Initiative (GDI) Grant Program
- Massachusetts Opportunity Relocation and Expansion Program (MORE)
- Small Town Rural Assistance Program (STRAP)
- Transit Oriented Development (TOD) Program

U.S. Economic Development Administration (EDA)

EDA grants will partially fund public works projects and planning projects with demonstrated economic development benefits. For example, EDA has funded the development of water and sewer facilities, roadway infrastructure construction, technology infrastructure, training facilities, and even capitalized wastewater revolving loan funds.

Refer to Attachment D for funding/financing information.

8. PUBLIC OUTREACH

The Town of Sutton has developed a public outreach plan to keep the public apprised of the Project happenings. This Plan is a collaboration between Town Administration / Board of Selectmen and the Sewer Department and Planning Department (Project proponents). Outreach to date includes public meeting discussion related to funding of the CWMP Update, and in preparation for Town Meetings and Ballot Overrides, presentations at regularly scheduled Board of Selectmen and Sewer Commission Meetings. Attachment E contains materials and presentations to date.

The Project proponent carries out Project execution and technical communication with the general public, interest groups and agencies having jurisdiction.

Currently, the Town Administration/Board of Selectmen, and Sewer Department, in coordination with the Town Planning Department, coordinate CWMP updates at various Board of Selectmen meetings at the Town Hall. These meetings are live taped and can be viewed live or on loops that run on local Cable TV. Postings for meetings can be viewed at Town Hall for specific dates, times, and locations. On-going regular update and work sessions are also being held amongst the consultant and the Town as needed.

Several informal presentations have been held throughout the Project for presentation and review by various entities having jurisdiction over or interest in the project. Final presentations had been postponed due to the onset of the COVID 19 protocols set by the Governor of the Commonwealth. The Town is currently scheduling a final round of presentations before the Board of Selectmen and Sewer Commission.

The Town's CWMP consultant, Woodard & Curran, has provided the Town with a three-ring Depository Record binder for placement in the Town for general public viewing. The Depository consist of copies of all reports filed on the project along with the Binder. The Binder contains information specific to the project including:

- Summary of CWMP Update process to date
- Public Participation Plan
- Public Meeting Records
- Meeting Minutes
- Mailing List (for any interested party)
- Responsiveness Summaries
- Media Coverage
- Reference Materials
    - Regulatory Information
    - MADEP State Revolving Fund Information
- ATTACHMENT A Scope of Services

The current Depository is included in the Planning Director's Office located at Town Hall:

Address:
4 Uxbridge Road
Sutton, MA 01590

Hours of Operation:
Mon – Thurs: 8:00 am to 4:00 pm
Friday: 9:00 am to 12:00 pm

Phone:
(508) 865-8729

Fax:
(508) 865-8721

The Town, through the Board of Selectmen and Board of Sewer Commissioners, has and will continue to distribute periodic fact sheets and mailings to the Mail List as a minimum.

Additional meetings will be scheduled as needed and will be advertised and posted in Town Hall.

The Sewer Commissioners through the Sewer Department maintain an updated webpage at www.suttonma.org/sewer-dept with a number of informational areas. This includes regular updates on the following:

- Calendar of Scheduled Meeting/Presentations
    - Agendas
    - Meeting Minutes
- Information on staff contacts
- CWMP Updates
- Process to Abandon a Septic System when connecting to sewer (310 CMR 13.354)
- Fats, Oils and Grease Program Outreach materials
- Sump Pumps Outreach Materials
- Process of How Get Connected to Sewer
- Sewer Application

9. RECOMMENDATIONS

9.1 General

Replacement of the Blackstone Street lines and addressing the defunct septic system at the Town Hall and the aging wastewater treatment infrastructure at the School Complex are priorities that should be pursued as soon as possible. Other than these three projects, there is no critical environmental need for the Town of Sutton to initiate other potential wastewater projects mentioned in this CWMP. However, private development may afford the Town with the opportunity to extend sewers in currently serviced areas as well as provide new service to limited areas such the commercial/industrial land east and west of Route 146 in South Sutton. In any case, Sutton needs to be cautious of the impact that additional wastewater flow might have on existing facilities and the environment and avoid haphazard expansion.

In accordance with Title 5 Rules and Regulations, if a private on-site wastewater disposal system fails and municipal sewer service is available, the owner must tie into the system. The Town of Sutton has no current plans to implement a mandatory sewer connection program beyond the health-related provision(s) of Title 5. The Town of Sutton will carefully track system repairs and replacements in order to identify clusters of failures that would impact plans for future sewer extensions.

It is recommended that Sutton continue to maintain and upgrade its ArcGIS sewer system map. The map could be expanded to include attributes such as pipe slope, pipe material, date installed, etc., and manhole data could be expanded to include attributes such as rim elevation, invert elevations, type of structure. The map could also be expanded to include storm drainage and water systems.

The IMA with the Town of Millbury should be updated as Sutton's flows approach 90% of current allotment. Regardless of the potential additional flow requirements The Town of Sutton should begin in 2030 to review and update this Agreement as it expires in 2032. The Town of Sutton should also maintain and update its IMA with the Town of Northbridge as necessary and also consider the value of entering into an IMA with the Town of Douglas.

9.2 Wilkinsonville/Route 146

Considering cost and environmental impacts as well as complications negotiating installation of a new 12" main adjacent to the 10" un-sleeved transite pipe beneath the railroad, the recommendation to address issues in this sub-area is as follows. The Town of Sutton should undertake design and construction of a new pumping station along Providence Road sized for future flows and a combination of 12" gravity main from the manhole at 44 Providence Road into a new pump station and minimum 8" force main out of this pump station to the Millbury pump station. Additionally, an adequately sized gravity line should be installed to pick up users north of the pump station abutting Providence Road. Lastly, existing users tied into the cross country line need to be hooked into the new lines. Lastly, the existing pump station should be demolished and all pipe and manholes emptied, filled, and abandoned in place.

9.3 Sutton Center/School Campus

Considering cost and environmental impacts, the Town of Sutton should undertake rehab of the MBR Tank and other necessary components of the School Campus WWTS as soon as possible. After which, the Town should procure a design for a new septic system for Sutton Town Hall and proceed to replace this system as soon as possible.

9.4 Other Needs Area Recommendations

Lake Singletary

Although the most recent studies conducted by the Lake Singletary Association do not point to septic systems as the primary driver of nutrient loading and degradation of the Lake, the Town should continue to track septic failures and work with the Lake Association to continue monitoring of water quality.

Manchaug/South Sutton

As additional development comes on line in Manchaug and South Sutton and the volume of wastewater approaches the capacity of the Advanced Wastewater Treatment Plant, the Town should undertake an engineering study to evaluate the plant and determine the scope of upgrades necessary to provide increased plant capacity. If private development drives sewer flow increases the Town should look to these users to fund, at least in part, upgrades to the system.

9.5 Comprehensive Wastewater Management Plan Review and Update

Review and update of the Comprehensive Wastewater Management Plan should begin in 2031 as the Millbury/Sutton IMA and current version of the CWMP near expiration. In addition to providing continuity of planning, maintaining an updated plan can help leverage various types of funding.

9.6 State Environmental Permitting

As previously discussed, due to a 2001 Administrative Consent Order (ACO) for the high-needs Manchaug area, the Town submitted an Expanded ENF and Phase I Waiver Request to MEPA along with the updated 2002 CWMP. MEPA subsequently issued an ENF Certificate and Phase I Waiver to the Town to allow construction of the Manchaug sewer system along with Special Procedures including subsequent state environmental permitting for additional sewer construction as detailed in the 2002 CWMP update. They also approved the 2002 CWMP in 2003 which was part of the Phase 2 requirements.

Consultation with MassDEP and MEPA

Since the 2002 ENF Certificate and Phase I Waiver, the State has updated its MEPA regulations. Additionally, permitting and oversight for sewer expansions under 10 miles have been ceded to local authorities absent other MEPA triggers. Further, as noted in the Introduction of this CWMP, the Town's understanding of the feasibility of and need for wastewater expansion within Sutton has shifted. Sutton does not intend to undertake any sewer expansion during the term of this CWMP except for those which are environmentally necessary and/or fiscally prudent. These potential projects are limited to those recommended in this Chapter.

It is the Town's intent to present this Plan to the Massachusetts Department of Environmental Protection (MassDEP) and Massachusetts Environmental Policy Act (MEPA) Office for approval and to seek input and guidance on required permitting with respect to the significantly less impactful recommendations of this 2018 CWMP.

ATTACHMENT A: 2002 CWMP & RELATED DOCUMENTS

Town of Sutton, Massachusetts

COMPREHENSIVE WASTEWATER MANAGEMENT PLAN UPDATE

Draft Submitted: August, 1998

SEPTEMBER, 2002

Submitted by:

BETA Group, Inc.

Engineers • Scientists • Planners

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CHAPTER 1 – INTRODUCTION

1.1 Purpose and Scope

A Wastewater Facilities Plan is a 20-year planning document intended to provide direction to ensure that wastewater in a given community is properly managed throughout the planning period. Through a systematic evaluation of alternatives considered feasible in view of demographic, topographic, hydrologic, and other characteristics in the planning area, the plan will demonstrate that the recommended alternative is the most economical means of meeting water quality and public health requirements, while recognizing environmental and other non-monetary factors. The Facilities Plan will also demonstrate that the recommended plan is implementable from financial, legal, and institutional perspectives.

For the Town of Sutton, evaluations of the existing wastewater collection system and pumping stations will be conducted and deficiencies within these systems will be identified. Unsewered areas of the Town will also be evaluated with regard to their need for improved wastewater management practices.

The Facility planning process was derived from provisions set forth in Section 201 of the Clean Water Act of 1972. This planning process was a requirement of the expired "Construction Grants" program that used federal grant money to fund the construction of wastewater treatment facilities. This requirement has been carried forth by many states, including Massachusetts, under the State Revolving Fund (SRF) program. The SRF is a loan program administered by the individual states and subsidized by the federal government. Rules and regulations of the SRF program require that for any project to be eligible for funding, it must be recommended in a State approved Facilities Plan or other similar document where financial and environmental impacts are analyzed and evaluated.

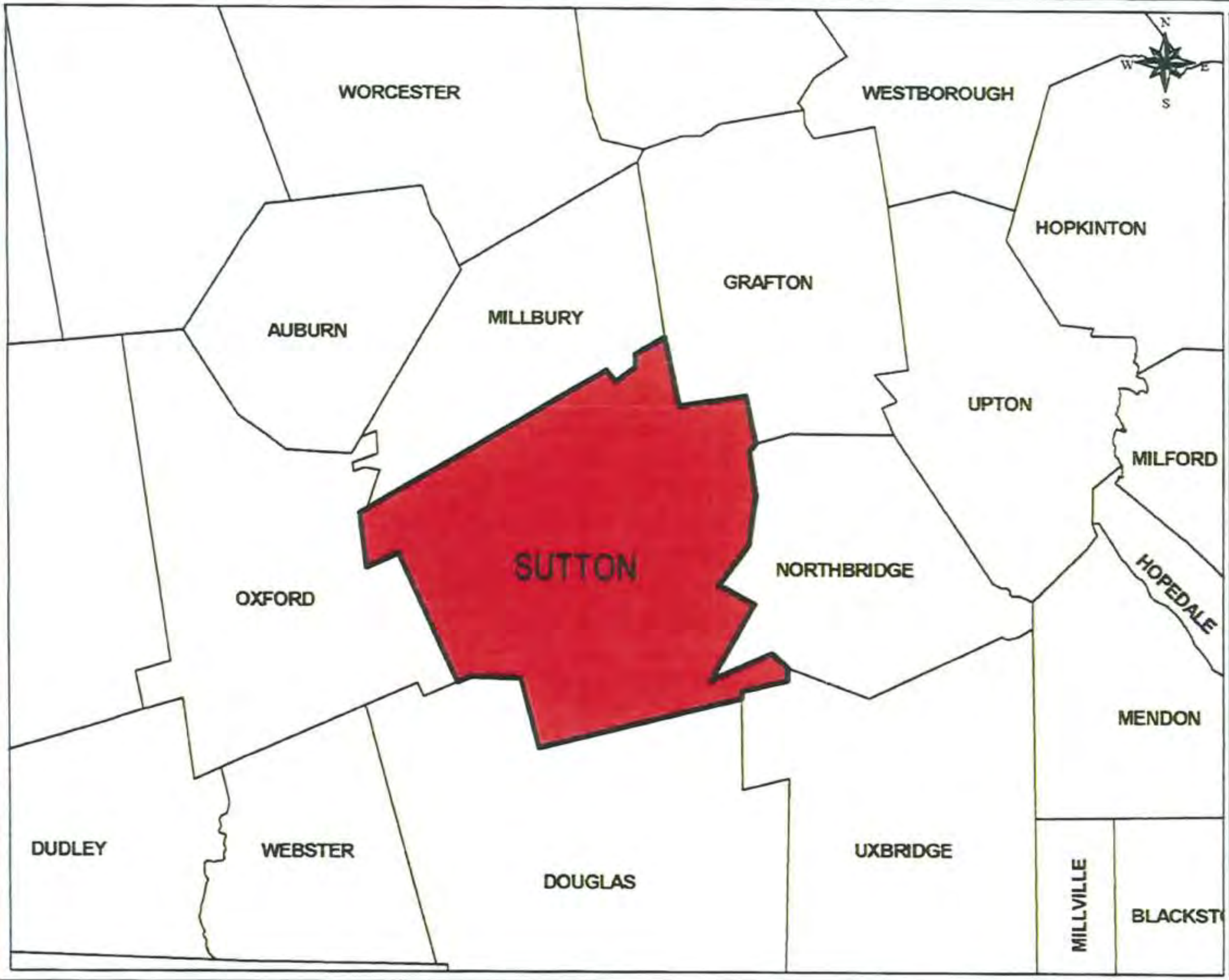
1.2 Study Area Description

The study area for this facilities plan is defined as the entire Town of Sutton, which is located in the historic Blackstone River Valley region of south-central Massachusetts. Sutton is situated approximately 10 miles south of the City of Worcester and is bordered to the north by the Towns of Millbury and Grafton, to the east by the Towns of Grafton and Northbridge, to the south by the Towns of Douglas and Uxbridge, and to the west by the Towns of Douglas and Oxford. The planning area is illustrated in Figure 1-1 and will be discussed in further detail in succeeding sections of this report.

The entity conducting the planning associated with this facilities plan is the Sutton Sewer Commission. The Sewer Commission is responsible for the supervision, planning, operation, maintenance, extension, and improvement to the centralized wastewater collection, disposal, and treatment systems. The Sewer Commissioners are appointed by the Town's Board of Selectmen.

Sutton is primarily a rural residential community covering approximately 34 square miles. It consists of six major village subareas: Sutton Center, Manchaug, Wilkinsonville, Ramshorn Pond, West Sutton, and South Sutton, as shown in Figure 1-2. Route 146, which is the main highway link between the cities of Providence, Rhode Island and Worcester, Massachusetts, traverses through Sutton from north to south dividing the town into two sections. The majority of the existing commercial and industrial development in Sutton is located along Route 146. This region also offers the greatest potential for future development of commercial and industrial land.

The Wilkinsonville subarea, located in the northeast section of Sutton, is currently the only area that receives Town sewer service. Primarily for this reason, Wilkinsonville has experienced the highest rate of residential development in recent years. Wastewater needs in the remaining areas of town are served by individual or community on-lot subsurface disposal systems. Sutton does not own or operate its own wastewater treatment facility. Wastewater generated in the Wilkinsonville area is conveyed to the



Town of Sutton
Massachusetts

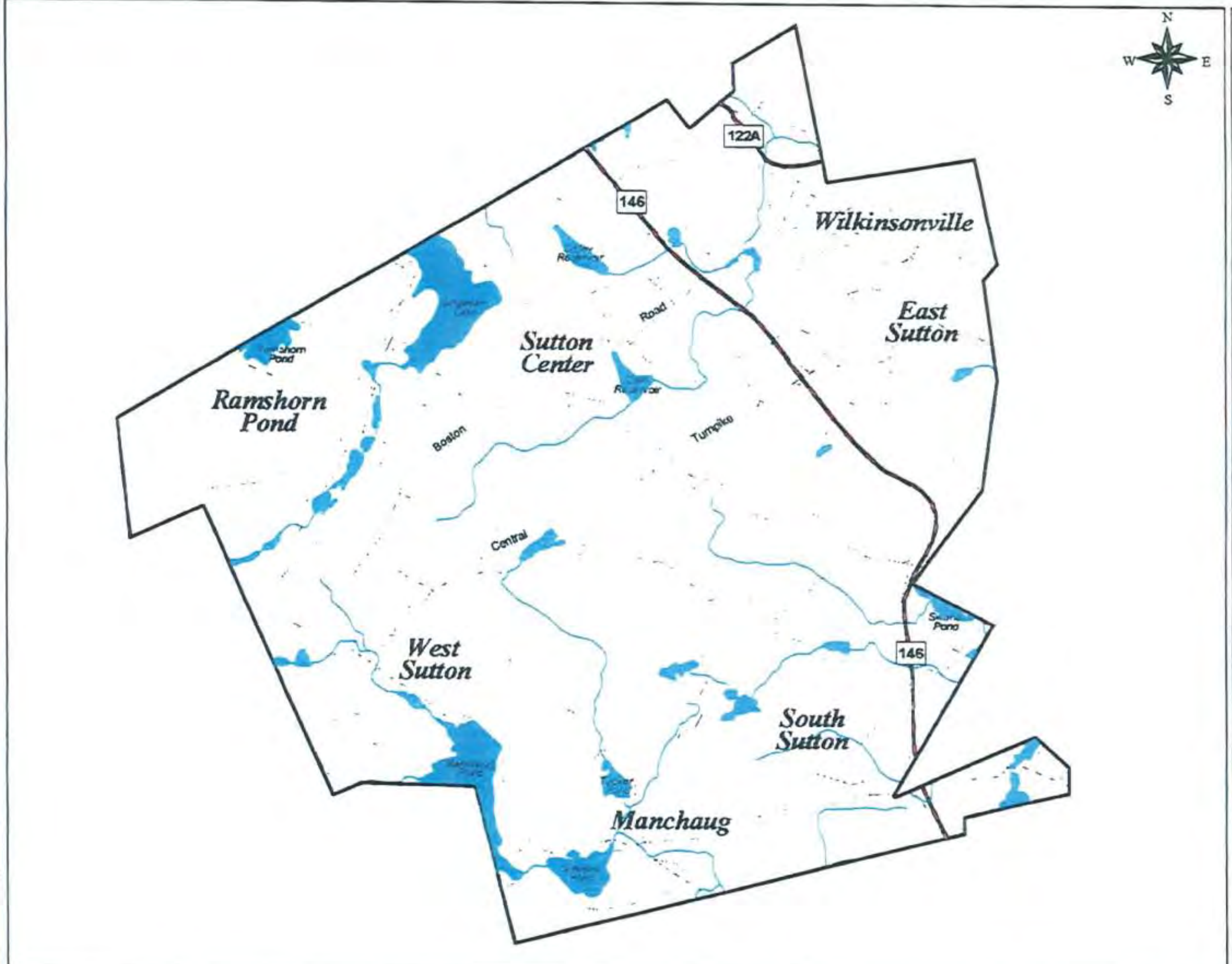
Wastewater Facilities Plan

Figure 1-1

Planning Area

Scale: NTS
Data Source: MassGIS/CMRPC
Date: November 2001

BETA Group, Inc.



Town of Sutton
Massachusetts

Wastewater Facilities Plan

Figure 1-2

Major Village Subareas

Scale: NTS
Data Source: MassGIS/CMRPC
Date: November 2001

Town of Milbury for treatment. The contractual agreement that is in-place between Sutton and Millbury allows for flows up to 100,000 gallons per day (gpd) of domestic wastewater and 26,000 gpd of industrial wastewater.

Since the initial wastewater collection system was constructed, it has been expanded to service several subdivisions that were developed in the northeastern section of Town during the 1980's and 1990's. The overall system contains three pump stations, approximately 5,200 linear feet of force mains, and 52,000 linear feet of gravity sewers.

1.3 Previous Reports

Several reports and studies were reviewed to establish historic and baseline conditions in the planning area. The most significant of these documents was the Town's Facilities Plan that was prepared in 1983 by Morganroth Engineers. This report conducted a brief analysis of the characteristics of the planning area and recommended sewering of the areas with the most significant need. With the exception of a small amount of sewer expansion in the Wilkinsonville area, none of the recommendations have been implemented.

In addition to the above, the following reports were reviewed for their impact on the Plan.

Report on Proposed Sewerage System for the Town of Sutton 1971

This report proposed a sewer system for the Town based on the existing need for that period of time.

Town of Sutton – Sewer Regulations 1978

These regulations govern the building of sewers and the connections, the use of the public sewer, the penalties for violating these regulations, and other factors that effect efficient operation of the sewer system.

Town of Sutton Planning Board Master Plan 1992

This document studies the most appropriate ways to use land for residential, commercial, and industrial purposes.

Current Water Quality Data Management Plan for Lake Singletary 1995

This study examines the need to maintain the integrity of Lake Singletary as a multiple use resource to the Town of Sutton.

Zoning By Laws of the Town of Sutton 1996

This document serves as a guide to encourage the most appropriate use of land, prevent overcrowding, conserve the value of land, and preserve and increase the amenities of the Town.

Route 146 Regional Master Plan Update

Route 146 is the major link between Providence and Worcester. The area has been evaluated for future economic development while trying to maintain the natural and cultural resources.

CHAPTER 2 – EXISTING CONDITIONS

2.1 General

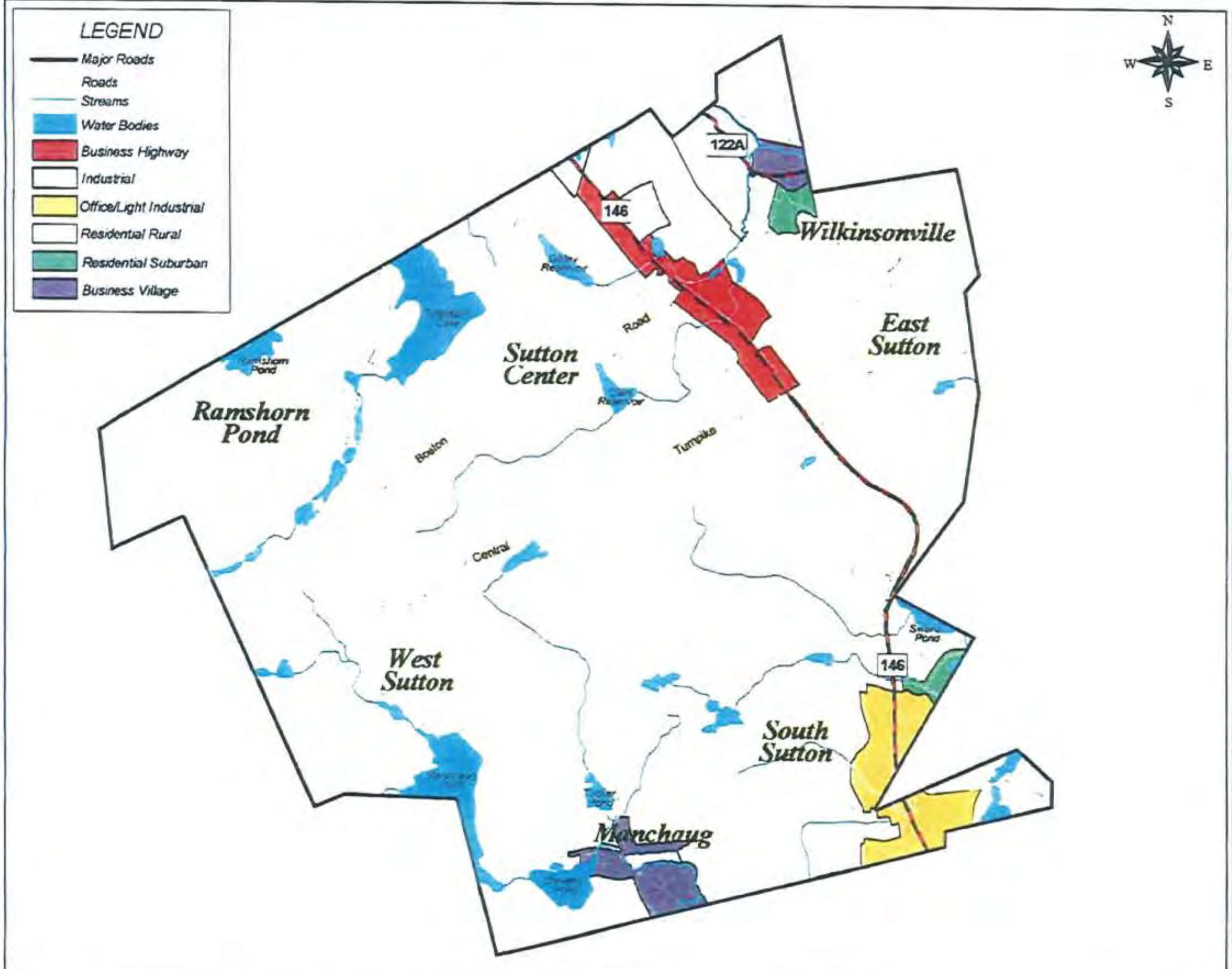
The purpose of this chapter is to describe existing conditions within the Town of Sutton that will influence development and bear a direct impact on wastewater management planning. The physical environment, including topographic conditions, the presence of natural systems (wetlands, etc.), soil conditions, groundwater, and surface water quality, significantly influences the rate and location of development. Finally, the location of the community in relation to major economic forces, regional job centers, transportation networks, and the availability of public water and sewer services can also greatly influence growth.

2.2 Planning Area Conditions

2.2.1 Zoning and Land Use

In the growth of any community, the gradual change in land use from rural agricultural to residential, commercial, and industrial activities produces a demand for adequate municipal services, particularly in the area of wastewater management.

Information on current land use and zoning was gathered through a review of zoning maps, land use regulations, the Town of Sutton's Master Plan (1992), and on-site inspections. The Town encompasses a total area of approximately 21,800 acres, the majority of which (14,700 acres) is currently forested or undeveloped. Approximately 3,500 acres are currently utilized for residential purposes and 1,100 acres are zoned for industrial/commercial use. The majority of the industrial/commercial land is found along the Route 146 corridor in the



Town of Sutton
Massachusetts

Wastewater Facilities Plan

Map Extent

Figure 2-1

Zoning

Scale: NTS
Data Sources: MassGIS/CMRPC and Cartographics Associates, Inc.
Date: November 2001

Wilkinsonville sub-area. An existing land use map is provided as Figure 2.1 and a Land Use Summary is provided in Table 2.1.

Table 2.1
Zoning Summary

Zoning	Percentage of Area
Residential Rural (R-1)	93.2
Residential Suburban (R-2)	1.6
Village (V)	0.1
Business-Highway (B-2)	1.5
Industrial (I)	1.6
Office/Light Industrial (OLI)	2.0
Total	100

The current zoning regulations for Sutton include six districts: residential rural, residential suburban, village, business-highway, industrial, and office/light industrial. Rural residential zoning (R-1) is the predominant zoning district found throughout the Town. It requires a minimum lot size of 80,000 square feet. Suburban residential zoning (R-2) is found in limited bands in the subareas of Manchaug and Wilkinsonville. This zoning designation requires a minimum lot size of 60,000 square feet, which can be reduced to 40,000 square feet with the availability of water or sewer, and further reduced to 20,000 square feet with the availability of water and sewer. Generally, lots in excess of 40,000 square feet have adequate space to allow for the use of new or upgraded septic systems to dispose of wastewater. Smaller lots have less available space for upgrades once property line setbacks, existing trees, driveways, pools, etc., are taken into consideration. No major changes in zoning are anticipated, as it is the Town's goal to maintain its generally rural character.

Many of the homes in the Manchaug area were constructed prior to the implementation of R-2 zoning. Consequently, these homes are constructed on lots ranging in size from less than 5,000 square feet to 10,000 square feet. Many of these smaller lots support duplex or other multi-family housing structures. Similarly, lot sizes along the shore of Lake Singletary do not conform to the Town's current zoning (R-1).

2.2.2 Existing Population

Population characteristics play an important role in identifying a community's needs, projecting future growth and development, and determining wastewater flows and loads. Population data was obtained from the Sutton Town Clerk who performs an annual census and publishes the population figures in the annual Town Report. As stated in the Town's Annual Report for the fiscal year ending June 30, 2000, the population in Sutton was 8,628.

The town-wide population from 1990 through 2000 is presented in Table 2.2. Over that span, the population has grown from 6,876 to 8,628, which represents an annual increase of 175 people, or an average annual growth rate of approximately 2.3 percent.

Table 2.2
Historical Sutton Population 1990-2000

Year	Percent Increase	Population
1990	--	6,876
1991	3.56	7,121
1992	3.79	7,391
1993	2.67	7,588
1994	4.39	7,921
1995	0.48	7,959
1996	2.42	8,152*
1997	0.42	8,186
1998	0.53	8,229

1999	2.25	8,414
2000	2.54	8,628

*1996 Annual Town Report not available, value interpolated

An additional review of "Summary File I: 2000 Census of Population and Housing" as prepared by the U.S. Census Bureau and issued in December 2001 states a population figure that is slightly less than that compiled by the Town. Based on the 2000 Census, the population in Sutton is 8,250, representing 2,811 house units, or an average household size of 2.9 persons/unit. As a conservative approach to estimating the Town's future wastewater needs under this report, the population of 8,268 people, an average household size of 2.9 persons/unit and an average annual population growth rate of 2.3 percent will be used as a baseline for estimating future wastewater flows.

It is important to note that in a recent infiltration/inflow report of the Wilkinsonville Sewer System prepared for the Town by BETA Group, dated September 2001, two different average household sizes were mentioned. A copy of this report has been included in this facility plan as Appendix D. The average household size of 2.56 persons/unit represents the entire Worcester County area. The average household size of 2.93 persons/unit represents the average for the Town of Sutton. These values were obtained from the aforementioned U.S. Census Bureau document. For purposes of the I/I study, the average household size of 2.56 persons/unit was used as a conservative approach for calculating excess I/I within the Wilkinsonville area of Town. This value is considered conservative for I/I purposes because the value minimizes the sewerage portion of the waste stream, consequently maximizing the I/I volume. For the purpose of future planning and estimating the wastewater flows associated therewith, the 2.9 persons/unit average household size has been used to maximize the sewerage portion of the waste stream, thereby making the applicable flow estimates more conservative.

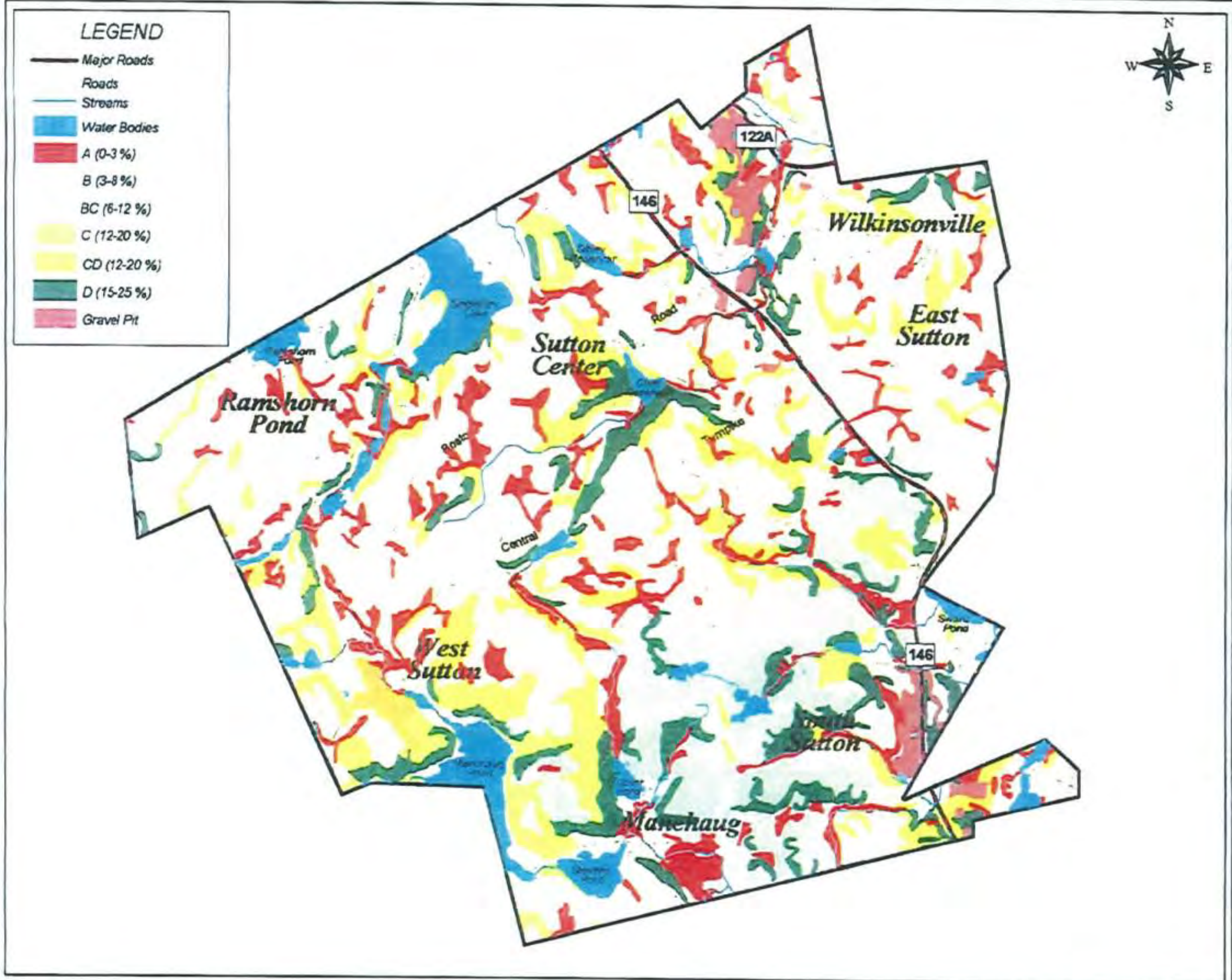
2.2.3 Geophysical Conditions

Developing an effective wastewater management program requires an adequate knowledge of the physical environment of the area to be served. Physical characteristics important to a study of this nature include soil conditions, hydrology, topography, and geology.

2.2.3.1 Soil, Hydrology and Surficial Geology

Determination of the types of soils and their suitability for subsurface disposal systems in Sutton was based on the United States Department of Agriculture Natural Resource Conservation Service report entitled "*Interim Soil Report for Southern Worcester County*", dated March 1995. The soil type in which a subsurface wastewater disposal system is located is critical to its ability to function properly. The most important soil characteristic in this regard is permeability. Soils that have a low permeability do not allow sufficient volumes of effluent to infiltrate the soil. This low permeability can cause ponding or back-ups into building plumbing. Conversely, soils with a high permeability generally do not provide adequate treatment of effluent. These soils allow excessive nutrients and bacteria to pass directly into the groundwater.

Soils in Sutton consist largely of rough, stony soils and sandy loam combinations. The four most common soil types are Chatfield-Hollis, Merrimac, Paxton, and Canton, which are summarized in Table 2.3. Approximately 80 percent of the town's soils are characterized by their severe restrictions toward the use of subsurface wastewater disposal systems because of inadequate permeability, depth to seasonal high water table, depth to bedrock, or their susceptibility to flooding. In most cases, these limitations are too difficult to overcome. This can severely limit the overall development potential of the Town. Soils classified with slight and moderate restrictions can generally be developed because



Town of Sutton
Massachusetts

Wastewater Facilities Plan

Map Extent

Figure 2-2

Soil Classifications

Slope Index

Scale: NTS
Data Sources: MassGIS/CMRPC and Cartographics Associates, Inc.
Date: November 2001

Beta Group, Inc.

the limitations can be addressed with proper site engineering. Soil types with their respective slope index are shown in Figure 2-2.

Table 2-3
Summary of Sutton Soil Types

Soil Type	Characterization
Chatfield-Hollis	Rock Outcrop
	Well-drained, water is removed readily
	Depth to bedrock between 20-40 inches
	Water Table greater than 6 feet
	3 to 15 percent slopes
Merrimac	Fine sandy loam
	Excessively drained
	Depth to bedrock greater than 60 inches
	Water table greater than 6 feet
	3 to 8 percent slopes
Paxton	Fine sandy loam
	Percs slowly
	Depth to bedrock greater than 60 inches
	Water table between 1.5 and 2.5 feet
	15 to 25 percent slopes
Canton	Fine sandy loam
	Well drained
	Depth to bedrock greater than 60 inches
	Water table greater than 6 feet

	3 to 8 percent slopes

2.2.3.2 Topography and Drainage

Topographical information identifies physical features of the ground surface that will influence the design, construction, cost, and operation of wastewater facilities. Topography affects the necessity for and location of wastewater pumping stations, the possible locations of pipes, and the slope of the pipes, which is one factor that determines the pipe size.

Topography is also the governing factor of watershed delineation. Most of Sutton lies within the Blackstone River drainage basin. The area of Town that lies generally north of the Central Turnpike drains to the Blackstone River. The remaining portion of Town drains directly into the Mumford River in the southern part of Town before joining with the Blackstone River in Uxbridge. Only a small portion (18 acres) in the northwest corner of town lies in the French River drainage basin, which eventually empties into the Long Island Sound in New London, Connecticut.

2.2.4 Surface and Ground Water Quality

The Town of Sutton contains many surface water features. Primary rivers include the Blackstone and the Mumford. The two large ponds in Town are Singletary and Manchaug. In addition, there are several other medium and small water bodies, (Steven's Pond, Tucker Pond, Ramshorn Pond, Lackey Pond and Swans Pond) all of which account for approximately 800-900 acres of surface water, or 4 percent of the total land area in Sutton.

Lake Singletary is located in the northern part of Sutton and its border extends into the Town of Millbury. The small lot sizes, steep slopes, and poor soil types found in the developed areas along the northwest and eastern shoreline have created a concern in regards to pollution of Lake Singletary from septic system failures. In 1991, a diagnostic study of Lake Singletary was prepared for the Singletary Lake Association, an association of concerned residents residing on Lake Singletary. This study showed that the water quality was deteriorating due in part to excessive nutrient loading. Fugro East, Incorporated prepared a management plan feasibility study for the Association in May 1995 that recommended action for reducing nutrient loading and sediment loads as well as controlling nuisance aquatic plants. Although no significant bacteriological contamination was identified in these studies, it is inferred that the high nutrient concentrations found in the pond are derived from failing or inadequate septic systems. Excessive nutrient loading and related plant growth could eventually degrade water quality to a level that affects the recreational value of this resource.

Although no other reports or studies have been conducted on the remaining surface water bodies in Sutton, there has been some history of bacteriological contamination in the Mumford River. Manchaug Pond, Stevens Pond, Tucker Pond, and Ramshorn Pond are tributaries to this river and failing septic systems from surrounding developments are thought to be the major source of the contamination. The development trend around Sutton's surface water bodies has been toward small pockets of high-density residential development. These smaller lots were developed before the current zoning regulations were enacted. Most of the homes found in these areas are former summer cottages which are now inhabited year-round. This is true for Lake Singletary, Manchaug Pond, Ramshorn Pond, and to a lesser extent, around Stevens Pond and Tucker Pond. In addition, there are several campgrounds that are located along the shores of Lake Singletary and Manchaug Pond that are significant producers of wastewater on a seasonal basis and could be a threat to water quality.

Historically, areas that rely on on-site sewage disposal systems can contribute fecal coliform and excessive nutrient contamination to surface water bodies. The two primary mechanisms by which contaminants are transported to water bodies are surface runoff in areas with a high degree of failing sewage disposal systems and groundwater migration, where inadequately treated wastewater passes quickly through the soil.

Sutton relies solely on groundwater for its drinking water supply. Extensive sand and gravel deposits provide substantial quantities of groundwater and there would appear to be ample quantities in the Town's aquifers to meet future demand. Historically, groundwater quality has not been a problem in Sutton. However, with the history of septic system problems throughout the town and the existing unfavorable conditions for on-site wastewater disposal, groundwater quality can be considered at risk.

2.2.5 Drinking Water Supply

Sutton does not have a municipal water department. Water supply is furnished by three privately owned water suppliers: the Wilkinsonville Water District, Manchaug Water District and Whitinsville Water Company, which serve approximately 35-40% of the population. The remainder of the Town is served by individual wells.

The Wilkinsonville Water District serves the northeast section of Sutton, east of Route 146 and north of the Central Turnpike. Water is supplied from the Hatchery Pond well which is located in an area gravel bank. Wilkinsonville Water District also has the option of purchasing water from Grafton's water system.

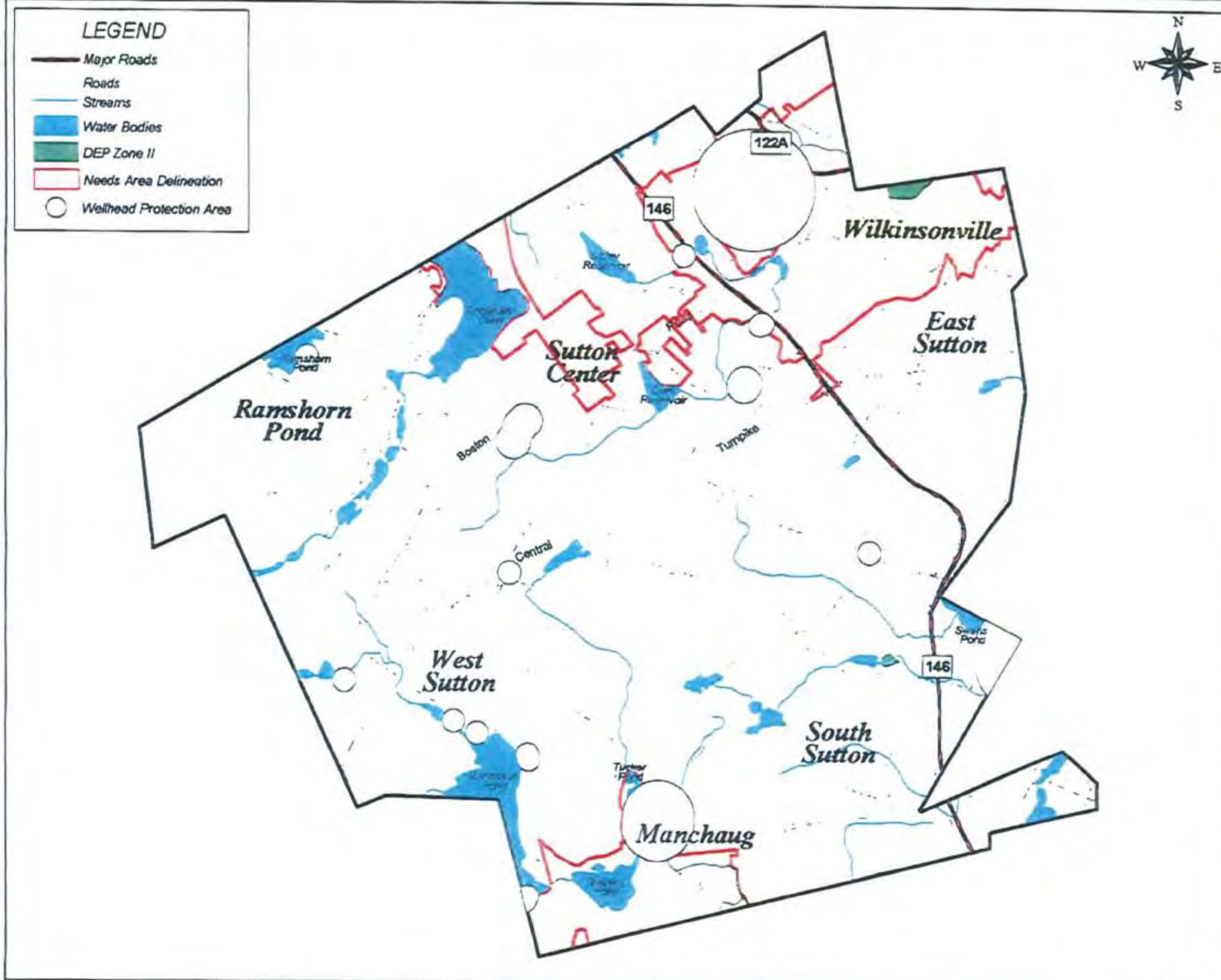
The Manchaug Water District serves the southern section of Sutton near Douglas. Water is supplied from three gravel-packed wells, located just south of Tuckers Pond, that are connected to a pump house on Putnam Hill Road. The history of septic system problems in the Manchaug area of Sutton raises concerns for the possible future contamination of this groundwater supply.

The Whitinsville Water Company serves a section of Sutton from the Northbridge town line, extending westward into Sutton along Mendon Road, approximately to Sutton State Forest. Water is supplied from three well sites, one of which is located in Sutton at Mendon Road and Route 146. This company has an extensive water supply and has potential to supply water to a much larger portion of Sutton.

Areas that influence drinking water supplies in Sutton are designated by DEP as either interim wellhead protection areas or Zone II areas. These areas are classified as nitrogen sensitive areas with the intent of limiting nitrate loading to the water supply. Designated Zone II areas are defined by DEP as "the area of an aquifer which contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated." Only a small area in the northeast corner of town bordering Grafton is designated as Zone II. Interim Wellhead Protection Areas are public water systems using wells or wellfields that lack a DEP approved Zone II. The wellhead and Zone II areas are shown in Figure 2-3. While Sutton's current zoning by-laws include a groundwater protection district by-law, it has not been effectively implemented around any of the DEP identified groundwater supply sources.

2.2.6 Wetlands

Inland wetland area, not including surface water bodies accounts for approximately 1.5 percent of the total land area, or 296 acres, in the Town. Wetlands generally provide a valuable habitat for a variety of fish and wildlife species and act to improve water quality by filtering nutrients, wastes and sediment from upland runoff. Wetlands also provide flood control and groundwater recharge opportunities. Improper sewage disposal practices and urban runoff, among other factors, can threaten wetland areas. While wetlands have not formally been surveyed and mapped to date, locations and number of wetlands have been accounted for from USGS topographic maps. Wetland areas are shown in Figure 2-4.



Town of Sutton
Massachusetts

Wastewater Facilities Plan

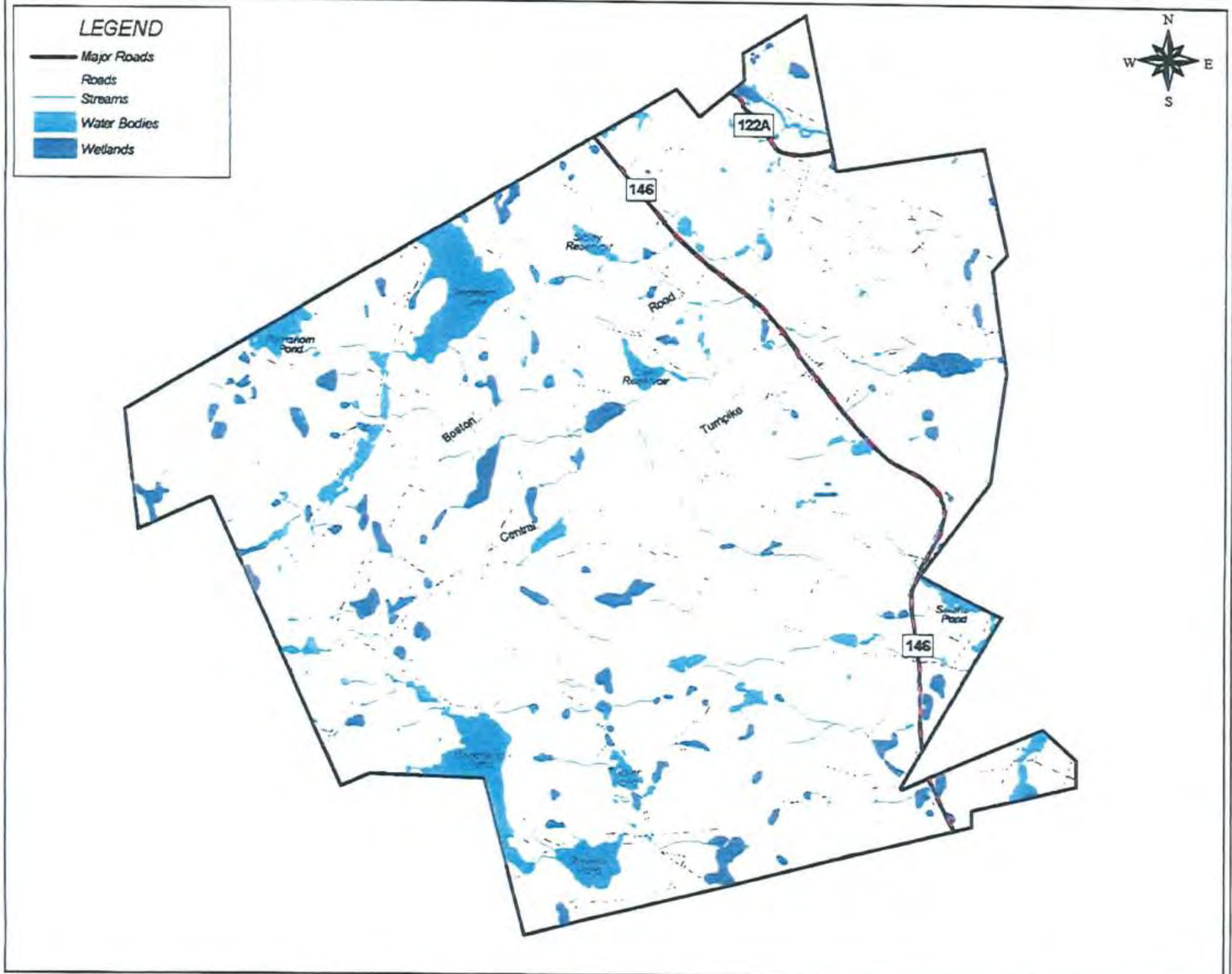
Map Extent

Figure 2-3

Interim Wellhead Protection Areas

Scale: NTS
Data Source: MassGIS/CMRPC
Date: November 2001

Beta Group, Inc.



Town of Sutton Massachusetts

Wastewater Facilities Plan

Figure 2-4

Wetlands

1:25,000 Hydrography

Scale: NTS
Data Source: MassGIS/CMRPC
Date: November 2001

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2.3 Current Wastewater Disposal Practices

With the exception of the Wilkinsonville area, Sutton is an unsewered community that relies on on-site disposal systems to manage wastewater. On-site systems serve approximately 85% of the population in Sutton. The most common types of on-site disposal systems are septic systems or cesspools. A septic system is comprised of a collection/settling tank and a leaching field. A cesspool consists of an underground collection tank with either single or multiple discharge ports that allow delivery of the liquid portion of the wastewater to surrounding soil. Cesspools were the standard system used prior to 1964. Under current regulations, they are no longer allowed, but are still found serving some older homes. Since 1964, most on-site disposal systems have consisted of septic systems as opposed to cesspools. The leaching field allows the liquid portion of the wastewater to discharge to a larger area than the cesspool system.

The main purpose of the cesspool and septic tank is to separate the solids from the liquid. These systems reduce the volume of solids through biodegredation. The remaining solids must be pumped out on a regular basis to ensure proper operation of these systems continue. Like most communities, Sutton relies on the individual property owner to maintain and repair their on-site sewage disposal systems. Lack of proper maintenance, among other factors, contributes to system failures.

2.3.1 Massachusetts Title 5 Regulations

On-site disposal system design, construction and maintenance in Massachusetts are managed under Department of Environmental Protection (DEP) 310 CMR 15.000. Massachusetts Title 5 was initially enacted in 1978 as a means to protect public health, safety, welfare, and the environment. Prior to 1978, many on-site disposal systems consisted of cesspools or septic systems with less than a 1,000 gallon capacity. As of March 31, 1995, Title 5 requires septic tanks to have a minimum capacity of 1,500 gallons and prohibits construction or repair of cesspools. Table 2.4 compares the Title 5 regulations as revised in November 1995 with the 1978 Massachusetts code for subsurface wastewater disposal.

In addition to the requirements shown in Table 2.4 for conventional septic systems, new Title 5 regulations require facilities with design flow rates greater than 10,000 gallons per day (gpd), or 2,000 gpd for facilities located in DEP Zone II wellhead protection areas, to adhere to additional requirements. The additional requirements also apply to any land designated by the state as an Area of Critical Environmental Concern. Facilities which generate a design flow rate in excess of 10,000 gpd are required to obtain a groundwater discharge permit and install a wastewater treatment system which treats wastewater effluent to Class I (tertiary) groundwater standards. Facilities located within a DEP approved Zone II area which exceed a flow rate of 2,000 gpd require a recirculating sand filter or some other approved method to reduce nitrogen loading to the groundwater supply. Title 5 also allows for the use of innovative and alternative technologies that provide the same or higher degree of treatment as the conventional Title 5 system.

Table 2.4
Comparison of 1995 Title 5 and 1978 Regulations for Subsurface Disposal Systems

Provision	*1978 Code*	*New Title 5*
	Setback Requirements for Leaching Area	
Water Supply Reservoirs	100 feet	400 feet
Tributaries to Reservoirs	100 feet	200 feet
Certified Vernal Pools	Not Addressed	100 feet (50 feet if vernal pool is upgradient)
Bordering Vegetated Wetlands, Salt Marshes, Inland and Coastal Banks	50 feet	50 feet (100 feet if wetlands bordering surface water supply or tributary thereto)
Other Surface Waters	50 feet	50 feet
Property Line	10 feet	10 feet
Cellar Wall	20 feet	20 feet
In-Ground Pool	20 feet	20 feet
Slab Foundation	Not Addressed	10 feet
Water Supply Line (Pressure)	10 feet	10 feet
Private Water Supply Well or Suction Line	100 feet	150 feet
Public Water Supply Well	100 feet	
--Gravel Packed		400 feet
--Tubular		250 feet
Surface or Subsurface Drains that Discharge to Water Supplies or Tributaries Thereto	100 feet	100 feet
Road Catch Basins, Surface or Subsurface Drains, and Drainage Easements (Subsurface)	25 feet	10 feet excluding foundation drains (50 feet if installed upgradient); 25 feet for leaching catch basins and dry wells
	Design Criteria	
Reserve Area	Area between leaching pits, galleries, or trenches may be used	Area between trenches may be used if greater than or equal to

		6 feet apart: new systems shall include a reserve area sufficient to replace the primary soil absorption system
Edge of Fill	Varies with formula	15 feet; maximum slope 3:1
Minimum Design Flow	None	330 gpd (220 allowed if 2-bedroom deed restriction) 3-bedroom home
Minimum Leaching Area	Dependent on percolation rate	Dependent on percolation rate and soil type; for some soils, allows smaller leaching areas than 1978 code; for others, requires larger leaching areas

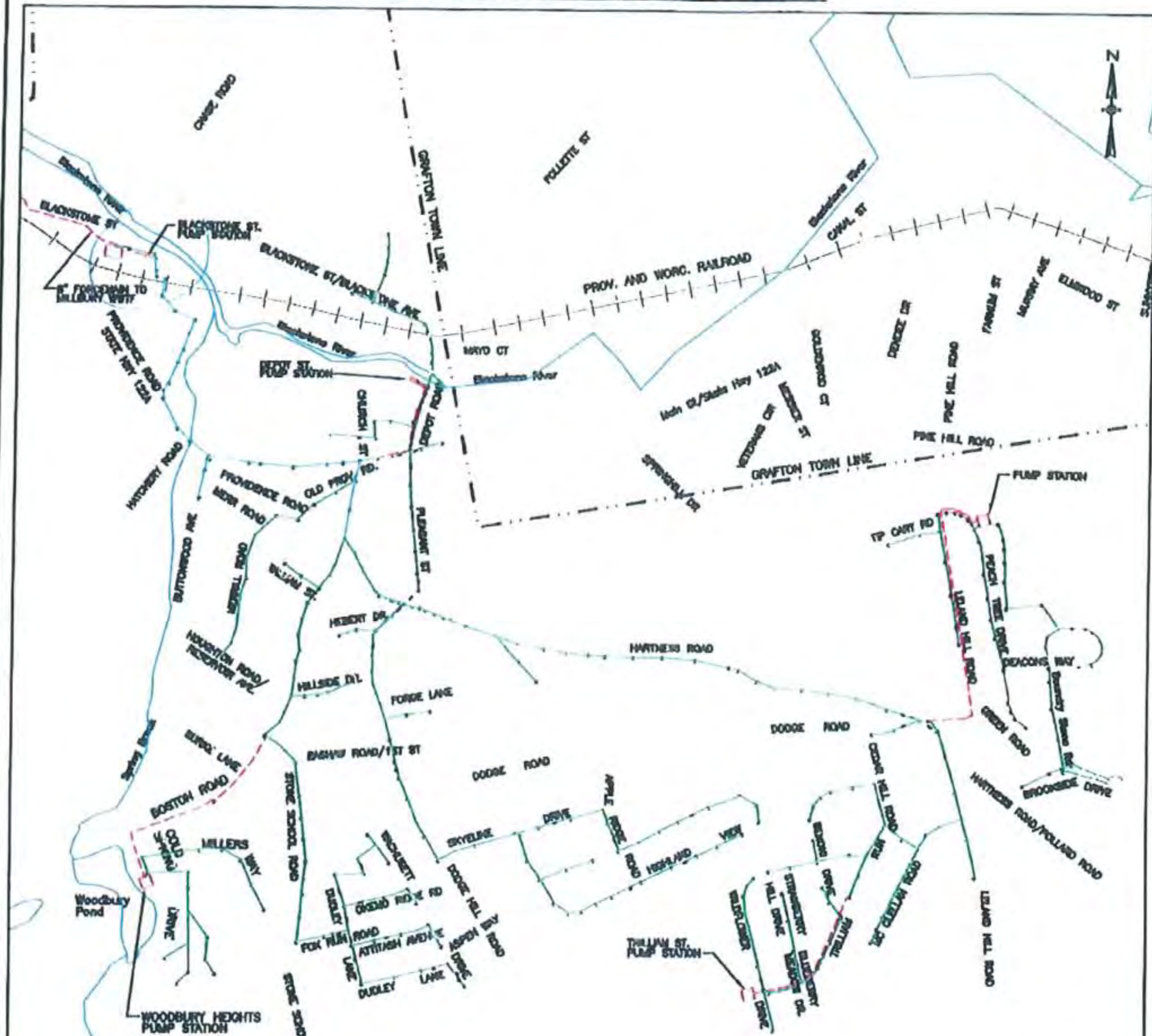
Table 2.4 (cont.)
Comparison of Revised Title 5 with 1978 Regulations for Subsurface Disposal Systems

Provision	*1978 Code*	*New Title 5*
		Design Criteria
Minimum Septic Tank Capacity	1,000 Gallons	1,500 Gallons
Distance from Maximum Groundwater	4 feet to bottom of leaching area; 1 foot from invert of septic tank outlet	4 feet to bottom of stone underlying soil absorption system if percolation rate >2 min/in, 5 feet if percolation rate <2 min/in
Definition of Failed System	System suffering breakout or backup or deemed to pose public health threat	System exhibiting breakout or backup; cesspools and privies located within Zone I of public water supply wells, within 100 feet of reservoirs or their tributaries, or within 50 feet of a private well, (septic tanks/soil absorption systems in these areas do not fail automatically if the local Board of Health determines the system is protective); cesspools without at least a half-day capacity: system found to be specific health or environmental threat; systems with excessive pumping (greater than 4 times/year); cesspool or leaching system is in groundwater table; septic tank is metal or is structurally unsound; cesspool within 50 feet of surface water bodies or a wetland is found to be unprotected by Board of Health
Large Systems	Defined as systems greater than 15,000 gpd	Defined as systems greater than 10,000 gpd (treatment plant required) or systems greater than 2,000 gpd in well recharge areas or within setbacks for water supplies (recirculating sand filter or equivalent alternative system required). Existing systems over 10,000 gpd must be inspected by December 1, 1996, and reinspected at least once every three years thereafter; those located within Zone II of public wells, within 400 feet of reservoirs, or 200 feet of their tributaries must upgrade to treatment plant within 5-7 years unless the owner demonstrates that drinking water standards are being met
Pumping	Recommended annually	Suggested at least every three years

Table 2.4 (cont.)
Comparison of Revised Title 5 with 1978 Regulations for Subsurface Disposal Systems

Provision	*1978 Code*	*New Title 5*
	Design Criteria	
Upgrade Standard	Required substandard systems be upgraded to meet requirements of code, or get a variance from the Board of Health and DEP	Where no expansion or change of use proposed, standard is "maximum feasible upgrade," with Board of Health approval: considering physical site conditions and economic feasibility; DEP approval needed if system cannot meet groundwater separation or drinking water supply setback requirements, or construction of a basic three-part system
Shared Use	Prohibited	Allowed for upgrade of existing systems, new construcflonl or for increased flow to an existing system; shared systems shall be inspected annually; definition of shared system does not include a condo-minimum unit or units located on the same facility
Nitrogen Loading	Not Addressed	One acre of land required to build 4-bedroom house in: recharge areas of public wells, designated (through Surface Water Quality Standards) nitrogen-sensitive areas and coastal embayments, and new developments served by well and septic system on same lot; no new system in these areas shall receive greater than 440 gpd per acre
Alternative Systems	Case-by-case approval	Proposes systematic approach; approves use of recirculating sand filters, composting toilets, and several aerobic treatment processes to reduce leaching area requirements, or the separation distance to groundwater or an impervious layer
Grandfathering Existing Lots	Not Addressed	If an individual lot was buildable under the 1978 code, but cannot fully comply with the new rules, the same flow, up to a 3-bedroom home, will be allowed if the disposal system application is filed on or before January 1, 2000 and the system is built within three years of the receipt of the permit; a larger house may be built with a higher level of treatment

TOWN OF SUTTON, MASSACHUSETTS
SEWAGE SYSTEM PLAN



WILKINSONVILLE AREA SEWER SYSTEM

NTS

FIGURE 2-5

LEGEND

- PUMP STATION
- SEWER MANHOLE
- GREATER THAN 8" DIAMETER GRAVITY SEWER
- 8" DIAMETER GRAVITY SEWER
- SEWER FORCE MAIN
- LOW PRESSURE SEWER

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J:\SUTTON SEWERS\1103 - Facility Plan\REV-FIGS-11-2001\FIG2-5.dwg, 10/11/2002 11:26:31 AM

2.3.2 Municipal Sewer Service

The Wilkinsonville area of Sutton is the only area in Town that presently receives municipal sewer service. This service consists of separate sanitary sewers, which means they are designed to transport only sanitary and industrial/commercial wastewater and not stormwater or surface run-off. The existing system services approximately 600 accounts, of which 584 are residential and 16 are commercial/industrial. The majority of the system was constructed between 1977 and 1978 and includes approximately 3,100 linear feet of force mains, 11,000 linear feet of gravity sewer and two pump stations. The system has since been expanded considerably within the last twenty years and now includes approximately 10,200 linear feet of force mains, 59,200 linear feet of gravity sewer, and four pump stations. Gravity sewers consist of approximately 53,500 feet of 8-inch diameter pipe and 5,700 feet of 10-inch pipe. The pipe materials are a mix of asbestos cement (AC), polyvinyl chloride (PVC), ductile iron (DI), and vitrified clay (VC) pipes. Manholes are constructed predominately of pre-cast concrete. A plan of the Wilkinsonville sewer system is presented in Figure 2-5.

Flow from the Wilkinsonville service area is collected and measured at the Blackstone Street pump station. Flow is then pumped from this station via a force main to the Town of Millbury's wastewater treatment plant. The contractual agreement between Sutton and Millbury allows for an average daily flow of 126,000 gallons per day. The current average daily flow is approximately 97,000 gallons per day.

2.3.3 Neighboring Municipal Sewer Systems

Of the Towns that border Sutton, only Oxford is without its own municipal sewer system. Grafton owns and operates a 1.6 mgd treatment facility that is being expanded to 2.2 mgd. Existing flows to this facility are approximately 1.6 mgd. The treatment facility in Northbridge has a rated capacity of 1.8 mgd with current flows at 1.6 mgd. It is evident that neither of these facilities has the reserve

capacity to service substantial areas of Sutton. Treatment and collection facilities in Uxbridge do not lie within a reasonable proximity to Sutton to offer an economical wastewater disposal alternative.

The treatment facility and collection system in Douglas is being planned for capacity expansion from 0.18 mgd to approximately 0.4 mgd. In the 1983 Facilities Plan prepared for Sutton, wastewater from Manchaug was recommended for conveyance to Douglas. At that time, the projected flow from Manchaug to Douglas was estimated at 40,000 gpd and due to the limited capacity at the Douglas plant, this alternative was never vigorously pursued. No agreement between the two communities was ever reached.

Sutton and Millbury currently have an agreement as mentioned in the above section for a specific quantity of flow. In recent years, Millbury has been considering a proposal to abandon its wastewater treatment facility in favor of pumping wastewater to the Upper Blackstone Regional Treatment Facility. This proposal eliminates the need for Millbury to expand its treatment facility and removes their responsibility for operation and maintenance. Voters at the Spring 1998 town meeting approved this economically viable concept. The Millbury Sewerage Commission applied for membership to the Upper Blackstone Water Pollution Abatement District in January 1999 and was accepted in February 1999.

Impacts to Sutton appear minimal in that their contract for wastewater disposal would continue to be with the Town of Millbury. However, Millbury has a negotiated capacity allotment with Upper Blackstone Water Pollution Abatement District (UBWPAD) in which Sutton has been included. A pumping station has been designed and is currently being constructed to transport wastewater from both Millbury and Sutton to the UBWPAD. Upon completion of this pumping station, the existing WWTF in Millbury will be abandoned and the current intermunicipal contract between Millbury and Sutton, specifying a total of 126,000 gpd of wastewater flow discharged from Sutton shall become null and void. A new intermunicipal agreement has been executed between the two Towns, providing a contractual allowance of 1,568,000 gpd to be discharged by

Sutton to the UBWPAD via the Millbury system. Sutton will be charged for transporting their portion of sewage flow from Millbury to UBWPAD for treatment. The fees will include capital costs and operation and maintenance charges. Thcsc fees will be discussed in greater detail in Chapter 6.

CHAPTER 3 - PROBLEM IDENTIFICATION AND NEED

3.1 General

The purpose of this chapter is to document the nature and extent of existing wastewater related problems found in the Sutton wastewater collection system and on-site disposal systems found throughout the unsewered areas of Town.

3.2 Wilkinsonville Wastewater Collection System

3.2.1 Infiltration/Inflow Analysis

An I/I study was completed in the spring of 2001. A copy of this report is included in this facility plan as Appendix D.

As an element of this I/I study and report, a desktop analysis of the existing sewer service area was conducted to determine if excessive quantities of infiltration/inflow (I/I) are entering the sewer system. Infiltration is defined as the groundwater that enters a sewer system through such means as defective pipes, pipe joints, connections, and manhole walls and cones. Infiltration usually varies during the year in relation to the groundwater levels above the sewers. Inflow is directly related to a rainfall event and consists of sources such as roof leaders, cellar drains, yard drains, area and foundation drains, and seepage through manhole covers.

Infiltration and inflow reduce the effective hydraulic capacities of sewers and treatment facilities by occupying capacity that could otherwise be allotted to system users. I/I also makes the wastewater treatment facility less efficient and operations more costly by increasing pumping frequencies and necessitating higher chemical dosing. The benefits of removing excess I/I are a decrease in energy consumption, an increase in the available capacity of the collection system and the wastewater treatment facility to accommodate future growth, and a reduction in the overall cost of treatment.

Under the I/I report, the following method was used to determine the quantity of infiltration present in the Wilkinsonville sewer system.

Gross Infiltration Estimate Method - This method is based on the "Infiltration and Inflow Analysis and Project Certification" developed by the Environmental Protection Agency (EPA). The method utilizes flow data recorded at the treatment facility during periods of seasonal high groundwater and compares this flow, on a per capita basis, to data from 270 statistical area cities that the EPA has compiled. The average daily flow conveyed by Sutton via the Blackstone Pump Station to the Millbury WWTF during the high groundwater period of April 2001 was 171,806 gpd. Since there are few industries affecting the overall flow, the total recorded flow was utilized. The resulting flow was then divided by the number of people connected to the sewer system to develop a per capita flow rate. Table 3-1 shows the results of this method.

Table 3-1
Determination of Infiltration Rate

Average Daily Flow (high groundwater period April 2001)	171,806 GPD
Flows from Major Industries	N/A
Average Daily Flow without Major Industries	171,806 GPD
Flow per Capita (sewered pop. = 1,536)	112 gallons per capita per day (gpcd)

The EPA has determined that resulting wastewater flows greater than 120 gallons per capita per day (gpcd) contain excessive infiltration, indicating further studies must be conducted to quantify infiltration and evaluate alternative corrective measures. This method only determines if infiltration is a problem on a system-wide basis. As can be seen in Table 3-1, the Sutton sewer system conveys wastewater at a rate of 112 gpcd, which is not considered excessive. An additional I/I study was performed and appended herewith. The end result is that I/I in Wilkinsonville is not excessive.

3.2.2 Wastewater Pumping Stations

There are three wastewater pumping stations located throughout the Wilkinsonville collection system. A brief description of these stations follows in Table 3-2.

Table 3-2
Pumping Stations Summary

	Blackstone Pumping Station	Depot Street Pump Station	Trilliam Street Pump Station
Civil/Site	*Fence* – fair, barbed wire rusted *Access* – narrow, not paved *Influent Screening Access* – poor *Site Pavement* – inside fence – fair *Other* – Underground fuel storage tank – unknown condition *Forcemain* – reported failure	*Fence* – fair *Access* – narrow, not paved *Site Pavement* – none *Other* – Railings on access stairs corroded Structure may be in 100-yr. Flood zone *Forcemain* – no reported problems	*Fence* – good *Site Pavement* – good *Other* – vegetative landscape screening not adequate
Architectural/ Structural	*Building* – (Ground Level) concrete block, fair, some cracks *Force Main Level (Second Level)* – Well at fuel supply line penetration cracked *Third Level (Pump Level)* – *Concrete* – fair *Street Spiral Staircase* – severely corroded *Channel Gratings* – corroded and missing	*No Building* *Elevated Station Area Walls (concrete) – fair* *Steel Dry Well – corrosion at seams* *Dry Well Floor* – concrete slab, good condition *Dry Well Ladder* – good; no cages or platforms *Pre-cast Wet Well* – some gratings broken and some covered with debris. Wet well ladder corroded; no cages or platforms. *Other* – minor surface settlement; soil loss through weep holes	*Building* – pre-cast concrete – good *Pre-cast wet well* – good *Pre-cast valve chamber* – good *Floor* – concrete slab – good
Mechanical Process	*Pump Drive Shafts* – needs lubrication *Flow Tube* – new controls, filters clogged *Comminuter* – old style, jams frequently *Grit Removal* – manual, poor condition *Screenings* – manual, poor condition. No equipment hoist. *Pumps* – new 6" check valve (pump 1) Upgraded pump seals (both pumps), 8-in wall casting required replacing.	*Pumps* – operational *Sump Pump* – operational No equipment hoist, poor access. *Comminuter* – clogged and inoperable; motor & bearings failed several times. *Bar Rack* – completely clogged *Piping* – good	*Equipment, Piping & Valves* – good No bar rack. No equipment hoist.
HVAC and Plumbing	*Control Building* – ventilation & heater operational *Second Level* – heater & ventilation operational *Pump Level* – *Vent operational*; no heater *Dehumidifier* - operational *Wet Well* – no ventilation, no heater *Backflow preventer* – new (-5 mos.)	*Dry Well Heater* – portable, good No wet well heater. *Dry Well Ventilation* – inoperable *Dehumidifier* – operable No wet well mechanical ventilation.	*Heater* – good *Control Building Ventilation* – none *Wet Well Ventilation* – *hooded vent* – good *Valve Chamber Ventilation* – *hooded vent* – good *Pumps* – good
Electrical and Instrumentation	*Service Cabinet* – good *Equipment* – good *Station Electrical* – good *Control Panel* – sealed *Alarms* – good *Flow Recorder* – new (3 yrs. old) *Electric Generator* – good *Wet Well* – electric may not meet current hazardous installation electrical codes	*Service Cabinet* – good *Equipment* – good *Station Electrical* – good; exposed to weather *Control Panel* – sealed, good condition *Alarms* – good *Electric Generator* – heater units inoperable; exposed to weather *Bubbler Tubes* – poor wet well access	*Service Cabinet* – good *Equipment* – good *Station Electrical* – good *Control Panel* – sealed *Alarms* - good

3.3 Wastewater Concerns in Unsewered Areas

Individual on-lot systems for wastewater disposal are used throughout the unsewered areas of Town. This section will describe the types of problems that may be encountered with the use of these systems and the degree of severity of such problems in the various sub-areas of Sutton.

There are two types of failures which are associated with an individual sewage disposal system (ISDS): failure of the system to dispose of wastes and failure of the system to properly treat the waste prior to entering the groundwater. There are several types of problems which result from these failures. Some problems, such as overflowing septic tanks, are readily detectable while others, such as a contamination of a surface water body, are not. Examples of typical on-lot system failures and their related problems are given in Table 3-3.

Table 3-3
Types of ISDS Failures

Type of Failure	Associated Problem
Disposal Failure	
Blocked pipe	Inability to use bathroom and kitchen facilities
Undersized septic tank/broken baffle in septic tank	Clogged leaching area, overflowing tank and/or odors, surface ponding
Tilted distribution box	A portion of the leaching area clogged, overflowing tank and/or odors, surface ponding
Undersized leaching area	Inability to fully use water facilities in house and overflowing of tank
Treatment Failures	
Coarse/sandy soil	Limited treatment is available and groundwater contamination may occur
Less than 3 feet to groundwater	Partial treatment by the soil in the leaching area and groundwater contamination may occur

A disposal failure occurs when a leaching field is unable to absorb effluent causing breakouts at the soil surface, backup into household plumbing fixtures, and severe odor problems. One of the more common reasons for this is an improper design.

Most of the systems constructed prior to 1960 were cesspools or other systems designed using criteria that have since been upgraded to reflect the more stringent requirements now believed needed to properly dispose of waste. A minimum leaching area is required for proper disposal of wastewater, with the size of the area dependent on the type of soil and expected flow. If this minimum area is not provided, the leaching field will eventually become overloaded and the system will backup.

Treatment failure occurs when the wastewater passes through the soil underlying the leaching area so quickly that some contaminants (i.e., pathogens, bacteria, nitrates, etc.) pass directly into the groundwater. Such problems typically occur when soils are coarse or sandy, or the distance between the bottom of the leaching area and the groundwater table is less than three feet. Coarse or sandy soils have rapid permeability, which equates to high percolation rates. This type of failure degrades the quality of the underlying groundwater system, and may jeopardize the public's health by polluting ground or surface water.

The principal wastewater constituents which pass through a properly functioning leaching field are nitrates and phosphates. More than 90% of the nitrogen in human waste is not removed to any extent in either septic tank or cesspool systems. Nitrogen exists as nitrates, which remain dissolved in wastewater as it percolates through the soil. Phosphates will similarly pass through the leaching field. Through an ion exchange process, phosphates will be adsorbed onto soils. However, the ability of the soil to accomplish such removal may become exhausted. Thus, all the nitrates and some of the phosphates will pass through the soil, enter groundwater, and eventually reach surface waters. Where the receiving waters are ponds or lakes, nitrates and phosphates can stimulate algae growth and promote eutrophication. Where groundwater is intercepted for drinking water purposes, nitrates represent a potential health hazard. The drinking water standard for nitrates is 10 mg/L.

Factors which were considered in assessing the problems in unsewered areas of Sutton were:

1. Soil suitability for on-lot disposal systems
2. Density of housing
3. Surface and groundwater quality

4. ISDS failure rates
5. Age of ISDS systems
6. Depth of groundwater

3.3.1 Disposal System Repair Records

Repair and pumping records for existing on-site systems were obtained from the local Board of Health. These records were used to identify areas that may be experiencing septic system problems or failures. Although useful, repair records are not reliable as a sole indicator of need because repairs are frequently the result of inadequate maintenance of an acceptable system. Also, repair or replacement of a cesspool or septic system does not necessarily indicate a need for improved methods of wastewater disposal as long as the system can be replaced or repaired to comply with Title 5 requirements. Since 1986, 46 septic system repairs have been recorded with the Board of Health. Most of these are located in the Manchaug, Sutton Center, and Wilkinsonville sub-areas of the Town. Locations of repaired systems are shown in Figure 3-1.

3.3.2 Identification of Needs Areas

The project area was delineated into the six sub-areas listed below for evaluation of wastewater disposal concerns. Each area is briefly discussed.

1. Wilkinsonville
2. Manchaug
3. Lake Singletary/Sutton Center
4. West Sutton
5. Ramshorn Pond
6. Rural Sutton

Wilkinsonville

The Wilkinsonville sub-area encompasses approximately 2,900 acres located in the northeast corner of Sutton and is the only sub-area that receives some municipal sewer service. The area is bound by Route 146

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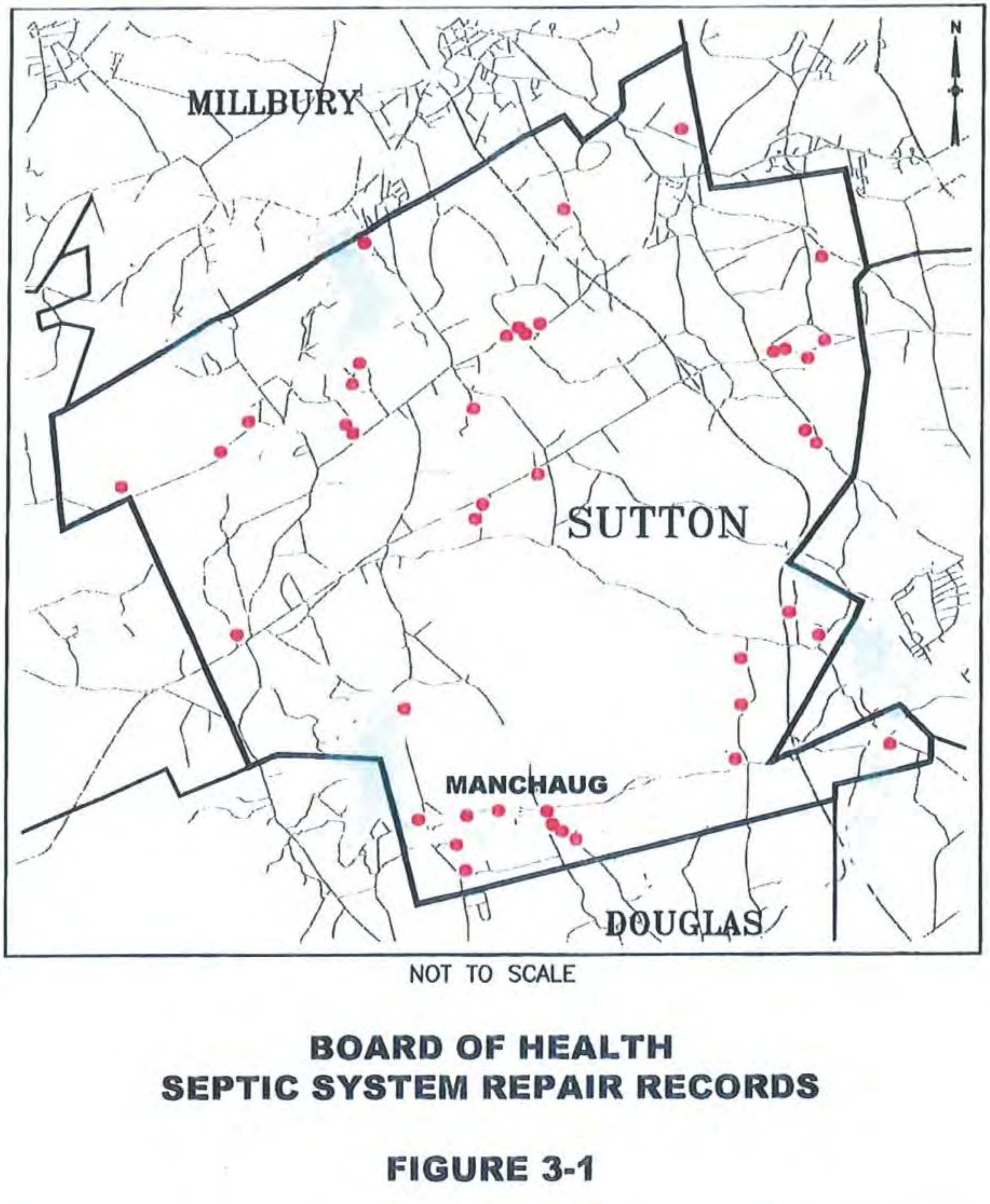
TOWN OF SUTTON, MASSACHUSETTS
SEWAGE SYSTEM PLAN



NOT TO SCALE

BOARD OF HEALTH
SEPTIC SYSTEM REPAIR RECORDS

FIGURE 3-1

● LOCATION OF SEPTIC SYSTEM REPAIR OR FAILURES

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from the Millbury town line southerly to the Central Turnpike Interchange and continues easterly along the Central Turnpike to the Town of Northbridge. The Route 146 corridor offers the Town an excellent opportunity to increase the size of its commercial and industrial base. To facilitate this process, sewer service must be extended. Large tracts of rural residential zoned land are also accessible from Route 146. The Central Turnpike was identified as the southern border since a large wetland area, the former Town landfill, and Sutton State Forest are situated just south of this line and would likely impede sewer expansion.

The Wilkinsonville sub-area includes the majority of the Town's business and industrial zoned land. Residential zoned land in this sub-area is also the most likely to be served by water and sewer service in the future, which creates the most likely area in Sutton that will continue to see rapid development. Not all land in Wilkinsonville is developable due to the presence of wetlands associated with several streams that traverse the region and the presence of steep slopes encumbering a section of this study area. Sewer expansion will be limited by the quantity of flow specified in future agreements with the Town of Millbury. However, it is not the intent of the Town to promote growth to a point where the rural character of the community is compromised.

Soil characteristics in unsewered areas of Wilkinsonville have severe limitations for on-site septic systems due to unacceptable percolation rates. There are several interim wellhead protection areas in the Wilkinsonville sub-area.

Manchaug

The Manchaug sub-area is a densely developed residential and industrial area in the southern part of Sutton that has a long history of sewage disposal problems. The problems are caused by adverse soil conditions, a prevalent high groundwater condition, and inadequate lot sizes. As delineated, the northern boundary of this sub-area contains an interim wellhead protection area for the groundwater source for the Manchaug Water District. Stevens Pond and the Mumford River form the western boundary. The Mumford River also forms the eastern boundary and the Sutton-Douglas town line forms the southern border.

Although the number of reported on-lot disposal system failures is not extremely high in this sub-area, it is widely believed that numerous systems are not performing adequately. These concerns were addressed in the Town's previous Facilities Plan, where sewering was recommended. Since Manchaug is one of the oldest villages in Sutton, many of the disposal systems are likely to be cesspools, which do not conform to current standards. Small lot sizes and the number of duplex housing units could have a significant impact on future system upgrades with respect to leaching field design and system setbacks.

Manchaug also contains a shared on-lot disposal system that serves approximately 25 to 30 homes in the neighborhood adjacent to Reservoir Street, Second Street, and Third Street. This neighborhood is characterized by steep slopes, a high water table, and a shallow mantle that consequently led to the failure of several individual systems. A gravity based wastewater collection system conveys wastewater to the treatment/disposal system site located at the southern side of the American Legion hall on First Avenue. This system has recently failed and had to be repaired.

Recent television inspections of the collection system revealed numerous broken pipes and loose joints that allow significant quantities of groundwater to enter. These deficiencies must be addressed or they will limit treatment system performance and minimize its useful life.

Lake Singletary/Sutton Center

The Lake Singletary portion of this sub-area was delineated utilizing the existing topographical features and current development patterns. Boundaries are limited to the northwest shore of the Lake, where severe slopes and small lot sizes negatively impact wastewater disposal practices, and the eastern shore of the Lake, where several densely developed pockets of converted summer dwellings are present. In both of these instances, site constraints force the placement of on-lot disposal systems adjacent to the shore and in high groundwater areas. Part of the southern shore is also included in this sub-area due to a pocket of high-density residential development. The entire sub-area is zoned rural residential, however, most of the existing lots were developed prior to the current zoning laws.

The Sutton Center portion of this sub-area was delineated to service the majority of the municipal buildings in Sutton, including the public schools. The boundary of this portion of the sub-area is based on topographical influences that define its drainage basin. As in most areas of Sutton, high groundwater and the depth to bedrock limit development and can lead to premature system failure. Disposal systems at both the Town Hall and the High School have recently failed and have been repaired or upgraded.

Concerns in the Lake Singletary/Sutton Center sub-area are summarized as follows:

- Pockets of high-density development along the shores of Lake Singletary that could adversely impact water quality.

- High-density residential development areas with inadequate lot sizes for upgrading existing septic systems to meet Title 5 requirements.

- Soil characteristics and topography create inadequate environmental conditions for upgrading existing septic systems.

West Sutton

The West Sutton sub-area encompasses the developments around Manchaug Pond and Stevens Pond in addition to the small to medium residential development in the western portion of Sutton, zoned rural residential. Although there is no history of problems associated with on-site disposal systems or water quality in this part of Sutton, several developments along the ponds that consist of campgrounds and summer cottages have unknown wastewater disposal practices. These areas should be monitored by the Town to ensure that adequate treatment is being provided.

Existing development is sparsely scattered for the majority of the area and lot sizes are adequate to support on-lot disposal systems. Existing zoning will also ensure that future development will continue to have adequate lot sizes.

Ramshorn Pond

Ramshorn Pond encompasses a portion of northwest Sutton and southwest Millbury. Typical to the development trend in Sutton, pockets of high-density residential development are located along both the southern and eastern shorelines of Ramshorn Pond. Lot sizes are generally adequate to support conventional on-lot disposal systems per Title 5 regulations. Although there is no history of on-site disposal system problems in this area according to Sutton Board of Health records, soil characteristics and topography create difficult environmental conditions that are not well suited for the use of on-lot systems. The sub-area is zoned rural residential and contains large undeveloped lots giving this area of Sutton potential for development should water and/or sewer service be brought into this area.

Rural Sutton

This sub-area encompasses the remaining land in Sutton not specifically contained within the above listed sub-areas. The remaining areas have been grouped together due to their similarities in regards to topography, soil conditions, zoning, existing development, and historical on-site disposal problems. This sub-area includes rural residential zoned areas of central, south, east, and north Sutton as well as the suburban residential and office/light industrial zoned areas of southeast Sutton.

No widespread indications of septic system problems have been reported in these areas nor have water quality problems been evident. Existing development is scattered for the majority of the area and lot sizes are adequate to support Title 5 systems.

3.3.3 Summary of Problem Areas

Improved wastewater disposal means are needed in parts of Sutton. These needs are primarily due to ineffective on-site sewage disposal systems as a result of adverse site conditions or the age of the system. Lot size is also a consideration, particularly in areas where older systems will need replacement or rehabilitation.

It will be difficult to use conventional Title 5 designs in areas where there is limited leaching field area due to set-back requirements, percolation rates, and flows. Evaluation criteria and relevant conditions in each area are summarized in Table 3.4.

To address the various levels of need in the Town, three broad-based recommendations were identified. The first consideration was the extension of sewers, which should be limited to high need areas in close proximity to the existing collection system. Sewers should be considered where the density of development is high, soils are unsuitable for on-lot systems, additional land is limited, and severe problems exist. The second level of action considered should be the use of satellite collection, treatment, and/or disposal technologies. Applications of these systems should be limited areas where geographic location (remote from the existing collection system) and adverse site conditions preclude the use of on-lot systems. These types of systems can be tailored to meet the needs of a specific area. The final alternative calls for the establishment of wastewater management districts coupled with an on-lot system rehabilitation program. Communities are allowed to establish wastewater management districts for the purpose of ensuring proper maintenance disposal systems. With proper Town ordinances, district officials may inspect private systems and state grants or loans may be obtained for the purpose of repair. There are several areas in Town where system age is considered the primary cause of failure. If suitable site conditions exist, rehabilitation of existing systems appears to be the most attractive solution. This is applicable to the identified areas as well as all other sections of Town where continued use of septic systems remains a viable alternative.

Table 3-4
Evaluation of Wastewater Management Need

Area	Density	Soil Permeability	Shallow Mantle	Age of ISDS	% ISDS Failures	Groundwater Recharge Area	Surface Water Poll. Potential	High Groundwater	Proximity to Existing Sewers
Manchaug	High	Low	No	>20 Yrs	High	No	High	Yes	Moderate
Wilkinsonville	Moderate	Moderate	Yes	>10 Yrs	Moderate	Yes	Low	Yes	Close
Singletary/ Sutton Center	Moderate	Moderate	Yes	>20 Yrs	Moderate	No	High	Yes	Moderate
Ramshorn Pond	Low	Low	Yes	>20 Yrs	Low	No	Moderate	Yes	Remote
West Sutton	Low	Moderate	No	>10 Yrs	Low	No	Moderate	Yes	Remote
Rural Sutton	Low	Moderate	Yes	Mixed	Low	Yes	Low	No	Remote

Table 3-5 presents the recommended actions for each of the six sub-areas. Alternative wastewater management solutions will be considered in succeeding chapters. A "no action" course on the part of the Town would result in continued degradation in existing problem areas. No action is considered unacceptable in terms of maintaining, and improving the quality of life in Sutton with respect to public health, preservation of the natural environment and the enhancement of the aesthetic quality of private and public property. Conversely, the construction of sewers to the entire Town is unwarranted on the basis of existing needs, extreme costs, and other impacts. The recommended plan must solve the problems in the most economic manner to preclude or minimize future problems.

Table 3-5
Recommended Wastewater Management Practices
For Unsewered Areas

Area	Proposed Action		
	Wastewater Management District/On-site Rehab	Traditional Sewering	Satellite Treatment/Disposal
Manchaug/So. Sutton		X	X
Wilkinsonville	O	X	
Singletary/Sutton	O	X	O
Ramshorn Pond	X		
West Sutton	X		
Rural Sutton	X		

X = Primary Recommendation

O = Secondary Recommendation

CHAPTER 4 – FUTURE CONDITIONS

4.1 General

For wastewater facilities planning purposes, future conditions within the 20-year planning period must be defined so that alternative means of wastewater management may be evaluated using common parameters. Future conditions considered include residential development, population increases, industrial and commercial development, and future wastewater flows and loads associated with the residential and commercial/industrial developments.

This section focuses primarily on the sub-areas of Sutton that were identified with the greatest need for wastewater management improvement due to high density development and problematic conditions, as described in Chapter 3. These areas include Manchaug, Wilkinsonville/Route 146 Corridor, and Lake Singletary/Sutton Center. Lake Singletary/Sutton Center and Wilkinsonville/Route 146 Corridor have been grouped together due to their close proximity to one another. Other less densely developed areas, such as West Sutton, where the continued use of on-lot wastewater disposal systems is recommended, are not evaluated in detail.

4.2 Population Projections

To determine projected domestic wastewater generation rates within the Town of Sutton, it is necessary to estimate planning year population figures. Additionally, build-out conditions must also be identified to develop a basis for evaluating alternatives and properly size interceptor sewers, treatment facilities, and other appurtenances that have useful lives far in excess of the 20 year planning period.

The 2000 population in Sutton was 8,628 and the average annual growth rate since 1990, as previously mentioned, has been approximately 2.3 percent. This average annual growth rate corresponds to an annual population increase of approximately 264 people between the years 2000 and 2025. Applying this annual increase to the current population results in an estimated design year (2025) population of 15,240. Town-wide population projections are shown in Table 4-1. At the current household occupancy rate of 2.9 persons, the population increase of 264 people corresponds to the addition of 91 new homes per year.

Table 4-1
Projected Town-wide Population

Year	Population
2000	8,628
2005	9,670
2010	10,830
2015	12,140
2020	13,600
2025	15,240

4.3 Residential Build-out

Future wastewater needs of the Town are directly related to development that will occur during the planning period. The residential build-out analysis evaluated two types of parcels. The first type is the stand-alone parcel or small individual lot that is found in older developed areas and represent infill within established neighborhoods. The second type of parcels considered are properties that are large enough to be sub-divided including those that are vacant and those with existing homes.

In the Manchaug study area, there are currently 216 existing homes with the potential for 125 additional units being projected through the study period of 2025 under current zoning requirements. The Lake Singletary and Sutton Center sub-areas have a combined development of 270 homes with a projected increase of 89 new dwellings by year 2025. Wilkinsonville and the Route 146 Corridor sub-areas have 600 homes currently connected to the Wilkinsonville area sewer system, with a projected number of 664 homes by the year 2005. By the year 2025, the projected amount of 382 new dwellings is anticipated.

As shown in Table 4-2, the needs areas can accommodate approximately 1746 additional residential dwellings. For the study year of 2025, growth projections would result in approximately 593 new residential homes. Applying the current occupancy rate of 2.9 persons per home, produces a total planning period population increase of 1,720. The projected number of new homes at the end of the planning period, separated by needs area, is also shown in Table 4-2.

Table 4-2
Estimated Residential Growth – Year 2025

Needs Area	Residential Units 2005	Estimated Increase of Residential Units During Planning Period	Total number of Residential Units Year 2025
Wilkinsonville/Route 146	664	382	1046
Manchaug/South Sutton	216	125	341
Lake Singletary/Sutton Center	270	89	359
TOTALS	1150	596	1,746

4.4 Commercial/Industrial Build-out

The commercial and industrial build-out analysis used the maximum potential square footage of building area available from vacant land inventory within the wastewater needs areas boundaries. From the vacant land inventory, the Wilkinsonville/Route 146 Corridor sub-area has the majority of land available zoned for commercial or industrial development. Approximately 300 commercially zoned acres and 325 industrial zoned acres are designated for development. In the Manchaug/South Sutton sub-area, there are approximately 14 commercially zoned acres and 27 industrial zoned acres designated for development. In the Lake Singletary/Town Center sub-area there are approximately 56 acres commercially zoned acres designated for development. Based on the current zoning, there is no industrial zoned area designated for development in the Lake Singletary/Town Center area. For the purpose of this report, Table 4-3 provides the overall projected commercial/industrial development anticipated for each of the areas by the design year 2025.

Table 4-3
Projected Commercial/Industrial Development During Study Period Year 2025 (Acres)

	Commercial	Industrial	Total
Wilkinsonville/Route 146	128	82	210
Manchaug/South Sutton	7	10	17
Lake Singletary/Town Center	40	0	40
Total	175	92	267

4.5 Estimated Wastewater Flows and Criteria

Estimated wastewater flows are a composite of five categories of flow: domestic or residential, commercial, industrial, institutional and infiltration/inflow. Flows for each of the categories are based upon typical industry standards for wastewater generation rates. This section will define these components and outline the criteria utilized for estimating the projected flow from each needs area.

4.5.1 Domestic Flow

Domestic flow is that portion of wastewater that is generated from single-family homes, apartments and/or condominiums. Since the majority of Sutton is not serviced by a municipal water system, the annual water consumption data could not be used to calculate an estimated wastewater generation rate. Instead, an estimated (or average) wastewater generation rate of 70 gallons per capita per day based on industry standards was used.

Utilizing the average capita per household value and the estimated wastewater generation rate, the domestic flow from each subject sub-area was calculated and is presented in Table 4-4.

Table 4-4
Estimated Domestic Wastewater Flow of Needs Areas

Wastewater Needs Area	Estimated Domestic Flow (gpd)				
	YR 2005	YR 2010	YR 2015	YR 2020	YR 2025
Wilkinsonville/Route 146	42,000	47,000	62,000	65,500	69,500
Singletary/Sutton Center	59,200	62,500	65,700	69,200	72,900
Manchaug/South Sutton	134,800	151,000	169,200	189,600	212,400
TOTAL	236,000	260,500	296,900	324,300	354,800

4.5.2 Commercial Flow

Wastewater generated in stores, restaurants, motels, and small businesses is defined as commercial flow. The amount of commercially zoned land in the Manchaug sub-area represents only a minor portion of the wastewater generated in this sub-area. By far, the bulk of commercially zoned land in Sutton is in the Wilkinsonville/Route 146 sub-area.

Industry standards estimate that typical commercial wastewater generation rates are within the range of 750-1,500 gallons per acre per day. For this study, a value 750 gallons per acre per day was used because the projected type of commercial development in Sutton will most likely include small businesses and stores, which tend to generate smaller amounts of wastewater than establishments such as restaurants and motels.

4.5.3 Industrial Flow

Wastewater generated from manufacturing facilities, truck terminals, etc., is defined as industrial flow. Most of the industrial zoned land in Sutton is located in the Wilkinsonville/Route 146 sub-area, with a couple of parcels zoned industrial in the Manchaug sub-area. Industry standards estimate that typical industrial wastewater generation rates are within the range of 1,000-3,000 gallons per acre per day. For this study, a value 1,500 gallons per acre per day was used. Due to limitations with wastewater disposal practices, a significant water use industry is not likely to be sited in Sutton.

4.5.4 Institutional Flow

Institutional wastewater flows are generated by schools, libraries, police stations, fire stations, etc. Institutional flows generated within the needs areas in Sutton are minimal. Therefore, institutional flows for this study will be accounted for as commercial flow (750 gallons per acre per day).

4.5.5 Flow from Infiltration and Inflow (I/I)

Water that enters the sewage system through indirect and direct means is considered infiltration and inflow, respectively. Infiltration is water entering the sewer system through defects in pipes, manholes, and service laterals. Inflow is

water entering the sewage system through roof leaders, sump pumps, drainage system cross-connections, driveway drains, and area drains.

It is extremely difficult to calculate I/I directly due to the fluctuation of groundwater elevations and rainfall through the seasons. Generally, the older the sewer system the higher the I/I rate. I/I entering into newly constructed sewers is minimal, assuming proper construction techniques and oversight are employed. Since there is a combination of existing and new sewers being evaluated for this study, an average value of 250 gallons per day per inch-mile (gpdim) is used. As sewers age, the amount of I/I will increase.

4.6 Projected Wastewater Flow

The projected average-day wastewater rate generated within each subject sub-area was calculated from the sources developed in the preceding sections. Table 4-5 presents these rates.

Table 4-5
Wastewater Needs Areas
Projected Average Day Wastewater Flow

Needs Area	Flow Component	Future Flow (gpd)				
		YR 2005	YR 2010	YR 2015	YR 2020	YR 2025
Wilkinsonville Route 146 Corridor	Residential	134,800	151,000	169,200	189,600	212,400
	Commercial	28,900	45,600	62,300	79,100	95,800
	Industrial	27,800	51,500	75,200	98,900	122,700
	I/I	28,900	32,400	36,300	40,600	45,500
	Subtotal	*220,400*	*280,500*	*343,000*	*408,200*	*476,400*
Manchaug/ South Sutton	Residential	42,000	47,000	62,000	65,500	69,500
	Commercial	2,500	3,500	4,000	5,000	5,000
	Industrial	10,000	13,000	15,000	15,000	15,000
	I/I	9,000	10,000	13,300	14,100	14,900
	Subtotal	*63,500*	*73,500*	*94,300*	*99,600*	*104,400*
Lake Singletary Sutton Center	Residential	59,200	62,500	65,700	69,200	72,900
	Commercial	10,000	15,000	20,000	25,000	30,000
	I/I	8,200	8,500	8,900	9,500	10,300
	Subtotal	*77,400*	*86,000*	*94,600*	*103,700*	*113,200*
	TOTAL	**361,300**	**440,000**	**531,900**	**611,500**	**694,000**

CHAPTER 5 - WASTEWATER MANAGEMENT METHODS

5.1 General

Priorities for providing solutions to wastewater disposal problems can be established on the basis of need, economic feasibility, and public demand for improvements. Viable alternatives will differ from area to area based on the type of problem, physical and environmental constraints, and cost impacts. For example, the construction of sewers in areas experiencing on-lot system failures may be the most feasible solution in some cases. However in other areas, particularly areas not fully developed, there may be some potential for other alternatives. Alternatives may include on-lot system construction or rehabilitation and cluster or package treatment facilities designed to handle wastewater generated from specific neighborhoods. An evaluation of each area must consider the ability of any alternative to reliably achieve the goals of protection of public health and maintenance of water quality. On-site disposal systems must be held to the same standards of treatment and disposal that public sewerage systems are expected to achieve.

5.2 Individual Sewage Disposal Systems

Approximately 85 percent of the current population in Sutton is dependent on on-site sewage disposal systems. Due to limitations on the Town's sewer service area, on-site disposal systems will continue to play an important role in the Town's overall wastewater management plan. Unfortunately, negligence or improper operation on the part of the property owner, along with unsatisfactory site conditions, can lead to early failure of a system, potentially threatening the health of residents and adversely impacting the environment. Failure of a system can be attributed to any or all of the following factors:

- Improper siting
- Inadequate sizing
- Hydraulic overloading

- Introduction of large quantities of non-biodegradable solids
- Failure to pump the system regularly
- Improper installation or substandard construction materials
- Adverse activities around the leaching field (i.e. planting trees)

Failed systems must be rehabilitated or replaced to comply with Title 5 regulations. Existing cesspools which fail must be replaced with an approved disposal system since they do not comply with the current Title 5 requirements. On-site system improvements may be achieved by upgrading or replacing existing individual systems or by implementing a shared system serving several homes and/or businesses.

For on-site wastewater disposal, the required level of treatment depends on the design flow of the system. According to Title 5, systems with wastewater flows less than 10,000 gpd only require treatment by a conventional septic system. New systems with wastewater flows equal to or greater than 10,000 gpd are considered large systems that require advanced treatment and a DEP groundwater discharge permit. Zone II wellhead protection areas have more stringent requirements. Systems located within Zone II protected areas with wastewater flows less than 2,000 gpd only require treatment by a conventional septic system. Systems in Zone II with flows between 2,000 and 10,000 gpd are required to reduce nitrogen as part of the treatment. Since groundwater discharge permits are generally not issued in Zone II protected areas, an advanced treatment facility for flows greater than 10,000 gpd would most likely not be approved unless no other feasible alternatives are available.

5.2.1 Conventional Upgrades or Replacement Systems

Conventional septic systems may be replaced or upgraded in sections of Town where centralized wastewater collection is cost prohibitive or where acceptable conditions for on-site wastewater disposal exist. Acceptable conditions include suitable soil percolation rate, low groundwater table, seasonal high water table at least 7 feet below grade, relatively level topography, adequate lot size for soil absorption system, adequate distance to bedrock, and proper distance of disposal system components to natural resources.

A typical Title 5 septic system consists of three components: a septic tank, a distribution box, and a soil absorption system. Pretreatment of the wastewater occurs in the septic tank. The distribution box directs the septic tank effluent evenly to the absorption system, which typically consists of trenches containing perforated polyvinylchloride (PVC) pipe backfilled with gravel.

5.2.2 Innovative/Alternative Systems

The State of Massachusetts allows for the use of approved innovative and alternative treatment and disposal systems as replacements for conventional systems. These systems are becoming more widely used. for cost effective upgrades of old failing systems on difficult sites with high water tables, poorly drained soils, and restricted areas that cannot support a conventional system. They are also used for new construction, particularly in environmentally sensitive areas where enhanced treatment is beneficial. The DEP maintains and publishes a list of approved alternative systems. Some of these systems are described below.

Treatment

Recirculating Sand Filters - The overall system consists of a septic tank, a recirculation tank, and an underdrained open sand filter. Effluent from the septic tank is collected in the recirculation tank, where it is mixed with effluent from the sand filter. The mixture is periodically pumped onto the sand filter. Overflow from the recirculation tank is directed to a leaching field. Benefits of this system are possible leaching field reduction of 50 percent, a 2-foot reduction in groundwater separation, and nitrogen removal.

Ruck System - A proprietary system designed to treat domestic sewage by means of parallel septic tanks, receiving gray water and black water, respectively, a nitrifying sand filter and a leaching field. Effluent from the black water septic tank is nitrified on the sand filter. Effluent from the sand filter is then mixed with gray water, promoting denitrification in the leaching field. This system reduces nitrogen concentrations, which will provide benefit to groundwater recharge areas and regions adjacent to sensitive surface water bodies.

AWT Bioclere System – This is another proprietary system which uses a modified trickling filter concept for wastewater treatment. The filter consists of a bed of highly permeable plastic media to which microorganisms are attached and through which septic tank effluent is trickled. The base of the unit serves as a final settling tank that discharges to a leaching field. Nitrified effluent from the settling tank can be returned to the septic tank for passive denitrification. A 50 percent reduction in leaching field area or a 2-foot reduction in groundwater separation is allowed with the use of this system.

Smith and Loveless Fast System - This proprietary fixed activated sludge process consists of a primary settling zone and an aerobic biological zone. Solids are trapped in the primary zone where they settle. In the aerobic zone, bacteria attaches itself to the surface of a submerged media bed, feeding on the sewage as it circulates. Both single home and modular units are available. Use of this system allows for a 50 percent reduction in leaching area or a 2-foot reduction of the groundwater separation. Nitrogen reduction can also be accomplished by adding an effluent recirculation loop to the system.

Saneco Intermittent Sand Filter – Intermittent sand filters are beds of medium to coarse sand, 24 to 36 inches deep, to which effluent from the septic tank is intermittently applied. Underdrains collect the filtrate and convey it to the leaching field. Use of this system allows for a 50 percent reduction in leaching area or a 2-foot reduction of the groundwater separation.

__Soil Absorption Systems__

Mound Systems - Mounds are a type of fill system designed to elevate the infiltration surface above wet, slightly permeable natural soil. Natural topsoil is plowed or furrowed to facilitate infiltration. Permeable fill material distributes effluent from a septic tank over a large area preventing excessive clogging and reducing the loading rate on natural soils.

Eljen In-Drain System - This proprietary system consists of panels, each with a cuspated plastic core having channels on both sides, which are completely enveloped by a geotechnical fabric. The fabric is folded around and sewn closed on two edges. Openings at the bottom of each vertical edge of the fabric permit the insertion of a perforated pipe. The system does not require the use of stone.

Infiltrator - This proprietary leaching field is designed for use without stone. The system consists of an open bottom leaching chamber molded from high density polyethylene.

__Miscellaneous__

Composting Toilets - Waterless toilets utilize biological oxidation to stabilize and reduce the volume of waste material. A separate septic system must be installed to treat gray water waste streams. The installation of composting toilets is most economically done in new houses. The size of the unit and radical plumbing changes make retrofitting very difficult.

5.2.2.1 Costs

Typical costs associated with the installation and operation of various on-site components and systems are presented in Table 5-1. For a conventional leaching field, a minimum area of 750 square feet for a 3 bedroom home with soils having a percolation rate of 25 minutes per inch has been used to estimate the cost. Costs will vary with the individual installation and could be considerably higher than those shown in some cases. According to the DEP, engineering and construction costs of an innovative/alternative upgrade to meet Title 5 may range from $6,000 to $38,000, depending on site conditions.

Table 5.1
Costs for On-Lot Disposal System

Description	Capital Cost $ (1)	Annual O&M Cost (2)	Amortized Cost (3)
Systems (4)			
Conventional	7,500	63	813
Recirculation Sand Filter	17,600	94	1,856
Ruck System	16,300	94	1,719
Bioclere-Trickling Filter	14,900	625	2,113
FAST System-Activated Sludge	12,500	188	1,438
Saneco ISF	13,400	213	1,550
Leaching Fields (5)			
Mound System	6,400	---	510
Eljen In-drain	4,800	---	475
Infiltrator	4,800	---	475
Miscellaneous			
Compost Toilets	9,500	250	1,200

(1) Cost based on ENR index of 5,895 (1998)
(2) Septic tank assumed to be pumped once per 3 years.
Power and labor costs included.
(3) Interest = 7-7/8%, system life = 20 years
(4) Includes treatment system and leaching field
(5) Includes replacement cost for field only.

5.2.3 Tight Tanks

A tight tank system can be considered an option when an existing system cannot be upgraded or repaired to meet Title 5 regulations. A tight tank system consists of a storage or holding tank installed before or after a septic tank to collect the wastewater which eliminates the need to discharge wastewater to the ground. The holding tanks must be sized at a minimum of 500% of the system sewage design but shall have a minimum storage capacity of 2,000-gallons. This creates a necessity for pumping out the stored sewage on a regular basis. Although this alternative is environmentally acceptable and meets Title 5 requirements, the operation and maintenance costs are high due to the frequent pumping. This option should only be considered feasible as a last resort where all other options have been examined and eliminated.

5.3 Shared Local Wastewater Treatment and Disposal

Locally shared systems may be a viable option for areas where conventional systems and individual systems are not feasible or cost prohibitive. This type of system requires a parcel of land with suitable environmental conditions such as soil type, geologic conditions, and groundwater conditions, for on-site wastewater disposal located relatively close to the cluster of homes to be served.

5.3.1 Shared Leaching Systems

A shared leaching system is designed to utilize a vacant parcel of land near a group of problematic existing systems that is suitable for wastewater disposal. This alternative is used for existing systems that can accommodate a septic tank but can no longer effectively use a soil absorption system. Effluent from the existing septic tanks is conveyed to the shared leaching system via gravity sewers or low-pressure septic tank effluent pumping (STEP) systems. Shared leaching systems involve proper facility siting, modifications to existing systems, and the creation of a community organization that will be responsible for operation and maintenance of the system.

5.3.2 Shared Treatment and Disposal Systems

Shared treatment and disposal systems can be used where lot size constraints and environmental conditions make upgrades of both septic tank and leaching fields unfeasible. This alternative includes all of the components of a conventional septic system (i.e., septic tank, distribution box, and absorption field). Existing on-site disposal systems are abandoned and the sewage from the existing systems is conveyed to the shared system location via gravity or low-pressure individual grinder pump systems.

5.4 Central Wastewater Collection

Central collection is a structural alternative, which provides the most positive means of removing wastewater from densely developed areas. The types of collection systems available are gravity (conventional), small diameter gravity sewers, and pressure sewers. Each of these systems is explained below.

5.4.1 Gravity Systems

This alternative has been universally employed for collection of wastewater. The system is the simplest conceptually, in that natural topography is used to allow the wastewater to flow by gravity through a network of pipes to a desired point. There is little maintenance with these systems, except a yearly inspection and occasional cleaning and flushing. The systems can be limited by natural topography and pumping is required in some gravity systems as an alternative to unreasonably deep sewer construction.

5.4.2 Pressure Sewers

There are two major types of pressure sewer systems: the septic tank effluent pump (STEP) system and the grinder pump system. In both designs, wastewater is collected via the building sewer and conveyed by gravity to the pumping facility. Neither system requires any modification of household plumbing. The on-site piping arrangement includes at least one check valve and one gate valve to permit isolation of each pump from the main pressure sewer. Both systems have the advantage of relatively low capital cost for pipeline construction, as pressure sewers are smaller and shallower than gravity sewers. Because of their shallow depth, pressure sewers may also be constructed more easily in densely developed areas than gravity sewers. The major difference between these alternate systems is in the on-site equipment and layout.

In the STEP systems, wastewater receives intermediate treatment in a septic tank and the effluent flows to a holding tank, which houses the pump, control sensors, and valves required for the system. Small centrifugal pumps pump the effluent from the tank to the pressurized system. The primary disadvantage with this system is that the septic tank must still be pumped out periodically, just as with a conventional on-site disposal system.

In the grinder pump system, wastewater from the building sewer flows by gravity to a grinder pump. The pump can be located either inside or outside the building, although the basement location is preferable for easier access and maintenance. The grinder pump grinds all solids and the effluent is discharged into the pressurized pipe conveyance system. This system has been used in numerous locations throughout the United States and is considered very reliable. Thus, the grinder pump system is considered a viable alternative under appropriate conditions, such as when there is inadequate space in which to construct a conventional gravity wastewater collection system and where topography requires isolated areas to be pumped.

5.4.3 Small Diameter Gravity Sewers

Small diameter gravity sewers are used in conjunction with a septic tank at each individual lot to be served. The septic tank retains solids, which allows the use of smaller diameter pipe. The minimum diameter is usually 6-inches and piping is generally PVC. One disadvantage of this system is the maintenance and pumping of the septic tank at each lot. These systems are most applicable when the effluent needs to be clarified because conveyance is to a common leaching system and where a new treatment plant is to be constructed without facilities for primary treatment.

5.4.4 Pump Station and Force Mains

Pumping stations are typically used in conjunction with gravity sewer alternatives. Gravity sewer systems collect and transport wastewater from service connections to the treatment facility. Areas within the wastewater collection system that have topographical constraints utilize pump stations and force mains in conjunction with gravity sewers to transport wastewater to the desired location.

Pump stations must be designed to handle the peak wastewater flow. The costs for pump stations can be a considerable portion of a gravity sewer construction project. Each pump station requires a backup pump, emergency power (generator), and in some cases, odor control measures.

5.5 Satellite Treatment Facilities

Treatment facilities in Massachusetts, designed to handle flows in excess of 10,000 gpd and with a land disposal alternative, are required to obtain a groundwater discharge permit. At present, it is not considered feasible to obtain a new surface water discharge permit in Massachusetts, particularly if other discharge alternatives are available. If design flows exceed 40,000 gpd, the DEP requires that redundant treatment units be provided. Treatment facilities exceeding 40,000 gpd become more complex, require more operator attention, and are more expensive.

Wastewater collection and disposal facilities of this nature can handle flows from larger needs area than that of a shared local system. In Sutton, there is no need to service the entire town or large expanses of developed land with a satellite treatment facility. This type of system would be suitable for a small, problematic village area such as Manchaug. Several options for treatment and disposal are compatible with these larger treatment systems. These are described below.

5.5.1 Disposal Alternatives

Three methods of effluent disposal to groundwater were considered. These included rapid infiltration, spray irrigation, and subsurface disposal. Disposal site screening criteria include the type of soil, current land use, and the required land area. Specific criteria related to soil type are percolation rate, depth to bedrock, topography, and depth of groundwater. Preliminary determinations of these criteria can be made from data available from Soil Conservation Service and from USGS topographic maps. Land use can be determined from Town maps, conversations with Town personnel, and site visits. Land area requirements are estimated based on standard buffer zones, projected flows, and application rates for the specific disposal system. The size of the property can then be compared to undeveloped sites with suitable soils. Sites with adequate land area and in close proximity to the study area should be recommended for further evaluation. Criteria used to determine where suitable soil is located are given in Table 5-2.

Rapid Infiltration

In rapid infiltration systems, wastewater effluent is applied to deep and permeable basins, where it percolates through the soil matrix and into groundwater. The distribution system applies wastewater at a rate that constantly floods the basin throughout the application period of several hours to a couple of weeks. A cycle of flooding and drying helps maintain the infiltration capacity of the soil material. Infiltration diminishes slowly with time due to clogging. However, it is readily restored by occasional tillage of the surface layer. Treatment to remove solids improves distribution system reliability, minimizes nuisance conditions, and reduces clogging rates. Rapid infiltration is less land intensive than other land application systems and provides a means of groundwater recharge. No storage is required.

Spray Irrigation

Spray irrigation is the application of wastewater effluent to vegetated soils that are low to moderate in permeability. Wastewater is taken up by the soil matrix and plant biosystems, with additional losses through evapotranspiration and percolation to groundwater. This type of system requires the largest land area, creates possible air transport of pathogens if disinfection is not provided, and limits application periods to growing seasons, which makes it necessary to provide storage. For purposes of this study, it was assumed that three months storage would be required.

Subsurface Disposal

In subsurface disposal systems, treated wastewater is discharged below the ground surface, where it is absorbed by the soil as it percolates to groundwater. Several alternatives are available including trenches and beds, seepage pits, mounds, and artificially drained systems. All are covered excavations filled with porous media. For the purpose of this study, a trench system is evaluated as the disposal system. A trench system includes shallow, level excavation, usually one to five feet deep and one to three feet wide. Gravel or crushed rock fills six inches of the bottom. Perforated distribution piping is laid over the gravel and more rock is placed over the pipe.

Table 5-2
Alternate Disposal Systems
Soil Suitability

Disposal Technique	Criteria				
	Percolation Rate (in/hr)	Depth of Bedrock (ft)	Topography	Groundwater Depth (in)	Land Use
Rapid Infiltration	>0.2	>5	<10% Slope	>72	Open Space Crop Land
Spray Irrigation	>0.06	>5	<15% Slope	>72	Open Space Crop Land Partially Forrested
Subsurface	>2.0	>5	<10% Slope	>36	Open Space Crop Land

The following assumptions are also used to estimate land area requirements.

- Rapid infiltration systems – loading rate of 2.5 gal/day/ft^2.
- Spray irrigation systems – application rate of 0.2 gal/day/ft^2.
- Subsurface disposal systems – loading rate of 1.2 gal/day/ft^2.
- Rapid infiltration and spray irrigation systems include a 200-foot buffer zone on all sides.
- Subsurface disposal systems require a buffer of 50 feet on all sides.

5.5.2 Treatment Plants

Commercially available wastewater treatment plants or "package plants" are sold as pre-fabricated units or in easily assembled components. They are available with capacities up to 1 mgd, but are not commonly used for flows of greater than 200,000 gpd. These units have higher manpower requirements associated with their use than other community systems. They cannot be installed and expected to run by themselves. Daily attention is required, and anything less will result in an inefficient operation. Although these systems are capable of providing nitrified/denitrified effluents, it is assumed that a secondary effluent will be the required treatment level at this time.

With consideration to the large number of treatment alternatives available, a screening level evaluation was conducted to include those alternative technologies that have a history of use in similar applications, have gained regulatory approval, have reliably met discharge limits, and are comparatively cost effective. Alternative treatment technologies considered in this study include fixed activated sludge (FAST), rotating biological contactors (RBC), and sequencing batch reactors.

Fixed Activated Sludge Treatment (FAST)

The FAST system is a submerged aerobic fixed film process using corrugated PVC media as the site for microbial growth. Airlifts are used to circulate and transfer oxygen into the tank contents. The turbulent, completely mixed process provides high-rate circulation and excess oxygen to the biota. Sludge settles and is stored in a zone below the media. A separate clarifier is not required. The complete treatment system includes anoxic tanks to settle solids, FAST units for biological treatment, ultraviolet disinfection, and effluent disposal to a ground discharge site. Liquid sludge is treated off-site at an incinerating facility.

Rotating Biological Contactors (RBC)

A rotating biological contactor is a fixed film biological reactor consisting of plastic media mounted on a horizontal shaft placed in a rectangular tank. Common media forms are disc-type made of Styrofoam and a denser, lattice-type made of polyethylene. While wastewater flows through the tank, the media, which is 40% submerged, is slowly rotated to provide contact of the biofilm that develops in the media with the wastewater. Rotation results in exposure of the film to the atmosphere and serves as a means of aeration. Excess biomass is stripped off by rotational shear forces and remains in suspension by the mixing action.

The overall treatment process consists of primary settling tanks for pretreatment, a flow equalization basin, RBCs, secondary clarifiers, and ultraviolet disinfection. Sludge produced is stored in an aerated holding tank. Liquid sludge is then trucked off-site for disposal by incineration.

Sequencing Batch Reactors

A sequencing batch reactor, often referred to as an SBR, is a form of the activated sludge process, the most widely accepted biological treatment method. It consists of a concrete tank, approximately 20 to 28 feet in depth, in which mixing, aeration, and sedimentation occur in various stages for a specific volume of wastewater.

Wastewater flows into a basin during a static fill stage and is succeeded by a mixing stage and a mixing/aeration stage, which both occur while the filling of the basin continues. Once the basin is filled, mixing and aeration continue just like in an aeration tank. The organic material contained in the wastewater is used by microorganisms as a source of food and energy to support their metabolic functions. Growth of the desired microbial populations is encouraged by maintaining aerobic conditions. Waste material is converted to cell growth, which is settled out during sedimentation just like in a secondary clarifier. This is followed by a decant stage in which treated wastewater can be recycled for additional treatment or is allowed to continue for disinfection and discharge. Sludge is collected and is returned to the primary clarifiers or is disposed of as excess sludge.

Experience indicates that using sequencing batch reactors followed by conventional sedimentation can result in removal rates greater than 90 percent for BOD and suspended solids.

Zeno-Gem®

The Zeno-Gem® process combines two processes in a single tank to provide a high degree of wastewater treatment. The process uses a conventional aeration tank to effect the biological treatment required. In the same tank, effluent filtration modules are used to filter the wastewater as it is pumped out of the tank. Because the filtration membranes have an extremely small pore size, the effluent quality is extremely clean in relation to the other processes evaluated for this report. Because of the high degree of effluent quality produced by this system, it is usually used for recycling of wastewater. An anoxic zone is provided in the front of the tank for denitrification. Similar to the SBR, clarifiers are not required because of the membrane filtration modules. Flow equalization is required and more important than the other processes evaluated because the system is designed on a constant flow throughput. Effluent pumps are required to draw the wastewater through the membrane filters. This process requires little operator attention on a day-to-day basis, but it does require more maintenance and attention for the cleaning of the membranes.

CHAPTER 6 – ALTERNATIVE ANALYSIS

6.1 General

The purpose of this chapter is to present the wastewater treatment alternatives available for the critical needs areas identified in Chapter 3. The study has determined that Wilkinsonville, Lake Singletary/Sutton Center, and Manchaug are the most critical areas in the town. The following sections will discuss the possible alternatives and the approximate cost to treat the wastewater generated from each of the areas.

6.2 Wilkinsonville

As previously mentioned, Wilkinsonville is the only area in Sutton that presently receives municipal sewer service. Currently, the flow is transported through a force main to the Town of Millbury's wastewater treatment plant. Due to the severe soil limitations for on-site septic systems and the presence of several interim wellhead protection areas, the existing sewer system in Wilkinsonville needs to be expanded.

Recently, Millbury elected to abandon its wastewater treatment facility in favor of pumping its wastewater to the Upper Blackstone Regional Treatment Facility (UBWPAD). Once the sewer system in Wilkinsonville is expanded, this future flow will be included in Millbury's capacity allotment from the Upper Blackstone Facility.

By the design year of 2025, it is expected that Wilkinsonville will generate approximately 476,400 gpd of wastewater flow, including development along Route 146. The expansion of the sewer would include gravity sanitary sewers, force mains, and possibly two new pump stations. The configuration for the expansion can be seen in Figure 6-1. The cost for the construction of the sewer system would be approximately $4,585,000. There are several considerations that would need to be investigated further if the sewer expansion is constructed. The expansion would tie into the existing 10" sewer on

TOWN OF SUTTON, MASSACHUSETTS
SEWAGE SYSTEM PLAN

WILKINSONVILLE AREA SEWER SYSTEM

NTS

LEGEND

- PUMP STATION
- PROPOSED GRAVITY SEWER
- PROPOSED FORCE MAIN
- EXISTING GRAVITY SEWER
- EXISTING FORCE MAIN

FIGURE 6-1

BETA
ENGINEERS • SCIENTISTS

J:\SUTTON SEWERS\1103 - Facility Plan\REV-FIGS-11-2001\FIG6-1.dwg, 10/11/2002 11:31:33 AM

Buttonwood Avenue, which continues to the Blackstone pumping station. The diameter of this pipe may need to be increased depending on the increase in flow.

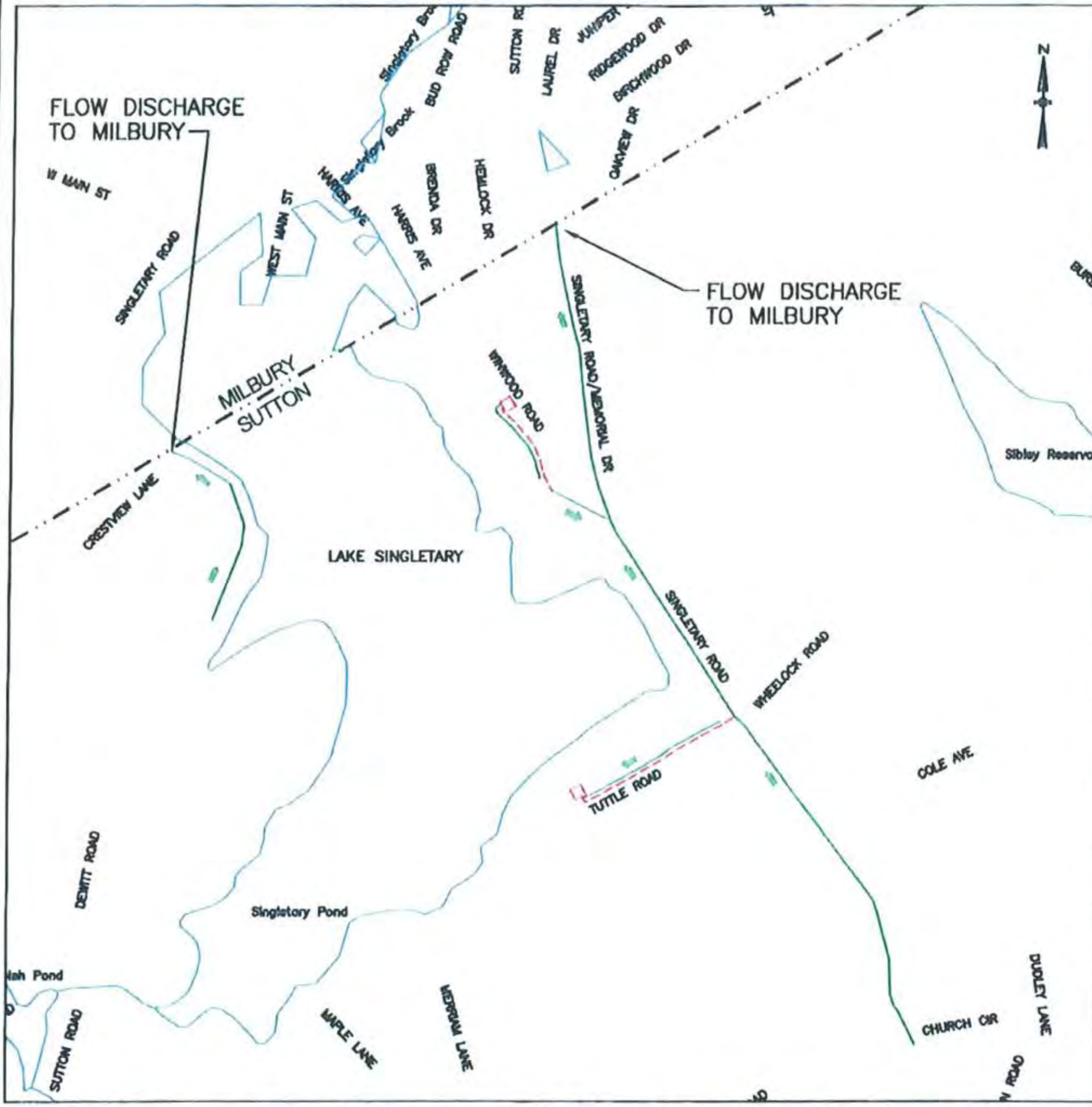
The charges from Millbury for transporting sewage flows to the UBWPAD are broken into two categories, capital cost and operations and maintenance charges. The charges for capital costs are based on the peak flow for any given year. The operations and maintenance (user) charges are based on average daily flows for 365 days. The share of the capital cost for the flow generated from Wilkinsonville is approximately $243,280. The annual user charge would be $417, assuming the users of this area are to pay for not only the operating costs, but also the debt service of the improvements being made.

6.3 Lake Singletary/Sutton Center

The Lake Singletary portion of this sub-area is considered a critical needs area due to the severe slopes, small lot sizes, and high groundwater. Also, the integrity of the lake as a multiple resource may be jeopardized due to the limitations of the on-site disposal systems. The Sutton Center portion of the area services the majority of the municipal buildings in Sutton. High groundwater and depth to bedrock can lead to premature on-site system failures. This area has inadequate environmental conditions for upgrading existing septic systems.

In the design year 2025, it is estimated that Lake Singletary/Sutton Center will generate approximately 113,200 gpd of wastewater flow. There are two alternatives that were evaluated for this needs area. The first alternative is to construct a sanitary sewer system that would convey the wastewater to Millbury and in turn, to the UBWPAD. This alternative is presented in Figure 6-2. The construction cost of the sewer system would be approximately $3,500,000. This system would include gravity sewers, force mains, and possibly two pump stations. The share of the capital cost to transport to UBWPAD for Lake Singletary/Sutton Center would be $214,200. The annual user charge would be approximately $650, assuming the users of this area are to pay for not only the operating costs, but also the debt service of the improvements being made.

TOWN OF SUTTON, MASSACHUSETTS
SEWAGE SYSTEM PLAN



LAKE SINGLETARY/SUTTON CENTER AREA SEWER SYSTEM

NTS

ALTERNATIVE 1
TO MILBURY

LEGEND
PUMP STATION
GRAVITY SEWER
SEWER FORCE MAIN

FIGURE 6-2

BETA
ENGINEERS • SCIENTISTS

J:\SUTTON SEWERS\1103 - Facility Plan\REV-FIGS-11-2001\FIG6-2.dwg, 10/11/2002 11:31:13 AM

6.4 Manchaug

The alternative for meeting the wastewater needs in this sub-area has been developed. The wastewater generated from this sub-area in the design year of 2025 is 104,400 gallons per day. The plan is to connect to a package treatment plant for groundwater discharge.

The costs for constructing the gravity and low-pressure sewers would be approximately $5,200,000. The share of the capital cost for the flow generated for Manchaug would be approximately $417,040. The annual user charge would be $1,267 assuming the users of this area are to pay for not only the operating costs, but also the debt service of the improvements being made.

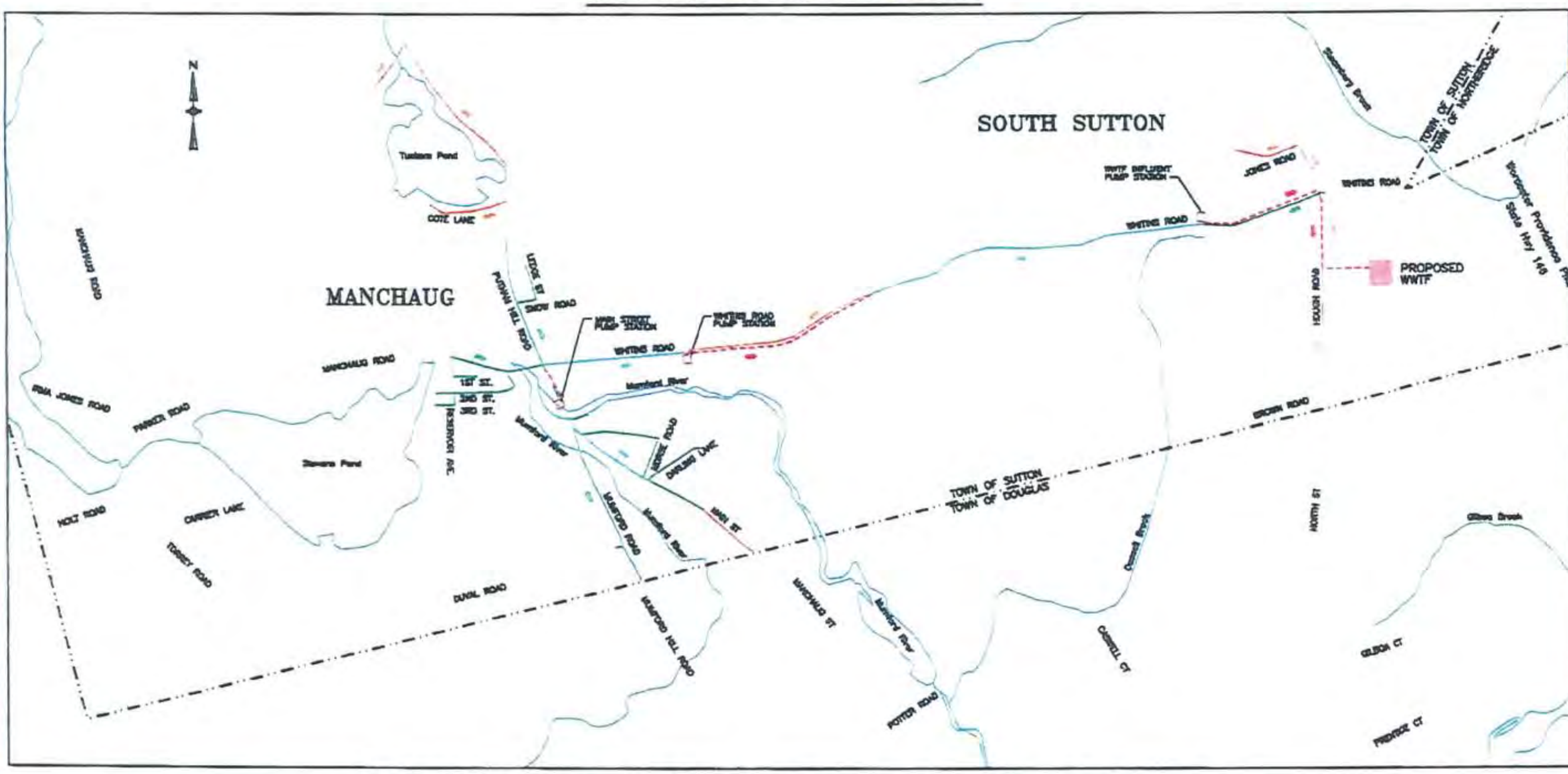
The cost for the package treatment plant and disposal field would be approximately $2,700,000. The share of the capital cost for the construction of the Manchaug WWTF would be approximately $165,240. The annual user charge would be $1,019, assuming the users of this area are to pay for not only the operating costs, but also the debt service of the improvements being made. This alternative is presented in Figure 6-4.

The total cost for this alternative would be approximately $7,900,000. The disposal alternative chosen for the package treatment plant would be a subsurface discharge.

6.5 Wastewater Treatment Options for Manchaug/South Sutton

A number of treatment processes can be utilized to achieve the effluent discharge standards contained in the Massachusetts Department of Environmental Protection Groundwater Discharge Permit Program 314 CMR 5.00. These include a variety of wastewater treatment processes, such as the conventional activated sludge process, the extended aeration activated sludge process, rotating biological contactors (RBCs), and sequencing batch reactors (SBRs). It also includes numerous propriety processes such as the FAST® (Fixed Film Activated Sludge) system and the Zeno-Gem® system. The

TOWN OF SUTTON, MASSACHUSETTS
SEWAGE SYSTEM PLAN



LEGEND

- PUMP STATION
- 8" GRAVITY SEWER
- 10" GRAVITY SEWER
- SEWER FORCE MAIN
- FUTURE SEWER PHASES

MANCHAUG/SOUTH SUTTON AREA SEWER SYSTEM

NTS

FIGURE 6-4

BETA ENGINEERS • SCIENTISTS

aforementioned processes are the most common and reliable systems and will be evaluated for the Town of Sutton's future wastewater treatment plant.

The basic criteria to be considered in determining which treatment process is the most appropriate in this particular instance includes: (1) the projected capital, operation, and maintenance expenses associated with the system; (2) the ease of operation of the system; (3) the reliability of the system; (4) the ability of the system to fit on the available site; (5) the aesthetic acceptability of the proposed facility; (6) the acceptance of the system by town residents and regulatory officials.

6.5.1 Wastewater Treatment Processes

Sewage treatment facilities generally employ an aerobic biological process to accomplish waste treatment. Aerobic biological treatment processes are capable of substantially reducing the concentration of Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS); both are measures of the strength or pollutant load of a particular wastewater. These are considered conventional measures of pollution. More importantly, the treatment process is capable of nitrifying the ammonia in the wastewater to nitrate-nitrogen, which can subsequently be removed through a denitrification process. Nitrate-nitrogen can have an adverse effect on the drinking water and is considered one of the more important nutrients to be addressed in wastewater treatment where groundwater disposal is being considered. Disinfection at such facilities provides significant reduction in the number of pathogenic organisms in the wastewater prior to its release into the environment.

Sewage treatment facilities approved under the Ground Water Discharge Permit program utilize a combination of treatment units generally consisting of primary settling followed by some form of aerobic biological treatment, anoxic biological treatment for nitrogen removal, secondary settling, filtration, and discharge into the ground via conventional leaching trenches or infiltration basins.

Flow equalization is typically required for small plants, such as the facility proposed for Sutton, due to the higher anticipated peak flows. Diurnal peaks in sewage flows are typical in most communities. These peaks are most pronounced when the service area is relatively small. Larger collection systems have a dampening effect on the flow variations experienced over a day. Minimal flows are anticipated during the late night and early morning hours and then again at mid-day. Peak flows are expected in the morning and again in the early evening. Flow equalization tanks are typically provided to modulate the flow ensuring an averaged feed rate to the treatment system. Wastewater is generally pumped to the biological treatment units from the equalization tank or to the filtration units from the biological tanks, depending on the wastewater treatment system chosen. Ultimately, the feed rate can be adjusted for maximum treatment efficiency.

Waste sludge produced by the various treatment processes are often directed to the pretreatment tank or a separate sludge holding tank for storage and ultimate removal for on-site dewatering, thickening, or off-site treatment and disposal. Processes that do not employ primary treatment typically include a headworks facility for screening or shredding and possibly degritting of the influent waste stream, depending on the size and characteristics of the collection system. Sutton's collection system is not that large and because it does not have any storm water connections, it is not anticipated that grit removal will be required. Screening will be required to remove rags and other large objects commonly found in a sewage collection system.

There are two basic methods of biological treatment available – fixed film and suspended growth processes. Both of these systems employ biological growths of microorganisms to effect aerobic decomposition or oxidation of organic material into more stable compounds and provide a higher degree of treatment than that accomplished by primary sedimentation alone. In the fixed film reactor, the biological growth is attached to a fixed medium and the organic material must be brought to them. With suspended growth systems, the organisms are suspended in the water and are carried to the organic matter in the wastewater by means of the aeration device. The biological systems evaluated in this study include RBCs (a fixed film reactor), SBRs (a suspended growth system), FAST® (a fixed film reactor with a suspended growth component) and Zeno-Gem® (a suspended growth system) with filtration.

Successful biological treatment involves the maintenance of aerobic environmental conditions favorable for the life cycle of the organisms and control over the amount of organic matter that they decompose. The organic matter or wastewater is the food upon which these organisms feed. If they are either over-fed or under-fed, their efficiency is reduced.

During the biological treatment of sewage, a series of biochemical reactions, known collectively as nitrification, convert the nitrogenous compounds present within the wastewater to the completely oxidized nitrate-nitrogen (NO_3-N) form. In recent years, a variation in the biological process has proven extremely successful in providing an additional treatment phase known as denitrification by limiting the availability of free oxygen. Bacteria functioning in the anoxic (devoid of free dissolved oxygen) environment utilize combined forms of oxygen for respiration thereby converting the NO_3-N present in the wastewater to nitrogen gas.

A secondary clarifier is typically placed in the treatment train following the biological treatment process. This tank provides a quiescent zone for the settling of the solid cell material generated during wastewater treatment. The settled solids are typically directed to a hopper by rotating sludge rakes and pumped to a holding tank at regular intervals. The clarifier also captures floating matter for removal from the system.

A tertiary filter is often used to enhance wastewater quality. Typically, the filter is comprised of two or more individual cells. Some systems incorporate a headloss controlled automatic scour and backwash cycle to periodically cleanse each filter cell.

Disinfection of treatment facility effluent allows for the destruction of pathogenic bacteria and viruses to further protect the environment. Disinfection is generally performed utilizing chlorination or ultraviolet radiation. Disinfection is generally provided when the depth to groundwater is shallow or close to the bottom of the leaching area. However, the depth to groundwater at the site chosen for the Sutton treatment plant is over 90 feet. Typically, 5 feet of unsaturated soil beneath the infiltration basins or trenches is considered adequate to affect the proper level of treatment. Additionally, the site is in a designated Zone III, which does not require disinfection.

Sludge holding tanks are required to store the residual sludge, a byproduct of the biological treatment process. The estimated sludge quantities from the treatment process will vary from approximately 2,000 gallons per day in the initial year to 4,300 gallons per day at the future estimated design flow of 110,000 gallons per day. Typically, the sludge is wasted from the reactors at 1.5% solids concentration and stored in a sludge holding tank. Once in the tank, sludge is handled one of three ways.

The sludge can be dewatered by means of a belt filter press, plate and frame press, or a centrifuge. Typically, the solids content of the sludge is increased to a concentration of 25-30% solids, which is in a cake-like form. The sludge can then be transported to a sludge processing facility, such as an incinerator or a composting facility. These methods are utilized when there are large quantities of sludge; plants larger than 2 million gallons per day or when hauling sludge long distances.

The sludge can be thickened from 1.5% solids to 5% solids concentration. Thickening can be accomplished by means of thickening devices, such as gravity

belt thickeners or rotary drum thickeners. These devices are commonly used when the sludge is being delivered to an incinerator or a facility that has the capability for dewatering. These thickening devices are commonly used at plants approaching 500,000 gallons per day or where the sludge processing facility is located a great distance from the plant.

The last method is to hold the sludge in a holding tank and decant the excess water so the sludge can be thickened to at least 2.5% solids concentration. This method is typically used for small treatment plants as proposed in Sutton. Because of the small quantities of sludge generated in Sutton and the short haul distance to sludge incinerators such as the facility in Woonsocket, it is not cost-effective to build any dewatering or thickening devices.

Common to all of the wastewater treatment schemes is a wastewater treatment plant building to house a conference room, process controls, a screening device, chemicals and chemical dosing pumps, office/laboratory, restroom facilities, and a maintenance shop. An emergency generator equipped with an automatic transfer switch and sequential starter will be housed outside in a separate sound attenuating enclosure.

Rotating Biological Contactors (RBCs)

Rotating Biological Contactor treatment devices employ a series of polyethylene discs, mounted on a steel shaft. The shafts are rotated to achieve a peripheral velocity of approximately 60 feet per minute with approximately 40 percent submergence in the wastewater. Microorganisms naturally present in the environment (primarily bacteria, but also other simple life forms such as algae, protozoa, and rotifers) adhere to the discs forming a biological slime layer. This biological layer utilizes the soluble organic compounds in the wastewater as a source of energy and as a supply of the basic elements necessary to produce new cell material. Rotation of the media alternately exposes the organisms to their food, the soluble organic matter, and the atmosphere, which provides the oxygen needed for respiration.

Shearing forces exerted on the organisms during rotation through the wastewater cause excess growth to slough from the media into the wastewater solution (referred to as mixed liquor). The mixing action of the rotating media keeps the sloughed solids suspended in the mixed liquor. Subsequent processes of clarification and filtration separate the phases, producing a clarified liquid effluent and a waste sludge.

RBCs are capable of producing a uniformly high quality effluent while operating over a wide range of hydraulic and organic loadings. The biological growth develops in response to the imparted load. During periods of low hydraulic or organic loading, the biological growth is concentrated on the front portion of the treatment unit. The remainders of the disks are available as excess capacity. As the flow (or organic load) is increased, the organisms begin to populate the entire surface area of the RBC media. Thus, the system is able to quickly adjust to the strength and volume of the influent wastewater stream.

A conceptual layout of the RBC treatment system is shown on Fig. 6-5. The total RBC treatment system includes primary clarification, flow equalization, aerobic rotating biological contactor treatment, secondary clarification, and filtration using automatic backwash denitrification filters.

For the proposed service area design flow of 110,000 gallons per day, this option has an estimated capital cost of $3,345,000 and an annual O&M cost of $188,000. The total present worth of the RBC treatment system is $4,927,000. Table 6-1, located at the end of this chapter, presents an itemized breakdown of the various cost items for the RBC treatment options.

The advantages of a RBC treatment process include:

- History of reliable use for similar applications

- There are more than 100 RBC treatment facilities in operation in Massachusetts
- Straightforward, simple operation – requires minimal process monitoring and control
- Generally well accepted by DEP
- Can be installed in modular format based on phasing requirements
- Equipment is available through a number of different vendors
- Can accommodate variations in hydraulic and organic loading

The disadvantages of a RBC treatment process include:

- Temperature can affect performance
- Larger land area required than other options
- Somewhat higher capital cost than other options

Sequencing Batch Reactors (SBRs)

The use of sequencing batch reactors for accomplishing multiple treatment tasks has recently attracted a great deal of interest. Utilizing a fill and draw operation together with a mixing, aeration, and sedimentation strategy during an operating cycle offers the possibility of accomplishing several processes and operations in a single reactor vessel, which has the potential for a lower capital cost. Processes such as nitrification (the oxidation of ammonia-nitrogen to nitrate, NO_3-N) and denitrification (the removal of nitrate by denitrifying bacteria which utilize the oxygen from NO_3-N under anoxic conditions, leaving the nitrogen as nitrogen gas, N_2) can be accomplished along with biochemical oxygen demand reduction and organic solids stabilization in a single reactor vessel. Most denitrification processes require a supplemental organic carbon source, usually a simple carbohydrate such as methanol. By introducing a portion of the incoming waste before the denitrification segment of a SBR cycle or alternating aerobic and anoxic periods during part of the cycle, it is possible to achieve biochemical oxygen demand reduction and nitrogen removal in a single reactor.

The SBR process is a "fill and draw" activated sludge treatment system that has been successfully used in industrial and municipal applications. There are five steps in the SBR process – fill, react (aeration), settle (clarification), draw (decant), and idle (sludge wasting). The SBR treatment system would consist of multiple tanks with inlets for raw wastewater, air diffusers with associated compressors and piping, a sludge draw off mechanism at the bottom to waste sludge, a decant mechanism to remove the clarified supernatant after settling, and a control mechanism to time and sequence the processes. A treatment plant using the SBR process would also have to include screening, effluent flow equalization, filtration, and sludge storage. A conceptual layout of the SBR treatment system is shown on Fig. 6-6.

This option has a capital cost of \$2,605,000 and an annual O&M cost of \$192,000. The total present worth of the SBR treatment system is \$4,277,000. Table 6-1, located at the end of the chapter, presents an itemized breakdown of the various cost items for the SBR treatment options.

The advantages of a SBR treatment process include:

- No separate primary or secondary clarifiers required
- Available in modular units to accommodate phasing
- Equipment is readily available through a number of different vendors
- Offers the greatest amount of operational flexibility of the three options
- Minimum process tank requirements
- Less land required than the other alternatives
- Accepted by DEP

The disadvantages of a SBR treatment process include:

- There are fewer small-scale facilities in operation in Massachusetts. However, there are many SBRs successfully operating throughout the US
- Electronic timing of units and level sensors is required
- There are difficulties in minimizing discharge of floating or settled sludge
- Process control modifications are necessary to adapt the system to flow variations
- More operator attention is required than the other options

FAST® Treatment System

The FAST® wastewater treatment system is a fixed film, packed bed reactor that combines elements of trickling filter and activated sludge technologies. The honeycomb type media in the system, which is 100 percent submerged in the wastewater, provides a high surface area to volume ratio. The packing material is similar to the media used in trickling filter towers and has discrete channel flow paths throughout, resulting in high liquid velocities and a self-cleaning action. A draft tube is used to circulate wastewater through the media. Air is released inside the draft tube, creating a standard airlift pump. Enough air is released so that the tank remains completely mixed.

As the system is operated, bacteria grow and flourish on the media and reach a point where they slough from the media in a manner similar to the RBC system. The solids from a FAST® unit are large, dense solids which settle rapidly. These sloughed solids are removed through sedimentation using a conventional secondary clarifier.

There are several configurations for the FAST® system depending on the waste characteristics and the environment where the treatment takes place. In situations such as here in Sutton, where there are effluent limitations for nitrogen, the FAST® system is partitioned into a series of aerobic and anoxic zones. A supplemental carbon source is added to the anoxic zone to promote denitrification reactions.

A conceptual layout of the FAST® treatment system is shown on Fig. 6-7. The total FAST® treatment system includes primary clarification, flow equalization, aerobic and anoxic FAST® treatment, secondary clarification, and filtration.

This option has capital cost of $5,829,000 and an annual O&M cost of $194,000. The total present worth of the FAST® treatment system is $7,122,000. Table 6-1, located at the end of the chapter, presents an itemized breakdown of the various cost items for the FAST® treatments options.

The advantages of FAST® include:

- Somewhat flexible operation
- Less mechanical equipment than the other options
- Accepted by DEP
- Requires slightly less land area than RBC

The disadvantages of FAST® include:

- There are only a few small scale facilities in operation in Massachusetts
- Require more process monitoring and adjustment than a RBC
- The equipment is proprietary and only available through a single vendor

Zeno-Gem®

The Zeno-Gem® process combines two processes in a single tank to provide a high degree of wastewater treatment. The process uses a conventional aeration tank to effect the biological treatment required. In the same tank, influent filtration modules are used to filter the wastewater as it is pumped out of the tank. Because the filtration membranes have an extremely small pore size, the effluent quality is extremely clean in relation to the other processes evaluated for this report. Because of the high degree of effluent quality produced by this system, it is usually used for recycling of wastewater. An anoxic zone is provided in the front of the tank for denitrification. Similar to the SBR, clarifiers are not required because of the membrane filtration modules. Flow equalization is required and more important than the other processes evaluated because the system is designed on a constant flow throughput. Effluent pumps are required to draw the wastewater through the membrane filters. This process requires little operator attention on a day-to-day basis, but it does require more maintenance and attention for the cleaning of the membranes.

A conceptual layout of the Zeno-Gem® treatment system is shown on Fig. 6-8. This option has a capital cost of $2,919,000 and an annual O&M cost of $218,000 for the proposed design flow. The total present worth of the Zeno-Gem® treatment system is $4,831,000. Table 6-1, located at the end of the chapter, presents an itemized breakdown of the various cost items for the Zeno-Gem® treatment option.

The advantages of Zeno-Gem® include:

- Capable of a high degree of solids removal
- Does not require clarifiers
- Requires little operator attention from a process view point
- Generally produces less sludge than the other process
- Accepted by DEP
- Requires less land area than the RBCs or the FAST processes

The disadvantages of Zeno-Gem® include:

- There are only a few full-scale operating systems in Massachusetts.
- Equipment is proprietary and only available through a single vendor
- Power costs are higher than the other alternatives

- Requires a larger equalization tank than the other processes

6.5.2 Effluent Disposal Options

Two methods of effluent disposal were investigated: open-sand beds and subsurface leaching trenches. Both practices are widely used for ground water discharge of treatment plant effluent in Massachusetts and throughout the Northeast.

Open Sand Beds

Open sand beds, or rapid infiltration basins, are sand-lined, open excavations or walled areas where treatment plant effluent is discharged onto the ground surface and allowed to percolate into the soil. For sandy soils such as those expected at the potential discharge sites, the DEP allows open beds to be designed with a hydraulic loading rate of 4-5 gallons per day per square foot. A typical design includes multiple beds to allow for alternating the flow. Alternating the flow facilitates routine maintenance. The open sand bed concept is suitable for the parcel of Town owned land proposed for this project.

The conceptual design calls for two equally sized beds surrounded by a fifteen foot wide buffer strip around the beds. The design flows for the proposed service area would require a total bed area of 37,500 square feet. An equivalent sized area would be held in reserve should it become necessary to replace the sand beds for any reason. Figure 6-9 shows the conceptual layout for the open bed effluent disposal system.

The advantages of open sand beds include:

- smaller land area requirements due to the higher allowable hydraulic loading rates
- less expensive to construct
- easy to monitor and repair, if necessary

The disadvantages of open sand beds include:

- may require weed control during warm months
- less desirable visual appearance
- may attract wildlife

Leaching Trenches

Leaching trenches are covered, shallow, level excavations which are usually not more the 3–4 feet deep, 3 feet wide and 100 feet in length. The bottom of the trench is filled with washed stone supporting a perforated distribution pipe. Plastic or concrete chambers can be used to reduce or completely eliminate the need for the washed stone. The total leaching area provided by the trench includes the pervious bottom and sidewall areas of the excavation below the invert of the pipe. Where more than one leaching trench is installed, the space between trenches may be used as the reserve area provided the distance between excavation sidewalls is no less than three times the effective width or three times the effective depth of the trench, whichever is greater.

For sandy soils such as those expected at the discharge site, the DEP allows the leaching trenches constructed with chambers to be designed on a hydraulic loading rate of 2.5-3.0 gallons per day per square foot.

The conceptual design calls for a series of trenches constructed with leaching chambers. The chambers are each 75 inches long and have an effective width of 52 inches and an effective depth of 25 inches. The design flow of 150,000 gallons per day would require a total of 7,500 linear feet of leaching trenches. This system would require a total land area of 128,000 square feet with the specified trench separation.

The advantages of leaching trenches include:

- Does not require routine maintenance

- Visual appearance is improved since no structures other than vent pipes are visible at the ground surface
- No waterfowl issues

The disadvantages of leaching trenches include:

- Land area requirements are greater than those for an open bed system
- More expensive to construct
- Not easily monitored
- Requires complete reconstruction should a problem arise

6.6 Screening of Wastewater Treatment Options

The present worth of the four treatment options were reasonably close in value. However, the present worth of the SBR system was lowest. SBRs are slightly more difficult to operate than the other systems analyzed. However, they offer the most operational flexibility of the four systems. The process includes a process control panel with a computer to aid the operator in making seasonal or other process related adjustments. The SBRs require the least amount of land area.

The capital cost of the RBC process is the highest of the four systems evaluated. However, RBCs are widely used, the process has been demonstrated to operate successfully over a wide range of organic and hydraulic loadings, and their operation is simple. The RBC system offers the least flexibility of the four systems evaluated. RBCs require very little operator attention and are easy to monitor and maintain.

The FAST® system does not offer any additional treatment efficiencies over SBRs or RBCs. Unlike SBRs and RBCs, the FAST® system is only available from a single vendor.

The Zeno-Gem® process has the highest present worth of the four systems. It offers some unique features in terms of its solids removal capabilities and ease of operation which distinguishes if from the other options. Its design is based on sound technology that is capable of meeting DEP's Ground Water Discharge Standards. However, the additional capital and O&M costs are not warranted for the application in Sutton.

Based on the previous discussion, SBRs are the recommended alternative for wastewater treatment in the Town of Sutton. Because infiltration sand basins are by far the least expensive of the two disposal options and require the least amount of land area, they are the recommended alternative for a disposal option.

Table 6-1
Cost Comparison of Wastewater Treatment Processes

		Process			
		SBR	Zeno-Gem	RBC	FAST
Capital Costs	Item				
	Screening	$40,000	$40,000	$40,000	$40,000
	Tankage	$400,000	$440,000	$600,000	$500,000
	Equipment	$460,000	$569,000	$653,000	$529,000
	Building	$380,000	$380,000	$380,000	$380,000
	Mech./Elect.& Install	$368,000	$455,000	$522,000	$423,000
	Generator	$80,000	$80,000	$80,000	$80,000
	Site & Infiltration Basins	$230,000	$230,000	$240,000	$2,430,000
	Cont Overhead etc., 8%	$157,000	$176,000	$201,000	$351,000
	Eng & Cont, 25%	$490,000	$549,000	$629,000	$1,096,000
	Total Capital Costs	**$2,605,000**	**$2,919,000**	**$3,345,000**	**$5,829,000**
Operating Costs					
	Utilities	$42,000	$60,000	$36,000	$42,000
	Operations personnel	$60,000	$60,000	$60,000	$60,000
	Chemicals	$10,000	$15,000	$12,000	$12,000
	Sludge Disposal	$22,000	$20,000	$22,000	$22,000
	Routine Maintenance	$40,000	$45,000	$40,000	$40,000
	Permit Monitoring	$18,000	$18,000	$18,000	$18,000
	Total Operations Cost	**$192,000**	**$218,000**	**$188,000**	**$194,000**
Present Worth					
	Capital	2,605,000	2,919,000	3,345,000	5,829,000
	Operation & Maint.	1,885,000	2,140,000	1,846,000	1,905,000
	Salvage	213,000	228,000	264,000	612,000
	Total Present Worth	**$4,277,000**	**$4,831,000**	**$4,927,000**	**$7,122,000**
	Discount rate 8%				

CHAPTER 7 – PROJECT FINANCING

7.1 Introduction

As indicated in Chapter 6 – Alternative Analysis, there are three critical needs areas in town: Wilkinsonville, Lake Singletary/Sutton Center, and Manchaug. The construction of new facilities will require a significant financial commitment from the Town. This chapter is intended to outline options for the funding of capital and operations and maintenance expenditures.

7.2 Estimated Expenses

Expense forecasts include capital expenses and operation and maintenance expenses. The forecasts presented here are for the first year of operation. A detailed description of these expenses follows.

Capital Expense

The capital expense includes payment of new debt created by the construction of interceptors, collection sewers, and pump stations. This analysis is based on the assumption that the Town will receive financing through the Massachusetts Water Pollution Abatement Trust. The trust offers subsidized loans to municipalities for the planning, design, and construction of water pollution abatement projects which include wastewater treatment projects, infiltration/inflow projects, collection system projects, and non-point source projects.

Sutton should expect to receive low interest loans for all of its borrowings. Payments on Trust loans are usually made on an equal annual payment schedule. This means that loan repayments are the same in each year of the loan. Table 7-1 presents the estimated annual payments for debt retirement over a 20 year period under the alternatives discussed in Chapter 6.

Table 7-1
Estimated Loans and Annual Debt Service Payments

Facility	Cost	Annual Debt Service
Wilkinsonville Sewers	$4,585,000	$243,280
Lake Singletary/ Sutton Center Sewers	$3,500,000	$214,200
Manchaug Sewers	$5,200,000	$417,040
Manchaug Package Treatment	$2,700,000	$165,240

Operations Expense

The annual operating expenses of the wastewater system include labor costs and fringe benefits, as well as power and other supplies associated with the operation and maintenance of sewer systems. The annual operating costs and the annualized debt service are presented in Table 7-2.

Table 7-2
Annual Expenses

Facility	Debt Service	Operating Expenses	Totals
Wilkinsonville Sewers	$243,280	$192,000	$435,280
Lake Singletary/ Sutton Center Sewers	$214,200	$19,000	$233,200
Manchaug Sewers	$417,040	$15,000	$432,040
Manchaug Package Treatment	$165,240	$182,000	$347,240

7.3 Estimated Rates and Charges

This section outlines the various options the Town has of recovering the annual expenses for the facilities outlined in this report. The options include charges based on system use and betterments used to recover costs of construction of local sewers.

User Fees

User fees are charged based on system use. Typically, they are used to recover operations and maintenance costs. However, they can also be used to pay off the debt service. User fees are typically calculated based on the customer's water use.

Since most customers in Sutton are not connected to a municipal water system, water meter records will not be available for use in determining user fees. Therefore, it is recommended that Sutton's user fees will be based on an equivalent single family unit basis.

Betterment Assessment

Communities are allowed, under Massachusetts law, to charge a one-time "betterment" fee for construction of lateral sewer systems. These fees can be paid by the owner of the bettered property either as a one-time payment, or it may be amortized over time, typically with the same terms as the borrower's that the Town uses to finance the construction.

Betterments can be calculated based on the front footage (frontage) of the property bettered or on an equivalent residential unit basis.

Under the frontage method, the total costs of the construction are spread equally over the total frontage of the project. The betterment to each lot will vary in proportion to the frontage of the lot. Under equivalent dwelling unit basis, each single family property abutting the new sewer pays the same amount. Commercial or other properties are converted to "equivalent" residential units based on the Title 5 standards. The Sutton betterment fees are proposed to be based on the equivalent unit basis.

Tax Contributions

Some communities obtain revenue for both capital construction costs and operation costs through the general tax rate. The explanation for this option is that these investments provide benefit to the Town as a whole, as well as to individual properties serviced by the facilities.

7.4 Recommended Approach

It is recommended that all operations and maintenance costs for the proposed improvements in the Sutton needs areas are paid by the users of the system. The abutters to these systems should also pay betterments to defray the cost of debt service for local and lateral sewers.

Using the recommended approach, the various rates and charges for sewer service are presented in Table 7-3 for the alternatives reviewed. Some portion of the capital costs should be apportioned to the Tax Rate.

Table 7-3
Estimated Rates and Charges

Cost Component	Annual Expense	User Units	Charge Per Unit Per Year
Wilkinsonville to Millbury			
Operating Cost	$192,000	1046	$184
Debit Service & Local Sewer Betterment	$243,280	1046	$233
Total Single Family Unit Cost			$417
Lake Singletary/Sutton Center to Upper Blackstone WWTF			
Operating Cost	$19,000	359	$53
Debit Service & Local Sewer Betterment	$214,200	359	$597
Total Single Family Unit Cost			$650
Manchaug Sewers to Package Treatment			
Operating Cost	$15,000	341	$44
Debt Service & Local Sewer Betterment	$417,040	341	$1,223
Total Single Family Unit Cost			$1,267
Manchaug - Package Plant			
Operating Cost	$182,000	341	$534
Debit Service & Local Sewer Betterment	$165,240	341	$485
Total Single Family Unit Cost			$1,019

These costs are based on preliminary engineering estimates and are subject to change based on changes in construction costs, interest rates, and the scope of the project.

In addition to the charges presented in Table 7-3, customers will be responsible for making the connections between their homes and the Town's collector system. The cost will vary depending on the length of the service connection and the route taken. Costs for house connections generally run between $25 to $35 per linear foot. Approximately 70 homes located at the water's edge on Lake Singletary will require the installation of a grinder pump to lift the flow to the sewer located in the traveled way. The average cost of a grinder unit for a single family home is $4,000. A typical annual electrical cost to run the unit is $200 per year.

CHAPTER 8 – RECOMMENDATIONS

8.1 General

Many alternatives were evaluated for each of the needs areas. The alternatives discussed in Chapter 6 were determined to be the most feasible of all the possibilities. The criteria included topographic and hydrologic characteristics, environmental impacts, water quality standards and public health requirements. Chapter 7 outlined the estimated expenses of each of the alternatives. The purpose of this chapter is to recommend an alternative that will meet the wastewater management needs of each of the three areas.

8.2 Wilkinsonville

Since Wilkinsonville presently receives municipal sewer service, the most feasible alternative is to expand the current sewer system. The new system would be comprised of gravity sewers, force mains, and possibly two pump stations. The flow will be conveyed to Millbury and then to the Upper Blackstone Regional Treatment Facility (UBWPAD). In addition to the cost for construction, Sutton will be responsible for a share of the capital cost and operating expenses at the UBWPAD. Table 7-3 shows that the charge per unit per year for Sutton would be $417, assuming the users of this area are to pay for not only the operating costs, but also the debt service of the improvements being made.

This alternative would eliminate any of the problems associated with on-site wastewater disposal systems. The soils in Wilkinsonville have severe limitations for the on-site systems due to unacceptable percolation rates. The expansion of the sewer system may also alleviate any concerns about endangering the integrity of the interim wellhead protection areas located in Wilkinsonville.

The existing pumping stations in this area have been in service several years. Table 3-2 presented the results of an inspection survey conducted in 1998. Based on the results of this survey, it is recommended that a detailed condition assessment and hydraulic evaluation of these stations be performed to identify operation and maintenance issues that affect the pump stations efficiency and reliability. Following this detailed assessment, design documents should be prepared for construction of the recommended pump station repairs and necessary improvements.

8.3 Lake Singletary/Sutton Center

Due to topographical limitations, it was determined that the flow generated by the Lake Singletary/Sutton Center needs area should be conveyed to Millbury, subsequently being conveyed to UBWPAD. The charge per unit per year would be $650, assuming the users of this area are to pay for not only the operating costs, but also the debt service of the improvements being made.

8.4 Manchaug

It is recommended that residents in the Manchaug needs area convey their wastewater to a package treatment plant located in Manchaug. The sewer system would still need to be constructed and operations and maintenance of the package plant are necessary for this alternative. A discharge permit would need to be obtained for the package plant. The charge per unit per year for the proposed Manchaug wastewater treatment and collection system would be $2,286, assuming the users of this area are to pay for not only the operating costs, but also the debt service of the improvements being made.

8.5 Recommended Allocation of Costs

As a result of the magnitude of the costs, it is a recommendation of this report to allocate a majority of the debt service be incurred by the Town under the general tax rate for the entire community. This approach will reduce the annual unit costs for each user to a more reasonable and affordable share of the overall costs for completing the wastewater improvements being proposed.

8.6 Impacts of the Recommended Plan

The recommended plan will have many beneficial financial and environmental impacts for the Town of Sutton.

Wilkinsonville

The expansion of sewer service in the Wilkinsonville area would greatly benefit the area. The problems experienced by on-site disposal systems due to unfavorable soil conditions would be alleviated. Wetlands in the area would be protected from contamination by septage overflows or outbreaks. Pollution of public and private drinking water supplies in the area would also be averted. In addition, the area would benefit financially by allowing the development of land along the Route 146 corridor designated for commercial/industrial use, expanding the Town's tax base. While growth in the area will have to be watched carefully to avoid over-development, zoning provisions are in place to control such expansion and maintain the rural character of the community.

Lake Singleton/Sutton Center

Construction of sewer service in the Lake Singleton/Sutton Center area would help to protect Lake Singleton from pollution resulting from failing septic systems and preserve it as a multiple resource. This area already has a high population density, so explosive growth is not expected to follow the introduction of sewer service to the area.

Manchaug

Construction of sewer service and a wastewater treatment facility in the Manchaug area would correct long-standing problems with on-site sewage disposal systems in the area. It would also protect public and private drinking water sources in the area from contamination by failing septic systems. Discharges of raw septage to the Mumford River would be eliminated, helping to preserve its water quality. Introduction of sewer service would encourage a growth in population, which would have to be closely monitored and controlled by zoning regulations and other means.

8.7 Compliance with Executive Order 385

Growth and development in Sutton is guided by the Town of Sutton Master Plan (1992). The plan outlines the areas of the Town that are deemed to be economically and environmentally feasible for development. In addition, it recognizes which areas of the Town are suited for higher population densities based on the ability of the area to deal with its wastewater. Zoning regulations in the Town take into account the soil conditions in a given area to determine the population capacity for that area. Manchaug, for example, has had restrictions placed on its allowable population density due to the fact that the soils in the region are characteristically undesirable for on-site septic systems. It has been recognized that sewers in the area could possibly trigger an increase in population:

"When sewer is made available, a major constraint to development will have been removed, and steps will have to be taken to prevent explosive growth spurts. Clearly, development policy for the Manchaug area will be closely tied to this issue for some time."

Any proposed project in the area has to take into account its location in the Town and that area's capacity to handle sewage flows. In areas of the Town whose sewers are connected to neighboring Towns' systems, an expansion regulator is already in place, namely the permitted flow to that Town's treatment facility. Sutton cannot exceed its allotted flow to Millbury's treatment facility. Therefore, any development that would produce wastewater in excess of the permit will not be allowed. For areas that will be serviced by sewers and a treatment facility located within Sutton, excessive development will be controlled by zoning regulations and sewer and treatment facility capacity. Existing requirements for minimum lot sizes and land uses will ensure that the area is not developed to the detriment of the environment in the area.

8.8 Impacts on Water Management

The purpose of creating a Comprehensive Wastewater Management Plan is to create a cost-effective and environmentally sound plan for dealing with the wastewater needs of Sutton for the next 20 years. It is important in that context to address water conservation and drinking water supply in the Town, and how expansion of sewer service and the construction of a Wastewater Treatment Facility will affect water usage. As discussed in Section 2.2.5, there are three privately-owned water suppliers in Sutton: Wilkinsonville Water District, Manchaug Water District, and Whitinsville Water Company.

Wilkinsonville Water District

The Wilkinsonville Water District (PWSID #2290014) services the Northeast section of the Town. It currently has a Water Management Act (WMA) permit allowing it to pump 170,000 gpd until 2004, when the permit will increase to 200,000 gpd. The District also purchases water from the Grafton Water District during periods of higher water consumption. The proposed expanded sewer system would initially carry about 220,000 gpd, with a future design flow of 476,000 gpd. It is anticipated that the District will continue to purchase water from the Grafton Water District to meet the increasing water demand of its customers.

Manchaug Water District

The Manchaug Water District serves the Manchaug area of Sutton near Douglas. The District currently pumps less than 30,000 gpd which is below the threshold for a WMA permit. The District services approximately 95% of homes in the Manchaug area. The new sewers proposed to be installed in the area serviced by the Manchaug Water District will initially carry a flow of 52,000 gpd, which is anticipated to increase to 74,000 gpd over the design period. Such an increase in demand initially will have no appreciable impact on the District's ability to provide drinking water to its customers. Expansion of the Whitinsville Water Company system along Whitins Road may be necessary to meet future demand.

Whitinsville Water Company

The Whitinsville Water Company services a small portion of the eastern section of Sutton. The Company currently holds a permit to withdraw 1.34 MGD until 2004, and 1.43 MGD from 2004-2009. No sewer construction in the area serviced by the Company is planned. Therefore, there is no reason to believe that wastewater flows from the area will have any immediate impact on the Company's water usage or its WMA permit. A future water main extension along Whitins Road and Houghs Road has been planned by the Company and this future extension of the water main could provide service in these areas. A water main extension to the Sutton Senior Center on Houghs Road is currently proposed.

8.9 Implementation of the Recommended Plan

As part of the MEPA process, an Environmental Impact Report (EIR) and a public participation program are required. There are a number of steps that will be followed for the implementation of the recommended improvements:

- Hold a public hearing on the CWMP and its recommendations. Submit a Responsiveness Summary to MADEP.
- Submit the final Comprehensive Wastewater Management Plan (CWMP) and Final Environmental Impact Report (FEIR) to EOEA and to MADEP for final review and approval.
- Complete the environmental review process required under MEPA.
- Secure the necessary funding for the projects from the Clean Water State Revolving Fund (SRF) and/or other sources.
- Complete the design of the improvements. Obtain required easements, land takings, and permits. Submit design to MADEP for approval.

- Advertise for bids for construction, receive and review bids, and award the contract to the lowest qualified bidder.

It is important that the public be well informed as to the status of wastewater projects in the Town, and be allowed to participate in the planning process. Several public meetings have already been held on the recommended projects in this report. Public input has been positive, including authorization to borrow in excess of $7.9 million to complete the proposed projects.

APPENDIX A

UBWPAD Membership Letter

UPPER BLACKSTONE WATER POLLUTION ABATEMENT DISTRICT

50 Route 20, Millbury, Massachusetts 01527-2199

Telephone: (508) 755 1286 FAX: (508) 755-1289

Chairman: I. Worth Landers
Vice-Chairman: G. Henry Uller
Secretary: Robert L. Moylan, Jr.

Engineer-Director-Treasurer: Thomas K. Walsh, P.E.

February 4, 1999

Town of Millbury
Office of Sewerage Commission
127 Elm Street
Millbury, Massachusetts 01527

FEB 10 1999

Gentlemen:

The Board of Directors of the Upper Blackstone Water Pollution Abatement District is in receipt of your letter of January 21, 1999, whereby you have formally requested membership for the Town of Millbury. In your letter you indicated that you would like to continue to provide service to portions of the Town of Sutton. It is my pleasure to tell you that at their meeting of February 3, 1999, the Board unanimously voted to accept the Town of Millbury as our newest member of the District. A copy of the vote of the Board is attached for your reference. In it's vote the Board agreed that your membership includes service to portions of Sutton.

The total fee for membership in the District is $1,442,482.00, which includes $1,180,002.00 for the Town of Millbury and $262,480.00 for the portions of Sutton that you will provide service to. As previously agreed, twenty five percent of the membership fee is currently due, with the remainder being paid in three equal annual payments on the anniversary date of your membership (February 3 of 2000, 2001 and 2002). The total amount currently due is $360,620.50 ($295,000.50 for Millbury and $65,620.00 for Sutton). Since Sutton is being serviced through Millbury, we cannot bill Sutton directly for its portion of the membership. However, we can accept separate checks from Millbury and Sutton in payment of the membership fee. Checks should be made payable to the Upper Blackstone Water Pollution Abatement District and forwarded to the above address, attention Mr. Thomas K. Walsh.

Capital, operation and maintenance costs for the District are assessed to our members annually based on their flow in the previous fiscal year (July 1 through June 30). In order to stabilize rates, we are requesting that our enabling legislation be revised to allow us to base assessments on the average of the flows received in the last three fiscal years. The costs are assessed each January and are payable quarterly in July, October, January, and April of the next fiscal year. We understand that Millbury will not be connecting to the District until some time in the year 2002 and you will not be assessed until you connect. We would suggest basing the assessment for your first year of service on a mutually agreed estimate of flow and adjusting assessments for your second year of service to cover any difference between estimated and actual flow during your first year of connection. We would assess you for the total flow received from Millbury, (including any flow from Sutton) and expect that you would bill Sutton for services as you deem appropriate.

In your letter you stated that Mr. Lange would serve as your representative on the Board with Mr. Erickson as alternate. On behalf of the District, we welcome Millbury to membership and Messrs. Lange and Erickson to our Board of Directors. We look forward to a continued good relationship with the Town of Millbury and your Commission.

Very truly yours,

UPPER BLACKSTONE WATER POLLUTION ABATEMENT DISTRICT

Thomas K. Walsh
Engineer-Director-Treasurer

TKW/kag

FEB 1 0 1999

APPENDIX B

Sutton/Millbury Wastewater Flow Agreement

OFFICE OF

SEWERAGE COMMISSION

MILLBURY, MASS. 01527

TOWN OF MILLBURY, MASSACHUSETTS * INCORPORATED 1813 *

Gary C. Nelson,
CHAIRMAN
Happy Erickson,
CLERK
Frank J. Gagliardi

August 10, 1999

Mr. Michael Boynton, Town Admin.
Sutton Board of Selectmen
Municipal Center
4 Uxbridge Road
Sutton, MA. 01590

Dear Mr. Boynton:

Please be advised that the flow proposed for the Town of Sutton to be discharged at the Upper Blackstone Facility is 1,568,000 gallons per day, as designated, per attached.

Very truly yours,

Happy Erickson

Happy Erickson, Clerk
Board of Sewer Commissioners

HE/ed
cc. Sutton Sewer Commissioners
Craig Martin - Beta Engineering

01/18/99

	Future Flow (gpd)					
Needs Area	*2005 – Avg.*	*2005 – Peak (1)*	*2010 – Avg.*	*2010 – Peak*	*2020 – Avg.*	*2020 – Peak*
Wilkinsonville / Route 146 Corridor	221,070	693,830	312,372	980,840	404,675	1,270,080
Lake Singletary / Sutton Center	89,828	275,870	93,420	286,900	97,010	297,920
Totals	310,898	969,700	405,792	1,267,740	501,685	1,568,000

1. Peak flow multiplier is 3 times average day demand w/ infiltration/inflow.

APPENDIX C

MADEP Comments – Hydrogeologic Study

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

NE SWIFT
vernor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

RECEIVED
AUG 06 2001
BETA ENGINEERING, INC

Michael Boynton, Town Administrator
Town Hall
4 Uxbridge Road
Sutton, MA 01590

RE: SUTTON-BRP-
314 CMR 5.00, Groundwater Discharge
Pre-Application Technical Review

Dear Mr. Boynton:

The Department has performed a pre-application review of a report titled "Draft Hydrogeological Evaluation of a Potential Groundwater Discharge Site, Sutton, Massachusetts" prepared on Sutton's behalf by Stone Environmental, Inc. The town commissioned this study to evaluate the hydrogeology of a site being considered for the potential subsurface discharge of 150,000 to 200,000 gallons per day (gpd) of treated municipal wastewater.

The proposed site is a town owned property adjacent to the Sutton Senior Center at 19 Hough Road in South Grafton. Hydrogeologic data collection included water level measurements, soil samples, and slug tests. Eight groundwater monitoring wells, six staff gages, and four hand-installed observation wells were installed to measure groundwater and surface water elevations beneath and downgradient of the proposed discharge location. The site consists of a knoll comprised of coarse to fine sands with a few silt layers or lenses. Depth to groundwater on top of the knoll is 63 to 100 feet below ground surface. Depth of refusal on the knoll was 86 to 102.5 feet. The design elevation for the discharge beds is currently 450 feet above mean sea level (amsl), the ground elevation at the Sutton Senior Center is approximately 433 ft. amsl, and the elevation of the wetlands to the northeast (downgradient) is approximately 355 ft. amsl.

Slug tests and grain size analyses results indicated hydraulic conductivity values for coarse grained, out-wash materials ranged from 60 to 200 ft./day. Test results for finer grained materials, fine sands and silt, ranged between 1 and 10 ft./day.

A groundwater flow model (MODFLOW) was used to predict groundwater elevations as a result of discharging 150,000 and 200,000 gpd to the ground. The model results indicated that a discharge of 150,000 gpd would maintain 30 feet of unsaturated soil and at a rate of 200,000 gpd.

25 feet of separation would be maintained. The groundwater model did not predict breakout or emergent groundwater either at the point of discharge or in surrounding areas. Particle tracking results indicate wastewater from the discharge fields would flow to the east and northeast away from all private and public water supply wells. Based on the information provided, it is our preliminary opinion that this site appears acceptable for subsurface of flows in the ranges evaluated.. No final approval can be granted until we have reviewed the town's formal application package.

The Department offers the following comments of the report which should be addressed in the formal application submittal:

1. Page 1, bullet 1. The model mounding analysis predicts an approximate 30 foot separation for flows of 150,000 gpd and about 25 feet for 200,000 gpd. Please be specific in summarizing the findings.
2. Apendix F, Slug Test Data and Analysis, the values on the X-axis displaying time in minutes are unclear. Show the fraction of time on the graph labels.
3. Revise hydrogeologic cross sections to include all monitoring wells that may be appropriate to include.
4. Clarify the description of the flow to the brook, north of the site. Include further discussion of why particle tracks did not enter the brook.
5. Check Table 4 against the sieve analysis (S-4, 30.2-31.2'). Table 4 appears to state 24% sand versus the laboratory report value of 5%.

If you have any questions feel free to contact Stephen Hallem of our Boston office at (617) 292-5681 or Barbara Kickham of my staff at (508) 767-2724.

Very truly yours,

Robert A. Kimball   August 3, 2001

Robert Kimball, P.E.
Watershed Chief
Bureau of Resource Protection

cc: Bruce Douglas, Stone Environmental, Inc., 58 E. State St., Montpelier, VT 05602
William Skerpan, Beta Group, 6 Blackstone Valley Place, Lincoln, RI 02865
Daniel Morrissey, MMA, Inc., P.O. Box 439, Hopkinton, NH 03229

APPENDIX D

Wilkinsonville Sewer System – Infiltration/Inflow Study

Town of Sutton, Massachusetts

Flow Monitoring and
Infiltration & Inflow (I/I) Investigation

Wilkinsonville Sewer System

September, 2001

Prepared For:

Art-Lot Acres Development Corporation

and the

Sutton Sewer Commission

BETA Group, Inc.
Engineers • Scientists • Planners
1420 Providence Highway, Suite 117, Norwood, MA 02062 781.255.1982 fax: 781.255.1974
6 Blackstone Valley Place, Lincoln, RI 02865 401.333.2382 fax: 401.333.9225
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and industrial zoned land and has the potential for rapid growth in upcoming years. Growth may be limited, however, due to the presence of wetlands associated with several streams that traverse the region along with the presence of steep slopes encumbering a section of the study area.

Existing Collection System

The Wilkinsonville Village is the only area in Sutton that currently receives sewer service. Wilkinsonville's service area is delineated in Figure 2-1. Based on current records provided by the Sutton Sewer Commission, the system services approximately 584 residential customers and 16 commercial/industrial customers. The majority of the collection system was constructed between 1977 and 1978.

The collection system consists of five pump stations, 10,200 linear feet of force mains, and 59,200 linear feet of gravity sewers. Gravity sewers are 8-inch and 10-inch diameter and consist of a mix of asbestos cement, PVC, ductile iron and vitrified clay (VC) pipes. Manholes are constructed predominately of precast concrete.

Flows for the service area are collected and measured at the Blackstone Street pump station. Flow is then pumped from this station to the Town of Millbury for treatment at the Millbury Wastewater Treatment Facility (WWTF). The contractual agreement between Sutton and Millbury allows for an average daily flow of 126,000 gallons per day (GPD).

Definitions and Abbreviations

***Definitions** (summarized from MADEP Guidelines, January 1993)*

Extraneous Flow – Quantity of water measured in the collection system from both infiltration and inflow.

Infiltration – Groundwater that enters a sewer system through defective pipes, joints, connections, and manhole walls.

Inflow – Quantity of water discharged into a sewer system from sump pumps, holes in manhole covers, roof leaders, foundation and surface drains, catch basins, etc. consisting of Direct Inflow and Delayed Inflow

Direct Inflow – The portion of Inflow that is generated from direct connections such as catch basins, manhole covers and roof leaders. This portion of inflow causes sharp increases in the total flow within the collection system and should be accompanied by a sharp decrease in flow following the conclusion of the associated rain event.

Delayed Inflow – The portion of Inflow that is generated from indirect connections such as sump pumps, foundation drains, indirect sewer/drain connections, etc. This portion of inflow causes gradual increases in the total flow within the collection system and should

be accompanied by a gradual decrease in flow following the conclusion of the associated rain event.

Rainfall - Induced Infiltration – The portion of Inflow that represents the short-term increase in the infiltration through collection system defects due to the percolation of stormwater into the ground. Through analysis of flow monitoring data alone, rainfall-induced infiltration cannot be distinguished from Delayed Inflow and is therefore considered as part of Delayed Inflow.

Rehabilitation – Repair work on pipes, manholes, and other sewer system appurtenances that have been determined to contribute excessive extraneous flow to the treatment facility.

Sewer System Evaluation Survey – Systematic examination of a sewer system to determine the specific location, estimated flow rate, and estimated cost of rehabilitation for each definable source of infiltration and inflow.

Wastewater – Combination of the liquid and water-carried wastes from residences, commercial buildings, industrial plants, and institutions, together with any groundwater, surface water, and stormwater which may be present.

Abbreviations

MADEP	(Massachusetts) Department of Environmental Protection
GPD	Gallons Per Day
GPD/IDM	Gallons Per Day Per Inch-Diameter Mile of Pipe
I/I	Infiltration/Inflow
GPCD	Gallons Per Capita Per Day
GPM	Gallons Per Minute

Chapter 1
Introduction

Purpose of Report

The purpose of this report is to locate, isolate, and quantify Infiltration and Inflow (I/I) problems if any within the existing sewer system currently serving the Village of Wilkinsonville in the Town of Sutton, Massachusetts.

This study was commissioned to address two primary concerns of the Town. First, the report would provide the Town with baseline information on the existing system's conditions and whether an I/I problem exists within the system. Second, the study would help identify which subareas of the existing system, if any, exhibit high flows during wet weather events.

Project Scope

In March, 2001 BETA Group, Inc. entered into an agreement with Art-Lot Acres Development Corp., acting on behalf of and under separate agreement with the Town of Sutton, Massachusetts to conduct an Infiltration and Inflow Investigation. The scope of services included:

- Inventory Existing Facilities
- Continuous Flow, Rainfall and Groundwater Monitoring
- Flow Isolation and Limited Manhole Inspection
- Report Preparation

Halfway through the flow-monitoring portion of this study it became apparent that there would not be any flow isolation or manhole inspections required due to the fact that the observed flows were consistent with the sewered population and the higher flows observed during significant rainfall were not statistically excessive. As a result, BETA Group in consultation with the Sutton Sewer Commission agreed to a scope revision. The revised scope eliminated the need for any extensive flow isolation and manhole inspection based on the flow data being recorded.

Study Area

The Town of Sutton is located south of Worcester in the Blackstone Valley portion of Massachusetts. Land use in the Town of Sutton is primarily rural residential, with limited commercial and industrial development. The Town is comprised of five (5) village areas: Sutton Center, Manchaug, West Sutton, South Sutton, and Wilkinsonville. The Study Area of this Infiltration and Inflow (I/I) investigation is the Wilkinsonville Village, shown in Figure 2-1.

The Wilkinsonville Study Area encompasses approximately 3,500 acres located in the northeast corner of Sutton. Wilkinsonville includes the majority of the Town's business

Chapter 2
Description of Methods

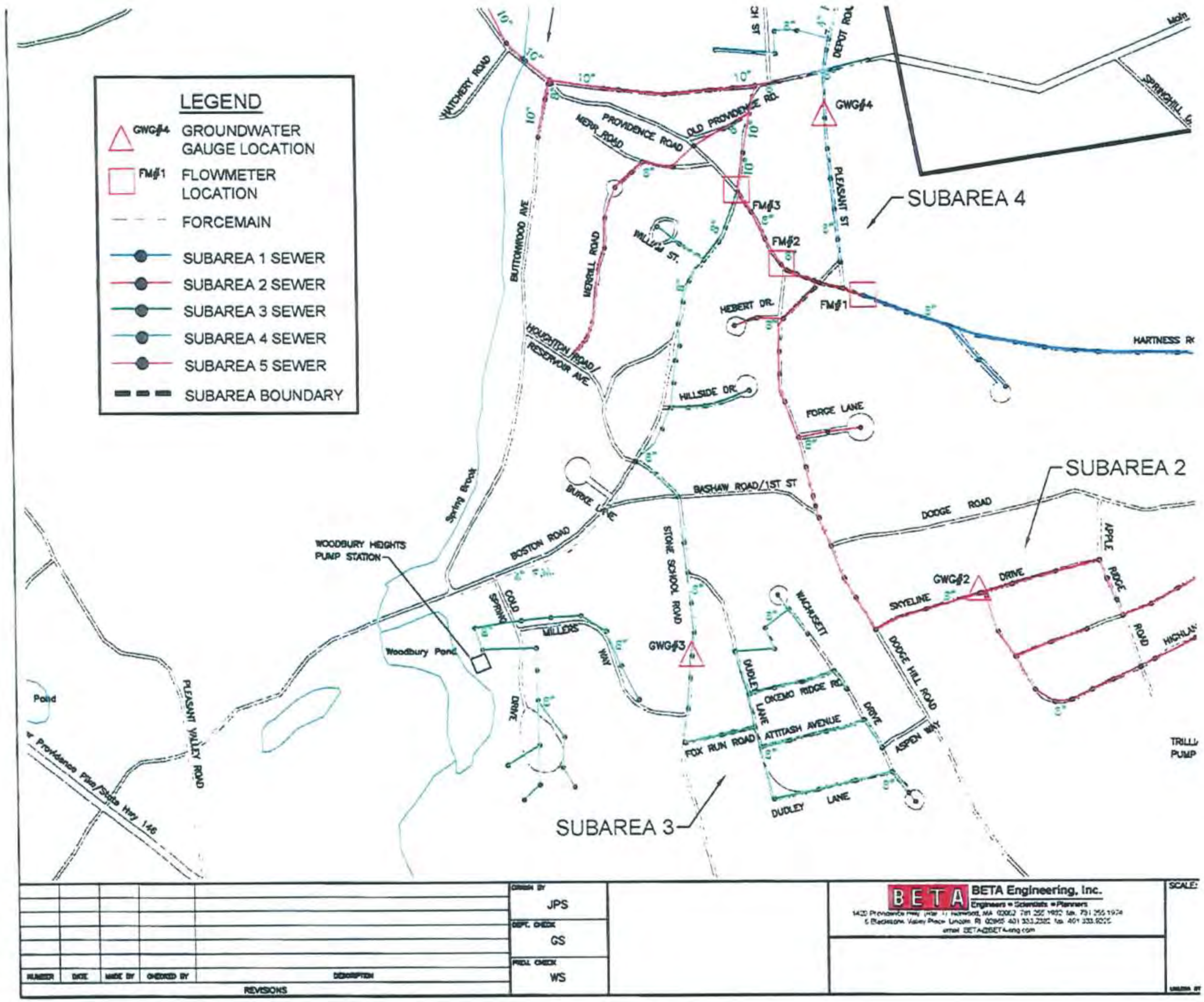
Continuous Flow Monitoring

Five (5) continuous flow monitors were installed and monitored for a period of ten weeks during the completion of the I/I from April 6, 2001 to June 15, 2001. These monitors were installed throughout the study area to determine the quantity of flow within the sewer system. The continuous flowmeters that were used were American Sigma model 910. A metal band was placed in the sewer where the flow was to be monitored. Attached to this band was an electromagnetic level-velocity sensor that could measure both the level and velocity of the wastewater within the sewer. The velocity and level readings were converted into flow quantities and stored in the Sigma control unit that was hung just below the manhole cover to protect it from surcharged wastewater flow. Once a week, the data from this control unit was downloaded to a laptop computer and analyzed. During these weekly downloads, physical measurements were also taken of the level and velocity. These measurements were compared with instantaneous readings displayed on the flowmeter's display to ensure accuracy. If required, adjustments were made to the flowmeter's settings and any debris that had settled in the area of the sensor was removed.

These flowmeters were strategically located throughout the sewer system to isolate the flow from the various subareas of the study area. The level, velocity and corresponding flow measurement computer printouts and graphs that were produced during the monitoring period are available upon request.

The study area was divided into five (5) corresponding subareas, each of which was evaluated separately for infiltration and inflow. Each subarea and its associated flowmeter are shown in Figure 2-1. As shown in Figure 2-1, the flowmeter used to measure Subarea 2 was located downstream of the flowmeter location for Subarea 1. To obtain the flows attributable to Subarea 2 alone, the Metered Flow at Flowmeter 1 must be subtracted from the Metered Flow at Flowmeter 2 to isolate the Subarea Flow that originated from Subarea 2. The flowmeter used to measure Subarea 5 was located at the end of the collection system at the Blackstone Pumping Station and therefore was downstream of all other flowmeters. To obtain the flows attributable to Subarea 5, the Metered Flow from Flowmeters 2,3 & 4 must be subtracted from the Metered Flow at Flowmeter 5 to isolate the Subarea Flow that originated from Subarea 5.

As a general observation, many of the average daily flow figures for the individual subareas show a significant increase in flow on Saturdays and Sundays throughout the study period. The magnitude of this increase in flow varied throughout the study period from ten (10) to forty (40) percent. This fact was taken into consideration when analyzing flow data and should be kept in mind when viewing the flow data figures included in this report especially for flow data near rainfall events where an increase in flow could be misinterpreted as inflow.



J:\SUTTON SEWERS\2080 - I-I Study 2001\drawings\FIG-2-1.dwg, 10/11/2002 01:51:12 PM

Rainfall Gauge
A continuous rainfall gauge was installed at the Depot St. Pumping Station throughout the flow monitoring period. The rainfall gauge consisted of a recording tipping bucket rainfall gauge and a data logger. The amount of rainfall was calculated and logged for every 5-minute interval during the flow monitoring period. A daily summary of the rainfall results is shown in Table 2-1.

Table 2-1
Summary of Daily Rainfall

Date	Rainfall (in.)	Date	Rainfall (in.)	Date	Rainfall (in.)
4/6/2001	0.29	5/1/2001	0.00	5/26/2001	0.39
4/7/2001	0.01	5/2/2001	0.00	5/27/2001	0.22
4/8/2001	0.69	5/3/2001	0.00	5/28/2001	0.03
4/9/2001	0.09	5/4/2001	0.00	5/29/2001	0.39
4/10/2001	0.01	5/5/2001	0.00	5/30/2001	0.00
4/11/2001	0.00	5/6/2001	0.00	5/31/2001	0.00
4/12/2001	0.34	5/7/2001	0.00	6/1/2001	0.00
4/13/2001	0.01	5/8/2001	0.00	6/2/2001	1.52
4/14/2001	0.00	5/9/2001	0.00	6/3/2001	0.21
4/15/2001	0.00	5/10/2001	0.00	6/4/2001	0.00
4/16/2001	0.00	5/11/2001	0.00	6/5/2001	0.00
4/17/2001	0.00	5/12/2001	0.07	6/6/2001	0.00
4/18/2001	0.06	5/13/2001	0.00	6/7/2001	0.00
4/19/2001	0.00	5/14/2001	0.02	6/8/2001	0.00
4/20/2001	0.00	5/15/2001	0.07	6/9/2001	0.00
4/21/2001	0.00	5/16/2001	0.00	6/10/2001	0.02
4/22/2001	0.00	5/17/2001	0.00	6/11/2001	0.63
4/23/2001	0.00	5/18/2001	0.00	6/12/2001	0.00
4/24/2001	0.14	5/19/2001	0.00	6/13/2001	0.00
4/25/2001	0.00	5/20/2001	0.00	6/14/2001	0.00
4/26/2001	0.00	5/21/2001	0.01	**Total**	**6.52**
4/27/2001	0.00	5/22/2001	0.61		
4/28/2001	0.00	5/23/2001	0.21		
4/29/2001	0.00	5/24/2001	0.47		
4/30/2001	0.00	5/25/2001	0.01		

Insert 11x17 Figure 2-1

Groundwater Gauges
Groundwater gauges were also installed within each of the five (5) subareas. Installation of these groundwater gauges consisted of drilling a hole through the wall of each manhole near the shelf, installing a PVC fitting that forms a tight seal with the hole that was drilled and extending a polyethylene tube from the PVC fitting up the wall of the manhole. This polyethylene tube terminates just below the manhole cover and allows a direct reading of the groundwater level outside of the manhole from within the manhole. These measurements were taken on a weekly basis during flowmeter maintenance. The locations of the groundwater gauges are shown in Figure 2-1.

All water table measurements have been taken from the invert of the groundwater gauge's corresponding manhole and are presented in Table 2-2.

Table 2-2
Groundwater Gauge Readings

	Groundwater Gauge Readings (in. above pipe invert)				
Date	**Subarea 1**	**Subarea 2**	**Subarea 3**	**Subarea 4**	**Subarea 5**
3/27/2001	31	54	30	0 (Dry)	30
4/17/2001	22	52 1/2	0 (Dry)	0 (Dry)	60
4/24/2001	18	51	0 (Dry)	0 (Dry)	18
5/1/2001	17	49	0 (Dry)	0 (Dry)	15
5/7/2001	12	48	0 (Dry)	0 (Dry)	11
5/14/2001	0 (Dry)	37 1/4	0 (Dry)	0 (Dry)	16
5/21/2001	0 (Dry)	24	0 (Dry)	0 (Dry)	14
5/29/2001	13	44	0 (Dry)	0 (Dry)	18 1/2
6/6/2001	15	50	0 (Dry)	0 (Dry)	21

Chapter 3
Results of Investigations

Infiltration

There were two methods used to determine the quantity of infiltration in the study area (1) the Gross Infiltration and Inflow Estimate Method (or EPA Method), and (2) the Inch Diameter Mile Method (or MADEP Method).

Gross Infiltration/Inflow Estimate Method (EPA Method)

This method is based on the "Infiltration and Inflow Analysis and Project Certification" (dated May, 1985), produced by the EPA and used as the basis for determining excessive infiltration and inflow. This method utilizes flow data from the continuous flow monitors installed as part of this study as well as historical data recorded at the Blackstone Valley Pumping Station provided by the Sutton Sewer Commission. For infiltration, flow data is analyzed during periods of high groundwater (usually March and April) and an average dry weather daily flow is calculated for a 7-14 day period. The resultant average daily flow is then divided by the population in the tributary area to arrive at a gallon per capita per day (GPCD) flow rate. These calculations were done for the overall collection system. The per capita flow was compared against data from 270 Standard Metropolitan Statistical Area Cities that was compiled during an "EPA Needs Survey". The EPA has determined that flows greater than 120 gallons per capita per day (GPCD) contain excessive infiltration and that "further studies must be conducted to quantify excessive infiltration and evaluate alternative corrective measures."

In general, this method is used as a screening guide to determine the magnitude of the infiltration or inflow in a large area. This method cannot be used for determining I/I for short runs or small areas. For example, this method cannot be used for determining I/I between a short stretch of pipe along an interceptor where no houses exist.

The sewered population was calculated utilizing data obtained from the Sutton Sewer Commission and results from Census 2000. Sutton Sewer Commission records indicated that the approximate number of active sewer connections at this time is 600. Census 2000 data indicates an average household size of 2.56 persons per housing unit for the entire Worcester County area and 2.93 persons per housing unit for the Wilkonsville Area. For this study, the sewered population will be estimated based on the more conservative household size of 2.56 persons per housing unit.

$$\text{Sewered Population} = (600 \text{ connections}) * (2.56\ ^{\text{persons}} /\ _{\text{connection}}) = 1536 \text{ people}$$

Based on this sewered population, the predicted average daily flow based on an estimated daily flow of 70 GPD/person is 107,520 GPD. Historical readings summarized by month are shown in Table 3-1 and are shown on a daily basis with the associated rainfall in Figure 3-1. Flow data prior to April 7, 2001 was compiled utilizing flow records from the Blackstone Pumping Station maintained by the Sutton Sewer Commission and rainfall records maintained at the nearby Douglas, MA WWTP. Averaging the monthly flows shown in Table 3-1 for the months of August, September, October and November 2000 results in an average low groundwater daily flow of 103,977 GPD for this period during which groundwater levels would be expected to be at a minimum thereby minimizing the effects of Infiltration and Inflow.

Table 3-1
Summary of Historical Average Monthly Flows

Month	Flow (GPD)	Month	Flow (GPD)
Jun-00	123,290	Jan-01	107,671
Jul-00	99,293	Feb-01	(missing data)
Aug-00	109,634	Mar-01	163,545
Sep-00	100,420	Apr-01	171,939
Oct-00	100,910	May-01	101,972
Nov-00	104,943	Year Avg.	117,925
Dec-00	110,771		

Average Dry Weather Flows during high groundwater conditions were calculated by averaging the daily flows at the Blackstone Pumping Station as shown in Table 3-2.

Table 3-2
Summary of Daily Flows

2001			2000			1999		
Date	Rain [1]	Flow (GPD) [3]	Date	Rain [2]	Flow (GPD) [4]	Date	Rain [2]	Flow (GPD) [4]
4/11/2001	0.00	202,661	4/28/2000	0.00	142,360	4/5/1999	0.00	101,650
4/12/2001	0.34	196,360	4/29/2000	0.01	150,060	4/6/1999	0.00	111,650
4/13/2001	0.01	203,408	4/30/2000	0.00	133,360	4/7/1999	0.00	124,720
4/14/2001	0.00	196,725	5/1/2000	0.05	133,360	4/8/1999	0.00	96,750
4/15/2001	0.00	174,356	5/2/2000	0.00	141,610	4/9/1999	0.00	92,030
4/16/2001	0.00	170,543	5/3/2000	0.00	123,810	4/10/1999	0.00	114,880
4/17/2001	0.00	151,801	5/4/2000	0.00	126,140	4/11/1999	0.08	113,240
4/18/2001	0.06	152,083	5/5/2000	0.00	111,400	4/12/1999	0.00	98,310
4/19/2001	0.00	143,350	5/6/2000	0.00	123,640	4/13/1999	0.00	101,760
4/20/2001	0.00	126,774	5/7/2000	0.00	123,840	4/14/1999	0.00	107,870
	Average =	171,806		Average =	130,958		Average =	106,286

(1) 2001 Rainfall Data from raingauge installed @ Depot St. Pumping Station as part of this study
(2) 1999 & 2000 Rainfall Data from raingauge records maintained by nearby Douglas, MA WWTP

(3) 2001 Flow Data from continuous flow monitors installed as part of this study
(4) 2000 & 1999 Flow Data from Blackstone Pumping Station flow records

Insert 11x17 Figure 3-1

As shown in Table 3-3, the gallons per capita per day (GPCD) has increased over the past three high groundwater seasons but is still well below the 120 GPCD threshold set by EPA. This would indicate that there does not appear to be an infiltration problem for the entire study area. As stated earlier, this method cannot be applied to the individual subareas because it is only applicable to entire collection systems where the sewered population can be accurately determined.

Table 3-3
Historical Infiltration Rates (EPA Method)

Year	Average Daily Flow (GPD)	Sewered Population [1]	GPCD
2001	171,806	1536	112
2000	130,958	1400	94
1999	106,286	1264	84

(1) Sewered Population interpolated between current population of 1536 people and 1128 people as reported for 1998 in BETA's Facilities Plan Update

Figure 3-2 graphically illustrates the EPA-allowable infiltration rate of 184,320 GPD (1536 people * 120 GPD/person) as compared to average daily flows recorded at the Blackstone Pumping Station. This allowable flowrate was exceeded for twenty-four (24) days from March 21, 2001 until April 14, 2001, but this was due to significant rainfall events prior to and during this time period. Exceeding the 120 GPCD threshold is acceptable during rainfall events due to the effects of inflow which will be discussed later in this chapter. Even during these periods of significant rainfall and high groundwater conditions, the average daily flow at the Blackstone Pumping Station only exceeded the EPA Infiltration threshold by and average daily flow of approximately 35,200 GPD during this period.

Inch Diameter Mile Method (MADEP Method)

The data from the five continuous flowmeters were analyzed to determine which subareas within the sewer system may be contributing excessive infiltration flow to the collection system. The method used to identify the subareas that warrant further study is based on procedures outlined in the MADEP's publication entitled, "Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys". This method involves analyzing the nighttime flow measured with the five continuous flow monitors. An average nighttime flowrate was established by averaging the flows between 12:00 AM and 6:00 AM on April 18th, 19th and 20th, 2001 as shown in Table 3-4. These days were selected because there was significant rainfall earlier in the preceding weeks to raise the groundwater table (confirmed through groundwater gauge observations), but five days had passed without significant rainfall. The metered nightflow data was adjusted to isolate the subarea nightflow for each subarea.

Table 3-4
Hourly Nightflow Data by Subarea

DATE	TIME From	TIME To	Area 1 (MGD)	Area 2 (MGD)	Area 3 (MGD)	Area 4 (MGD)	Area 5 (MGD)
4/18/2001	12:00 AM	1:00 AM	0.0130	0.0230	0.0390	0.0010	0.0821
	1:00 AM	2:00 AM	0.0080	0.0210	0.0160	0.0030	0.0726
	2:00 AM	3:00 AM	0.0070	0.0200	0.0150	0.0040	0.0546
	3:00 AM	4:00 AM	0.0060	0.0190	0.0160	0.0030	0.0519
	4:00 AM	5:00 AM	0.0080	0.0390	0.0160	0.0040	0.0519
	5:00 AM	6:00 AM	0.0350	0.0550	0.0490	0.0070	0.0822
		Average	**0.0128**	**0.0295**	**0.0252**	**0.0037**	**0.0659**
4/19/2001	12:00 AM	1:00 AM	0.0120	0.0200	0.0180	0.0050	0.1157
	1:00 AM	2:00 AM	0.0260	0.0310	0.0150	0.0060	0.0722
	2:00 AM	3:00 AM	0.0060	0.0150	0.0150	0.0040	0.0661
	3:00 AM	4:00 AM	0.0070	0.0140	0.0140	0.0040	0.0473
	4:00 AM	5:00 AM	0.0090	0.0140	0.0180	0.0060	0.0659
	5:00 AM	6:00 AM	0.0140	0.0200	0.0220	0.0060	0.0517
		Average	**0.0123**	**0.0190**	**0.0170**	**0.0052**	**0.0698**
4/20/2001	12:00 AM	1:00 AM	0.0140	0.0190	0.0220	0.0070	0.0832
	1:00 AM	2:00 AM	0.0080	0.0140	0.0340	0.0020	0.0622
	2:00 AM	3:00 AM	0.0270	0.0270	0.0150	0.0070	0.0433
	3:00 AM	4:00 AM	0.0090	0.0140	0.0160	0.0030	0.0679
	4:00 AM	5:00 AM	0.0080	0.0140	0.0140	0.0060	0.0564
	5:00 AM	6:00 AM	0.0100	0.0180	0.0180	0.0040	0.0501
		Average	**0.0127**	**0.0177**	**0.0198**	**0.0048**	**0.0605**
3-Day Avg. Nightflow (Metered Flow)			**0.01261**	**0.02206**	**0.02067**	**0.00456**	**0.06540**

The next step in this method is to quantify the amount of infiltration present in each subarea. The subarea nightflow data was then reduced by 10% to account for commercial/industrial flow and estimated sanitary flow normally encountered between 12:00 AM and 6:00 AM. The calculated infiltration rate from each subarea was then divided by the corresponding inch diameter miles for that subarea, to arrive at a gallon per day per inch diameter mile parameter (GPD/IDM). Per MADEP guidelines, any subarea with flows greater than 4,000 GPD/IDM may contain excessive infiltration and that further investigation may be warranted. This information, coupled with local knowledge of problems from the collection system staff, provide information that is essential in determining if additional investigation is required.

The infiltration rates per inch-diameter-mile of sewer in each of the five sub-areas were developed. These rates are presented in Table 3-5. As shown, all of the subareas have infiltration rates well below the recommended action level of 4000 GPD/IDM.

Table 3-5
Infiltration Rates (Inch-Diameter Mile Method)

Subarea	Metered Flow (MGD)	Subarea Flow (GPD)	Infiltration Rate (GPD)	IDM	GPD/IDM
1	0.013	12611	11350	36.08	315
2	0.022	9444	8500	15.93	534
3	0.021	20667	18600	19.63	947
4	0.005	4556	4100	7.92	518
5	0.065	18126	16313	11.80	1382
Total	0.065	65404	58863	91.37	644

The days used to determine the infiltration rates depicted in Table 3-5 were chosen to estimate the peak infiltration rates experienced during high groundwater periods. The average daily flow for the entire study area as measured at the Blackstone Pumping station during the three days used to estimate the peak infiltration rates shown in Table 3-5 was approximately 141,000 GPD. Figure 3-2 illustrates the average daily flow as recorded at the Blackstone Pumping Station as well as the daily rainfall as recorded at the Depot St. Pumping Station.

Inflow

Gross Infiltration/Inflow Estimate Method (EPA Method)

For determination of inflow, the Gross Inflow Estimate Method was also used. This method states, "If the average daily flow during periods of significant rainfall (which are defined as rain events that create surface ponding and surface runoff) does not exceed 275 gallons per capita per day then the amount of inflow is not excessive". If the wastewater flow during rain events does exceed 275 GPCD or the collection system experiences hydraulic overloads during storm events, "further studies must be conducted to quantify excessive inflow and evaluate alternative corrective measures".

This method typically involves the use of data collected during rain events occurring in both wet high groundwater (March/April) and dry low groundwater (August/September) seasons to avoid overestimating the inflow effects by including the effects of infiltration normally present during the wet season. For the purposes of this study, the highest recorded daily flows at the Blackstone Pumping Station were utilized to determine whether or not excessive inflow is present within the study area.

As shown in Table 3-6, the highest measured daily flows do not exceed 275 GPCD, therefore excessive inflow has not been demonstrated at any point during the past three years. Figure 3-2 graphically illustrates the EPA-allowable inflow rate of 422,400 GPD (1536 people * 275 GPD/person) as compared to average daily flows recorded at the Blackstone Pumping Station.

Table 3-6
Historical Inflow Rates (EPA Method)

Date	Rainfall (in.) [1]	Average Daily Flow (GPD)	Sewered Population [2]	GPCD
3/22/2001	3.2	295,330	1536	192
4/23/2000	0.8	217,020	1400	155
1/24/1999	0.9	189,480	1264	150

(1) Rainfall Data from raingauge records maintained by nearby Douglas, MA WWTP

(2) Sewered Population interpolated between current population of 1536 people and 1128 people as reported for 1998 in BETA's Facilities Plan Update

The average daily flow the first three full days of the flow monitoring period for this study (April 7th, 8th and 9th, 2001) was approximately 234,000 GPD. Flow and Rainfall data represented in Figure 3-2 prior to April 7, 2001 were compiled utilizing flow records from the Blackstone Pumping Station maintained by the Sutton Sewer Commission and rainfall records maintained at the nearby Douglas, MA WWTP.

The reason for the large difference in the average daily flows between the first three days of flow monitoring (April 7th, 8th and 9th, 2001) and the three days used to estimate peak infiltration rates earlier in this report (April 18th, 19th and 20th, 2001) can be attributed to the presence of Direct Inflow and/or Delayed Infow/Rainfall Induced Infiltration.

Figure 3-2 does indicate an increase in average daily flows starting approximately March 12, 2001 and returning to normal flow levels approximately April 20, 2001 indicating an increase in the amount of Infiltration/Inflow entering the collection system. As discussed previously, the rates of infiltration are not considered excessive for a collection system of this size with the current sewered population size. The inflow rates are also not considered excessive for the current sewered population size. Figure 3-1 shows the average daily flow as measured at the Blackstone Pumping Station for a 1-year period from June 1, 2000 to May 31, 2001. The lack of a substantial increase in the average daily flows entering the collection system during numerous significant rainfall events during the dry low groundwater season (August/September) indicates that there is not a substantial problem with Direct Inflow sources (catch basins, roof leaders, manhole covers, etc.), but rather indicates more of a delayed inflow situation. Delayed inflow can consist of sump pumps, foundation drains, indirect sewer/drain connections, etc or rainfall-induced infiltration.

For illustration purposes, assuming that this delayed inflow was the result of sump pumps connected to the sewer system, the increase in the average daily flow as measured at the Blackstone Pumping Station could easily be justified as follows. The average daily flow on March 20, 2001 was approximately 150,000 and after approximately 3.2" of rainfall the average daily flow increased to approximately 300,000 GPD on March 22, 2001. This increase in flow of approximately 150,000 GPD occurred after significant rainfall coupled with rapid melting of existing snow cover after the ground had already been saturated by multiple storms in the preceding weeks.

Sump pumps have flow rates that vary between 3 to 5 gallons per minute. Assuming an average discharge rate of 4 gallons per minute operating 12 hours per day, 50 homes could add 100 gallons per minute of flow, which is equivalent to an average daily flow of approximately 150,000 GPD. Considering the Wilkinsonville Village has approximately 600 individual service connections, this additional 150,000 gallons per day of estimated delayed inflow can easily be accounted for.

There is no evidence to support the existence of this number of sump pumps within the existing collection system and it is entirely possible that the observed delayed inflow is generated by another source, but the underlying principle is that at this time the amount of inflow within the existing collection is not considered excessive.

Table 3-7 further illustrates that there does not appear to be a significant direct inflow problem within the study area. Table 3-7 shows the average daily flows for a wet period (1.52" rainfall 6/2/01 and 0.21" 6/3/01) to a dry period as recorded by Flowmeter 5 at the Blackstone Pumping Station which receives the flow from the entire study area. As mentioned earlier in this report, there is a significant difference in the daily flow between weekdays and weekends, therefore a typical 4-day dry period consisting of the same days of the week as the wet period have been compared for both periods.

Table 3-7
Average Daily Flows Wet/Dry Weather Comparison (Entire Study Area)

Date	Daily Flow (MGD	Date	Daily Flow (MGD
6/1/2001 (Friday)	0.083	5/18/2001 (Friday)	0.097
6/2/2001 (Saturday)	0.115	5/19/2001 (Saturday)	0.110
6/3/2001 (Sunday)	0.117	5/20/2001 (Sunday)	0.115
6/4/2001 (Monday)	0.098	5/21/2001 (Monday)	0.099
Average	**0.103**	**Average**	**0.105**

Figure 3-3 graphically illustrates the average hourly flows for the dry and wet periods shown in Table 3-7. A system with an inflow problem would demonstrate a distinct increase flow once the rainfall event began accompanied by a distinct decrease in flow following the conclusion of the rainfall event. The wet and dry weather hourly flows as shown in Figure 3-3 are virtually identical and indicate that there is not a significant inflow problem within the study area.

Insert 11x17 Figure 3-3

General Flow Monitoring Results

Figures 3-4 to 3-9 illustrate the average daily flows recorded for each subarea during the study period as well as the daily rainfall as recorded at the Depot St. Pumping Station. Figure 3-4 shows all subareas. Figure 3-5 shows the daily flows from Subarea 1. Figure 3-6 shows the combined daily flows from Subareas 1&2 (to isolate flows for Subarea 2, flows from Subarea 1 must be subtracted). Figure 3-7 shows the daily flows from Subarea 3. Figure 3-8 shows the daily flows from Subarea 4. Figure 3-9 shows the combined daily flows from Subareas 2,3,4 & 5 (to isolate flows for Subarea 5, flows from Subareas 2,3 & 4 must be subtracted).

Figure 3-1 - Historical Average Daily Flows & Rainfall (June 2000 to May 2001)

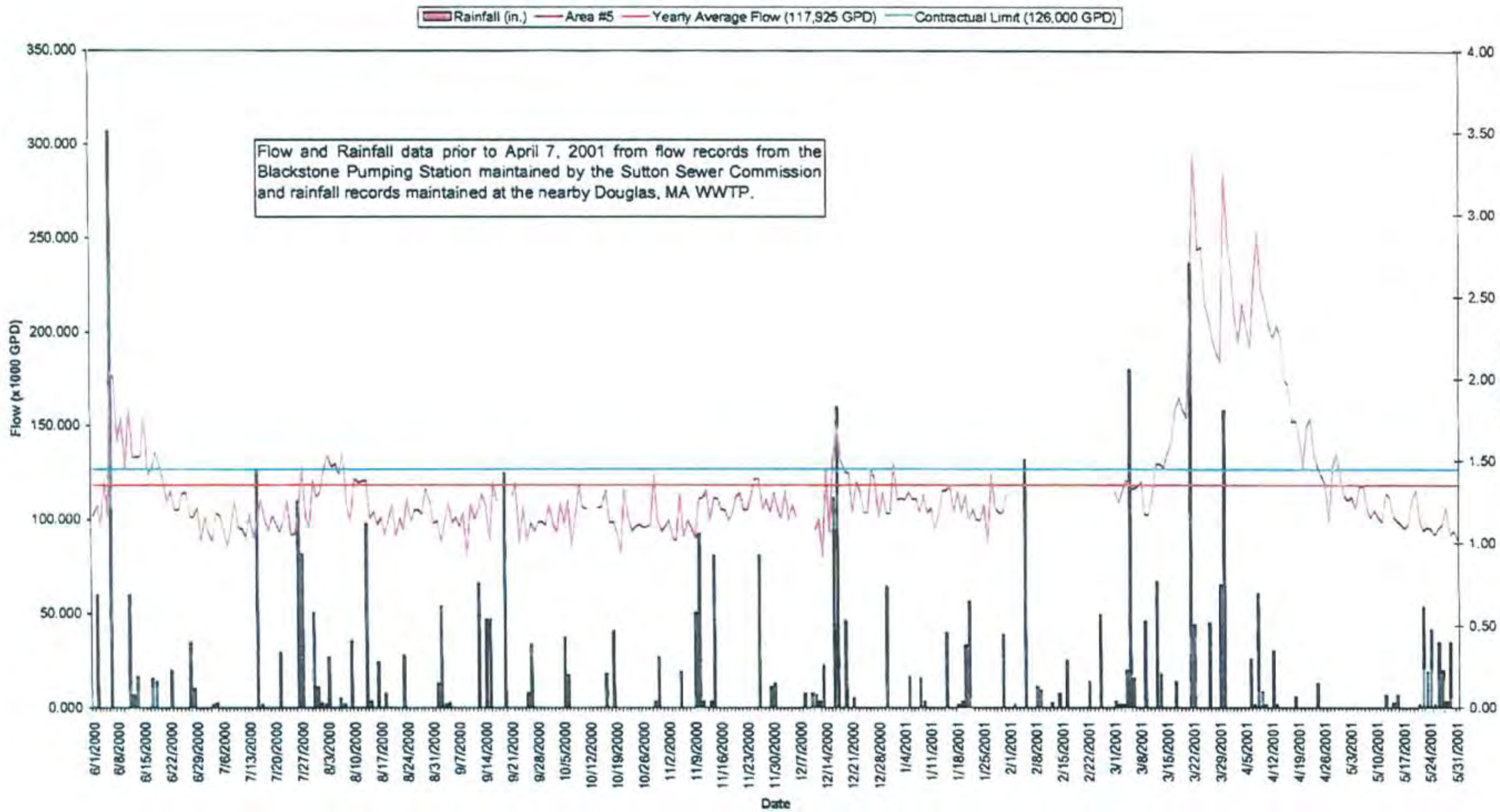


Figure 3-2 - Average Daily Flows & Rainfall

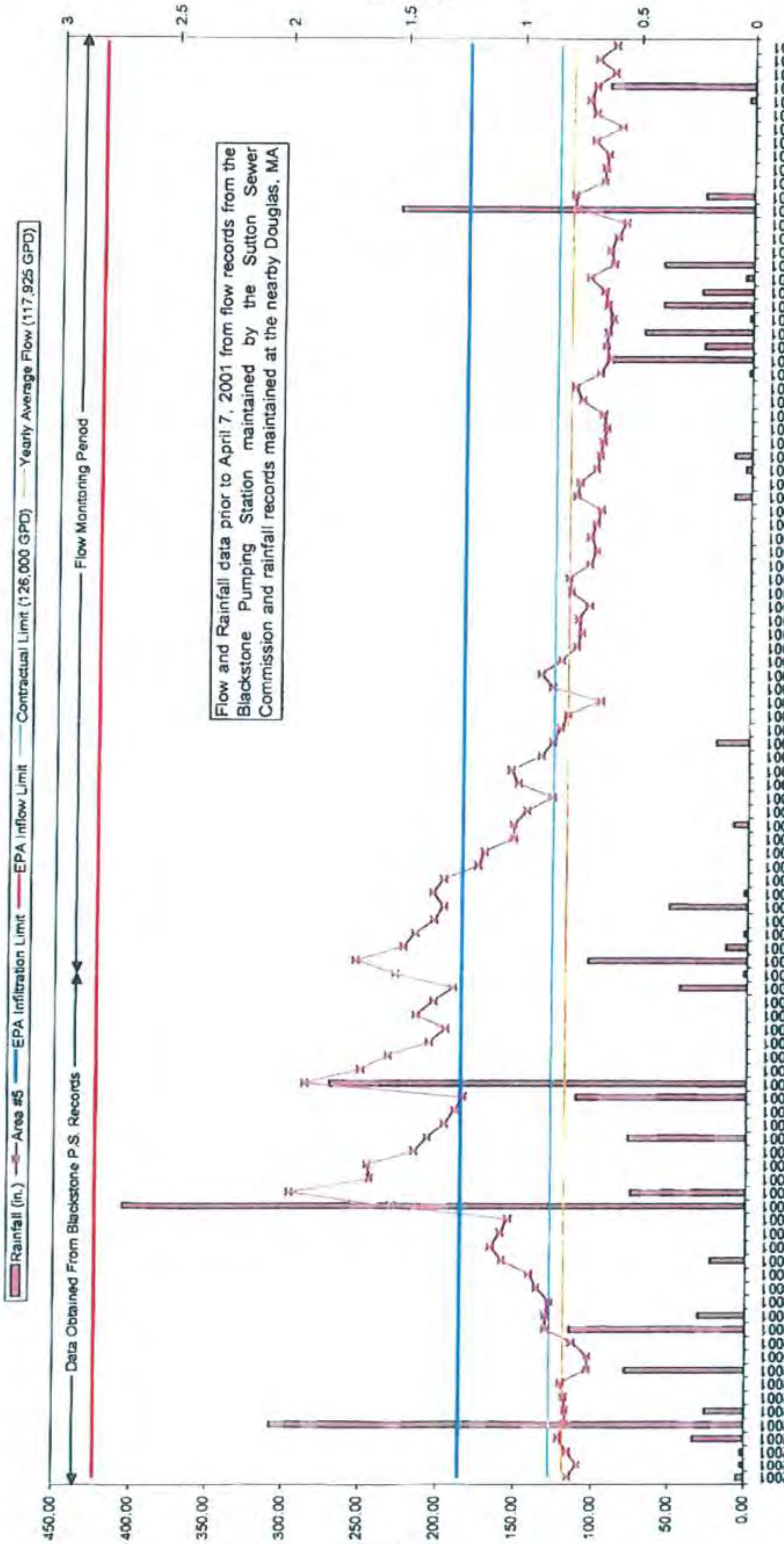


Figure 3-3 - Hourly Flow Comparison (Dry & Wet Weather) - Entire Study Area

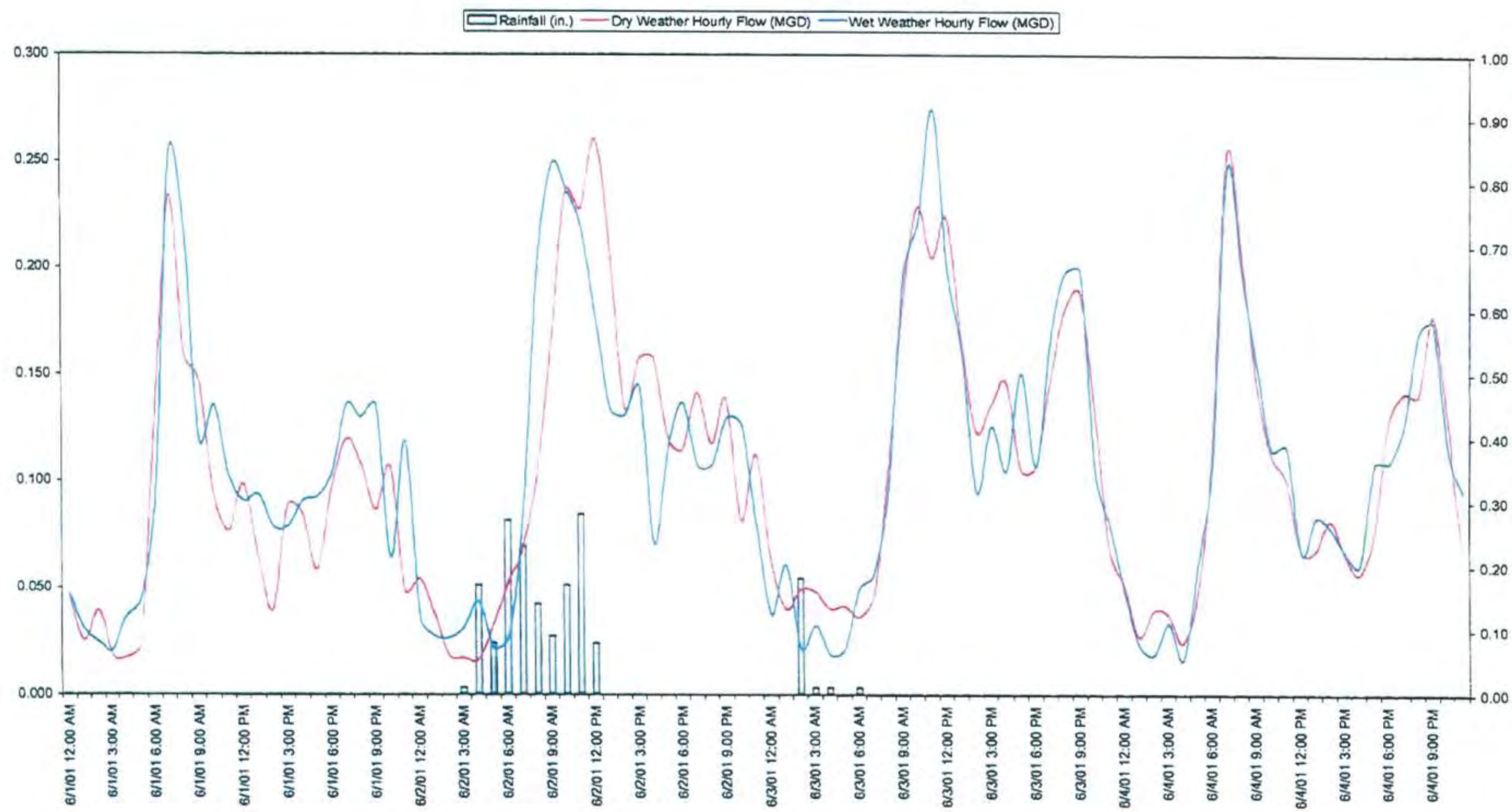


Figure 3-4 - Average Daily Flows & Rainfall (All Subareas)

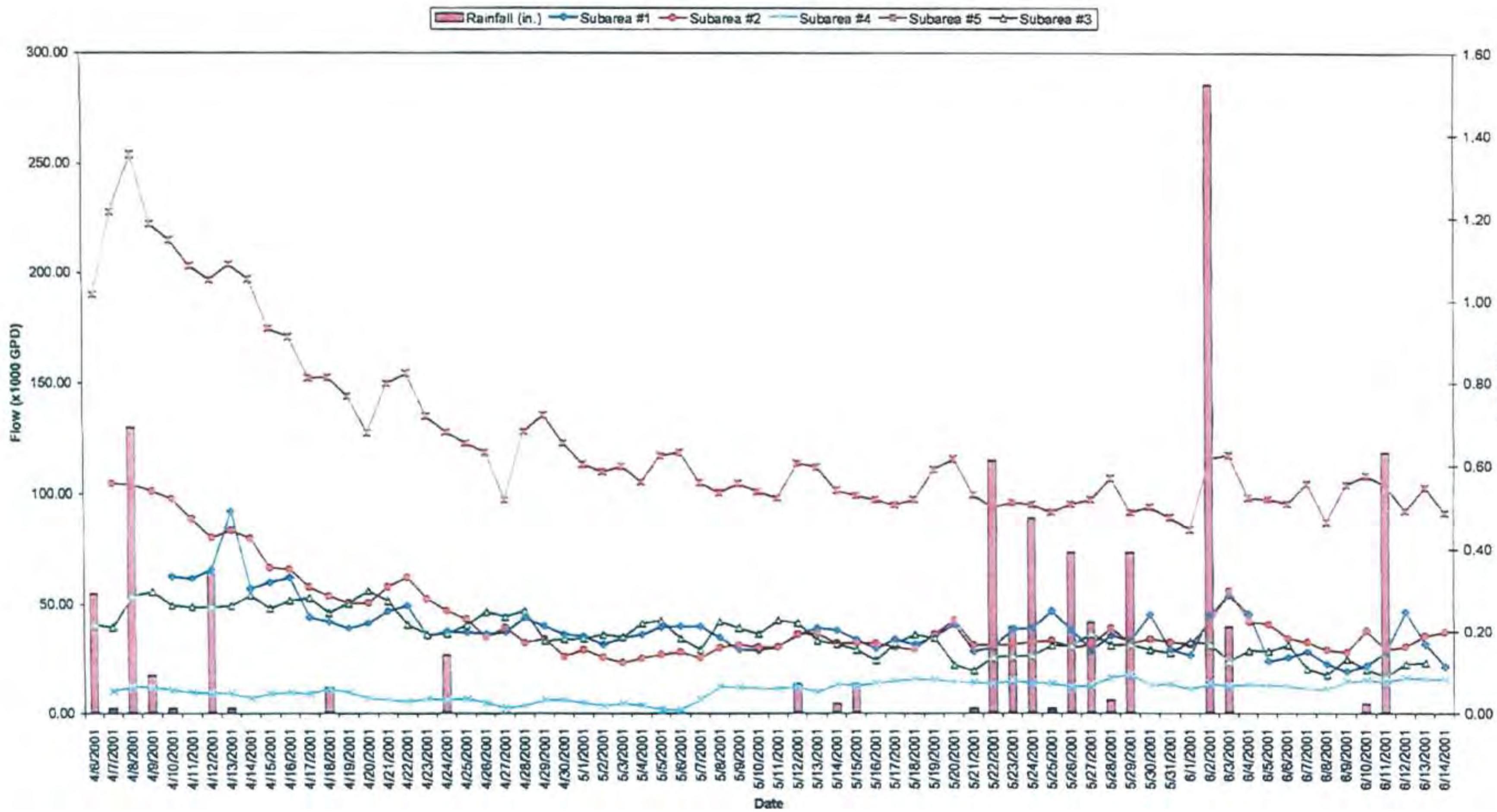


Figure 3-5 - Average Daily Flows & Rainfall (Subarea 1)

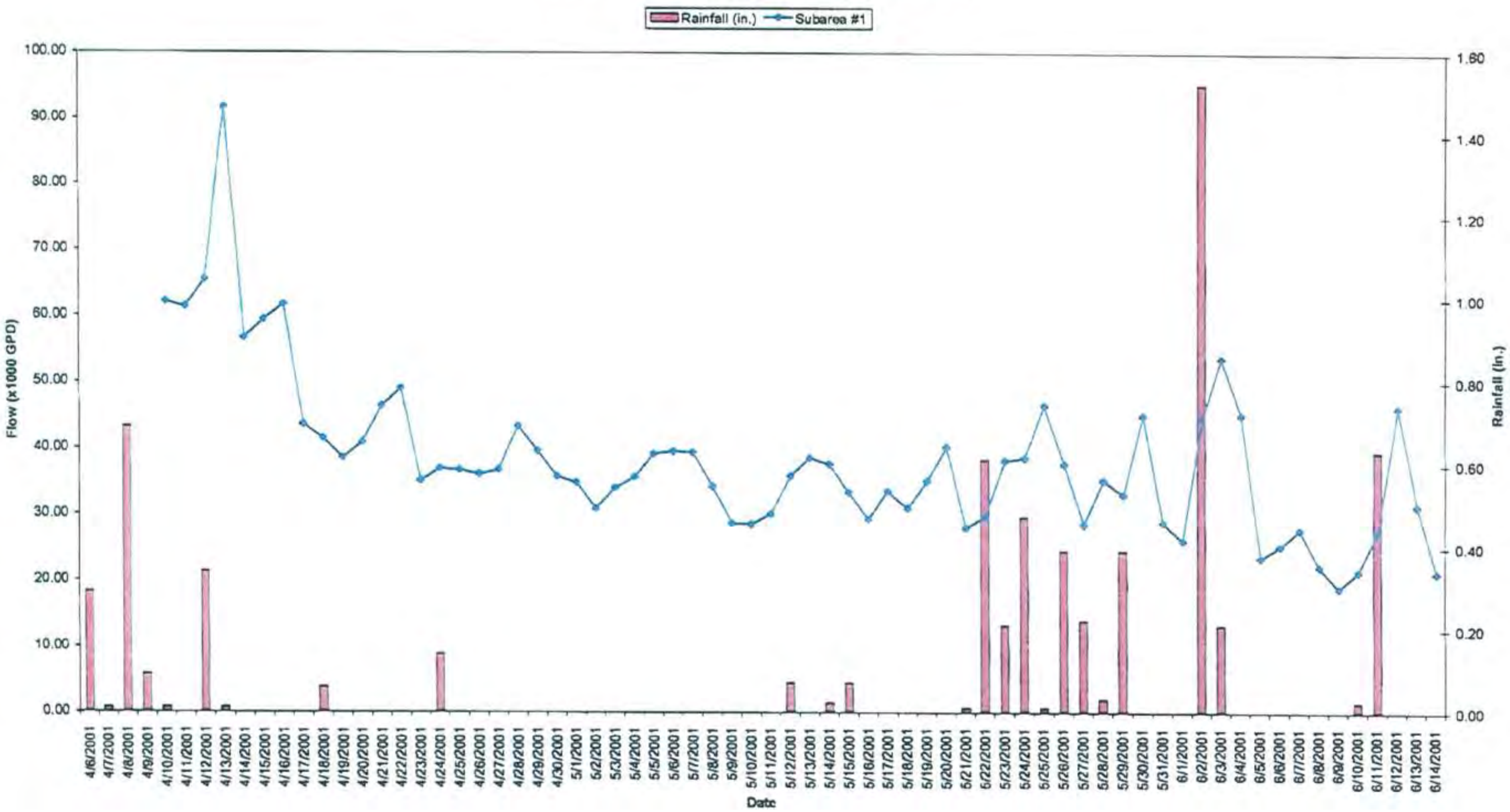


Figure 3-6 - Average Daily Flows & Rainfall (Subarea 2)

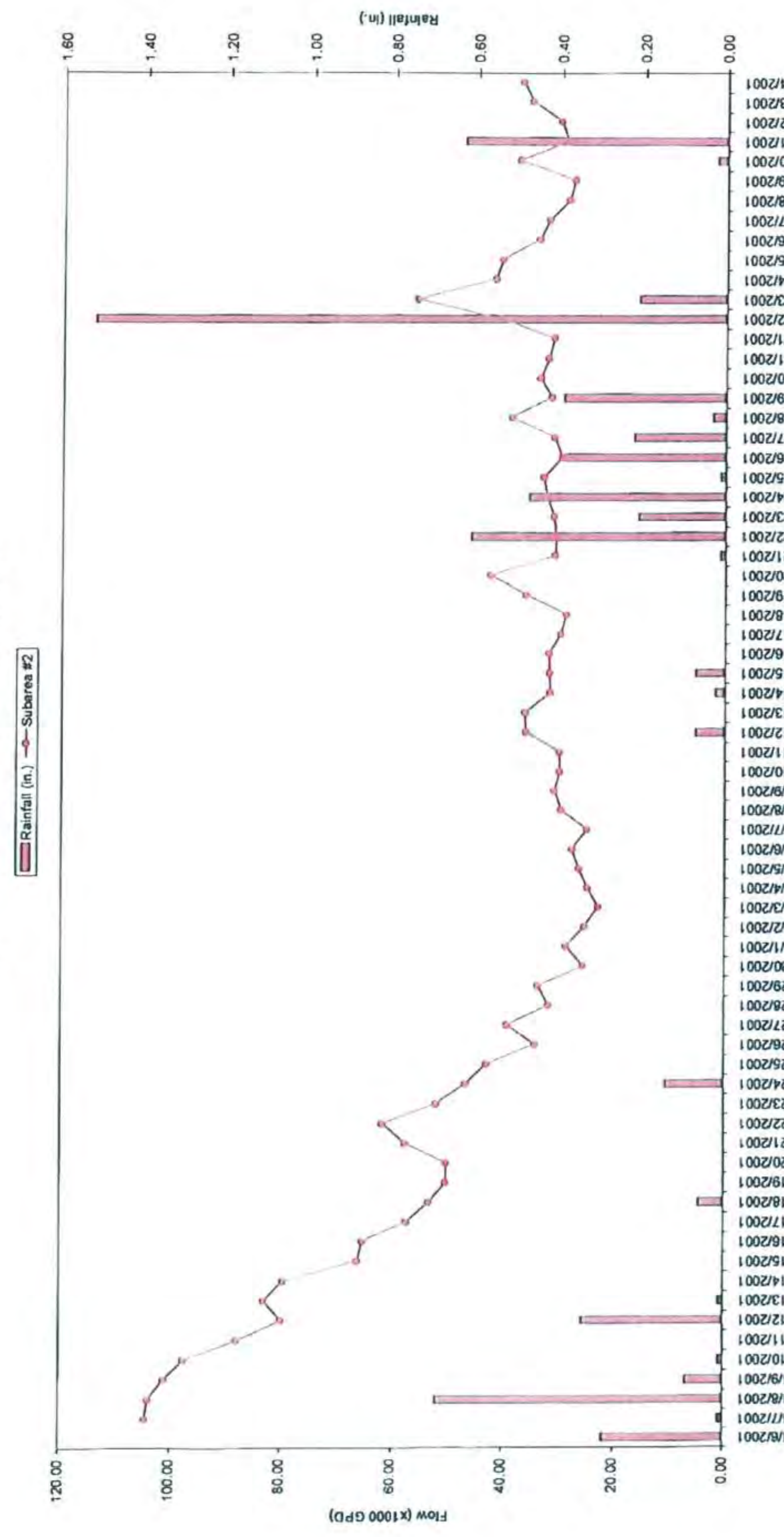


Figure 3-7 - Average Daily Flows & Rainfall (Subarea 3)

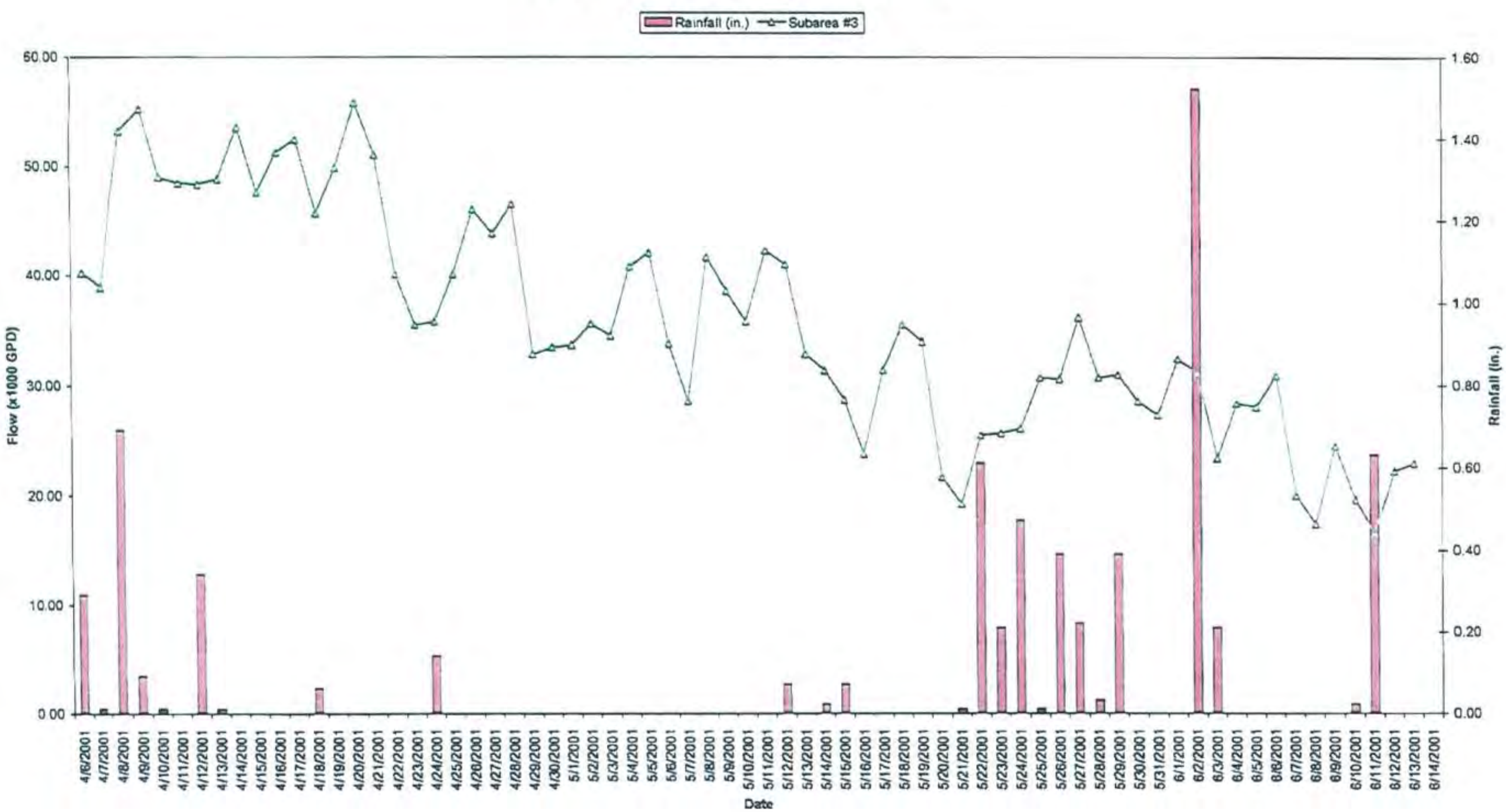
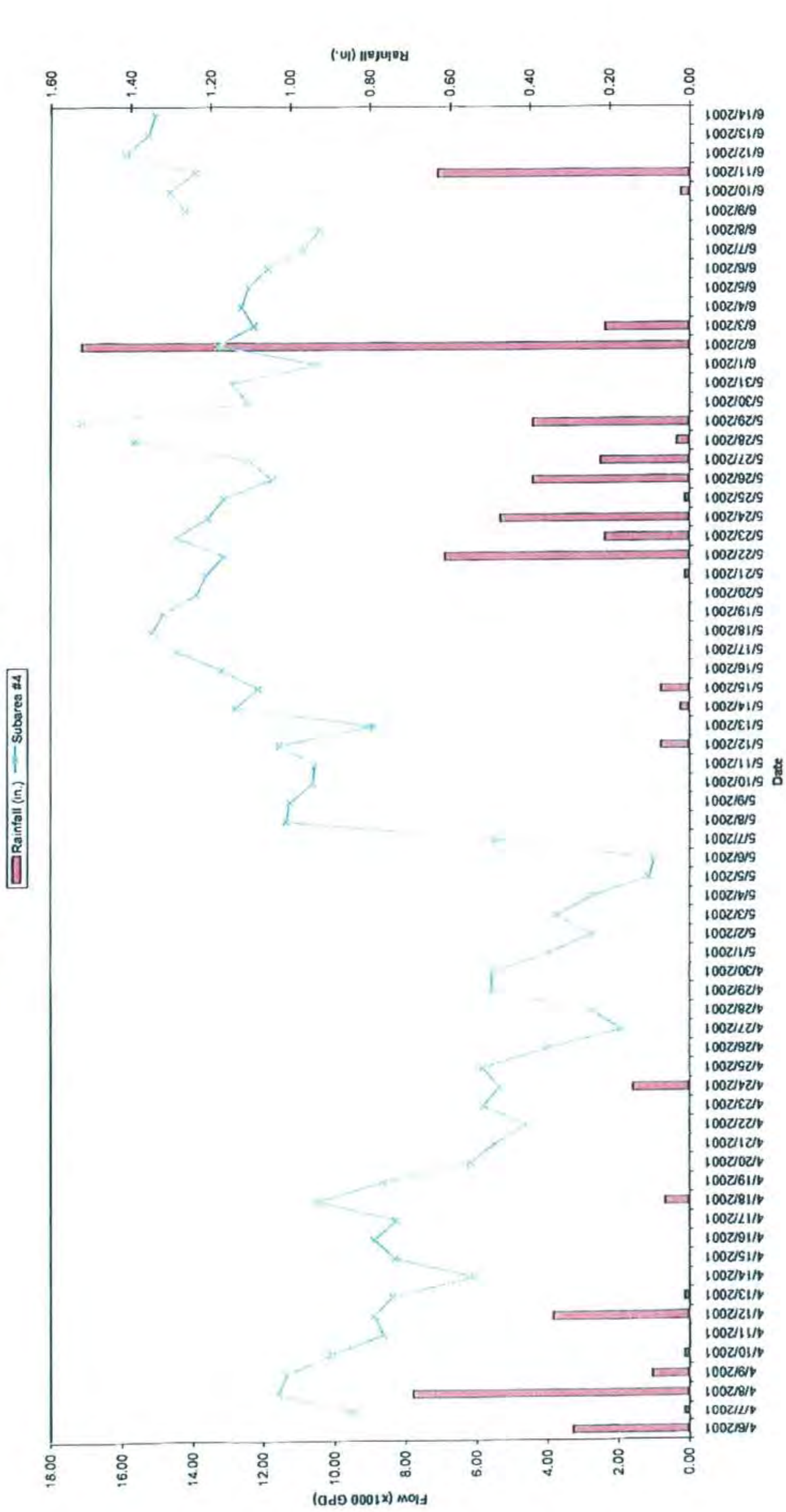


Figure 3-8 - Average Daily Flows & Rainfall (Subarea 4)



Chapter 4
Recommendations

General

Recommendations for sewer system rehabilitation in the Wilkinsonville area have been based on the results of the flow-monitoring program and the analyses performed during the preparation of this report. This section reviews recommendations presented by the previous I/I Study performed by BETA Engineering dated November 1999 and makes recommendations for further investigation of potential problems if deemed necessary be an increase in the severity of the Infiltration/Inflow in the future.

Unlike the wet high groundwater season utilized for the I/I study in 1999, 2001 offered generally higher groundwater levels and numerous significant rainfall events. This resulted in historically high flows at the Blackstone Pumping Station and can probably be considered a worst-case scenario. The average daily flow for the month of April 1999 was 107,400 GPD. The average daily flow for April 2001 was substantially higher at 162,400 GPD.

Review of Previous Recommendations

Many of the rehabilitation recommendations made in the previous I/I study were based on the reasonable assumption that the observed defects would be more severely contributing infiltration during a more typical wet high groundwater season with more rainfall. No evidence was discovered to support the fact that these previously identified defects were in fact contributing more infiltration than that observed in 1999 and would therefore not require performing the previously recommended rehabilitation.

Additional Recommendations

The entire section of pipe from the Blackstone Pumping Station to the intersection of Providence Road and Buttonwood Avenue carries the flow from the entire Village of Wilkensonville to the Town's Blackstone pumping station where it is pumped into the Town of Millbury's collection system for final treatment and disposal. As such, this section of pipe is a critical element of the Wilkensonville sewer system. The Town should also recognize that this section of the system is the oldest within the system, approximately 31 years, and travels at a rather shallow depth across a wooded low-lying easement that is in close proximity to the Blackstone River. Based on this status this section of the Wilkensonville sewer system should be periodically (annually or at least semi-annually) inspected internally and hydraulically cleaned as necessary to proactively avoid any potential problems that could be caused by the root intrusion and/or grease accumulation that has been historically documented in this area. Should deficiencies develop, the Town should consider as a cost effective alternative restoring the pipeline utilizing the trenchless technologies common to the industry (I.e. lining, pipe bursting, etc.) as a means of eliminating high maintenance tasks and improving the hydraulic characteristics of the pipe for years to come.

ATTACHMENT B: INTERMUNICIPAL AGREEMENTS FOR WASTEWATER TREATMENT

AGREEMENT BETWEEN
WALMART, TOWN OF SUTTON AND TOWN OF NORTHBRIDGE
FOR THE PROVISION OF SEWER SERVICE

This agreement, made and entered into this 19 day of July, 2016, by and between the Town of Sutton, a municipal corporation within the County of Worcester, Commonwealth of Massachusetts, acting through its Board of Selectmen, hereinafter referred to as "Sutton," the Town of Northbridge, a municipal corporation within the County of Worcester, Commonwealth of Massachusetts, acting through its Board of Selectmen, hereinafter referred to as "Northbridge," and Walmart, a corporation with a principal place of business located at 100 Valley Parkway, Northbridge, MA.

WITNESSETH

WHEREAS, Sutton owns and operates a public wastewater treatment system for the service of its inhabitants (the "Sutton Sewer System");

WHEREAS, Northbridge owns and operates a public wastewater treatment system for the service of its inhabitants (the "Northbridge Sewer System");

WHEREAS, Walmart has constructed a retail store on certain property in the Town of Northbridge on 100 Valley Parkway, identified as Parcel 119, on Northbridge Assessors' Map 1, and further described as: Walmart (the "Property"), which property is owned by W/S Northbridge LLC, and as part of such development seeks to obtain a connection to a public wastewater treatment system for the purpose of providing for the treatment and disposal of wastewater generated by such development;

WHEREAS, the Northbridge Sewer System does not extend to the Property, and the costs associated with connecting the Property to the Northbridge Sewer System would be significant;

WHEREAS, because of the proximity of the Property to the Town of Sutton and the Sutton Sewer System, connecting the Property to the Sutton Sewer System can be accomplished with less difficulty and at less expense than connecting the Property to the Northbridge Sewer System;

WHEREAS, Sutton and Northbridge agree that the development and use of the Property as proposed will provide a public benefit to the citizens of both municipalities;

WHEREAS, in light of such benefits, Sutton is willing to permit, and Northbridge is willing to allow, the connection of the Property to the Sutton Sewer System under the terms and conditions set forth in this Agreement;

WHEREAS, to secure such a connection, Walmart is willing to abide by the terms and conditions set forth in this Agreement;

WHEREAS, Sutton and Northbridge are authorized by General Laws Chapter 40, Sections 4 and 4A to enter into an Intermunicipal Agreement for the purpose of Sutton supplying wastewater treatment and disposal to property within the Town of Northbridge, subject to authorization by the Sutton Board of Selectmen and the Northbridge Board of Selectmen;

NOW, THEREFORE, in consideration of the promises and mutual benefits to be derived by the parties hereto, the parties agree as follows:

General Terms

1. Upon construction of the required facilities in accordance with the terms and conditions set forth herein, Northbridge agrees to permit connection of the Property to the Sutton Sewer System, and to collect from Walmart and remit to Sutton all fees and charges assessed by Sutton and incurred by Walmart for such connection and use as if the Property was served by the Northbridge Sewer System. No other Northbridge property

shall be allowed to tie into the Sutton Sewer System without a written agreement between the parties or a written amendment to this Agreement.

2. Walmart shall be responsible for and shall pay all costs associated with the design and construction of the connection of the Property to the Sutton Sewer System (the "Connection"), which Connection shall include all pipes and related facilities required to connect the Property to the Sutton Sewer System as that System is presently configured.

3. The Connection shall comply fully with all applicable federal, state and local laws, rules and regulations. The maximum flow accepted by Sutton pursuant to this Agreement shall be a total of 25,000 gallons per day.

4. Walmart shall provide Sutton with all specifications and plans for said Connection, and the identity of those persons/entities that will construct the Connection, for approval by the Sutton Sewer Department prior to the commencement of any construction. Upon completion of construction, Walmart shall provide the Sutton Sewer Department with an as-built plan of the Connection as a condition precedent to the actual supply of service by Sutton.

5. Walmart shall provide and install a sewer meter of the type and specification required by the Sutton Sewer Department and in such location as shall be designated by the Sutton Sewer Department.

6. Walmart shall be responsible for obtaining all necessary permits, approvals and rights in real property required by federal, state and local law, rules and regulations for the excavation and construction in association with the Connection to the Property, and shall maintain same in full force and affect throughout the term of this Agreement.

7. Walmart shall notify Sutton upon completion of construction of the Connection and prior to any backfilling of the excavation to allow Sutton to inspect the Connection as constructed. A twenty-four (24) hour notice is required to schedule an inspection.

8. Upon completion of the Connection, that portion of the Connection providing service solely to the Property and located outside the bounds of any public way or property in which the Town of Sutton holds record rights for sewer purposes, together with such property rights as are necessary to allow for the construction and use of such portion (together, the "Walmart Connection"), shall be and remain the property of the owner of the Property, its successors and assigns, and said owner shall be responsible for, at its sole cost and expense, the maintenance and repair of the Walmart Connection in accordance with the rules and regulations of the Sutton Sewer Department, with the exception of any pump station constructed in order to provide sewer service to the Property ("Pump Station"), which shall be deeded by Walmart to the Town of Sutton together with a permanent easement to access said Pump Station, for nominal consideration ($1.00). Walmart shall maintain the Walmart Connection, with the exception of the Pump Station, in compliance with all rules and regulations of Sutton and all applicable federal and state laws, rules and regulations, as they may be amended, and such further reasonable orders and requests as the Department may make to ensure proper operation of the Sutton Sewer System. Sutton reserves the right to inspect the Walmart Connection from time to time, to maintain and repair said connection if the owner fails to perform such work in a timely manner, and to make emergency repairs to said connection as necessary without prior notice to ensure proper operation of the Sutton Sewer System and protect public health and safety. The owner of the Walmart Connection shall be

responsible for the costs of all such maintenance and emergency repairs, with the exception of any maintenance or emergency repairs to the Pump Station, for which Sutton shall be solely responsible. These inspections and any inspections permitted under this Agreement may include any and all reasonable tests Sutton deems necessary. Northbridge and Walmart hereby consent to Sutton's entry onto or into the Town of Northbridge and the Property for the purpose of any inspection or repair, installation or maintenance which Sutton deems necessary under this Agreement.

9. Walmart shall pay to the Town of Sutton a one-time fee of $25,000.00 for on-going maintenance and repairs to the Pump Station. In addition to the payment to the Town of Sutton, Walmart shall make a mitigation payment in the amount of $10,000.00 to the Town of Northbridge on account of the impacts that the construction and installation of the Connection will have on Northbridge.

10. To the extent required by the design for the Connection approved by the Sutton Sewer Department, Northbridge shall allow for the installation of underground pipes within the public ways of Northbridge in accordance with the terms and conditions of such permits as Northbridge may customarily and reasonably require to be issued for such use.

11. Subject to the terms and limits of this Agreement and of applicable state and federal law, Sutton, acting through its Sewer Department, will provide sewer service to the Property in consideration for payment of such connection and user rates or charges and fees (together "Charges") as such users of the Sutton Sewer System may lawfully be charged. Sutton shall provide an account of such Charges in its usual manner to Northbridge, which in turn shall issue an invoice to Walmart for payment of such

Charges and shall provide for the collection of such Charges as if the Property were served by the Northbridge Sewer System. Such collection shall include, without limitation, the exercise of those remedies provided under G.L. c.83, §§16A through 16F, and the collection through all available legal means of those uncollected Charges added to the taxes assessed against the Property, including the remedies provided by G.L. c.59 and 60. Upon collection of the Charges, and any penalty or interest accruing thereon, Northbridge shall promptly remit such amounts to Sutton.

12. Sutton shall use its best efforts to be at all times in compliance with any NPDES permit issued for the treatment facility and to comply with all state and federal laws, regulations, water quality standards, orders, decrees of any state and/or federal governmental authority having jurisdiction over the treatment and disposal of waste waters.

13. Characteristics of waste acceptable to Sutton by or from Northbridge shall at all times conform to standards set by Rules and Regulations of the U.S. Environmental Protection Agency (hereinafter called "EPA") and the Massachusetts Department of Environmental Protection ("DEP") and Sutton's Bylaws, all as issued and amended from time to time. No industrial waste or wastewater, as defined and regulated at 314 CMR 7.02 et seq., shall be accepted by Sutton pursuant to this Agreement.

Insurance

14. Walmart shall obtain and maintain during the period of construction of the Connection the following insurance coverage from companies licensed to do business in the Commonwealth of Massachusetts, and acceptable to Sutton and Northbridge. The amounts of such insurance shall be for each policy, not less than:

(1) Bodily injury liability, including death - $1,000,000.00 on account of any one person and $2,000,000.00 aggregate limit.

(2) Property damage liability - $1,000,000.00 on account of any one accident, and $2,000,000.00 aggregate.

All policies shall identify Sutton and Northbridge as an additional insured and shall provide that Sutton and Northbridge shall receive written notification at least thirty (30) days prior to the effective date of any amendment or cancellation. Walmart shall provide Sutton and Northbridge with appropriate certificate(s) of insurance or other evidence that it maintains insurance in the amounts required by this Agreement.

Failure to provide or to continue in force such insurance shall be deemed a material breach of this Agreement and may result in termination of sewer supply to the Property by Sutton.

Remedies

15. Sutton maintains the right to terminate the sewer service provided under this Agreement for any breach of the terms of this Agreement. Failure to cure any noncompliance within ten (10) days of written notice from Sutton of such noncompliance shall be considered a material breach of this Agreement and may result in termination of sewer supply to the Property by Sutton.

16. In the case of an emergency creating a threat to the public health or safety as determined by Sutton, Sutton may suspend or terminate sewer service to the Property immediately and without prior written notice. Written notice shall be provided as soon as practicable thereafter.

17. In addition to the remedies, power and authority which the Sewer Department has under any bylaws or regulations of Sutton, the following remedies apply:

a) If any party fails to fulfill any obligation or condition of this Agreement, the other parties have the right to terminate this Agreement by giving ninety (90) days notice, in writing, of its intent to do so. Upon receipt of such notice the party shall have the right to prevent termination by curing the default within sixty (60) days. Termination shall not release Northbridge, or Walmart from their obligation to pay all bills or sums due in accordance with this Agreement.

b) The parties reserve the right, either in law or equity, by suit, and complaint in the nature of mandamus, or other proceeding, to enforce or compel performance of any or all covenants herein.

c) Once a bill remains unpaid past its due date, interest will be charged at the rate stated in the Sutton Bylaws or regulations from the due date to the date of payment of the bill.

d) If an administrative agency, board, commission or division of the state or federal government or any court impairs, alters, restricts or limits, directly or indirectly, Sutton's rights, powers or authority to maintain, sell, contract for, or permit sewage disposal as described in this Agreement, Sutton in its sole discretion may terminate and void this Agreement by written notice to Northbridge and Walmart. Termination under this clause shall not release Northbridge or Walmart from its obligation to pay any sums due and all bills owed for services previously rendered unless to do so would be in violation of a final administrative or judicial decree, order or ruling. The notice of termination shall be given within five (5) business days after Sutton receives written notice of the action or decision of such agency, board, commission, division or court. It is the intent of this notice provision to give Northbridge and Walmart as much advance notice as possible consistent with Sutton's need to terminate. Sutton will notify Northbridge and Walmart of the formal institution of any proceedings or the issuance of any formal order so that Northbridge, and Walmart may, if they choose, participate in such proceedings or challenge any such order.

e) If Walmart fails to perform any obligation under this Agreement, Sutton may perform on behalf of Walmart and charge the reasonable costs thereof, including administrative time and attorneys' fees, to Walmart as a sum due under the Agreement provided written notice is given to Walmart allowing it a reasonable time to cure the default.

f) Sutton may in its sole discretion immediately stop providing service to Northbridge and Walmart if Northbridge or Walmart fails to cure any default within sixty (60) days after written notice as provided in the previous paragraph.

g) The remedies set forth in this Agreement are cumulative. The election of one does not preclude use of another, at any time or the same time.

Term of Agreement

18. The term of this Agreement shall be for a period of twenty-five (25) years from date hereof, unless sooner terminated as herein provided. The parties intend that they are the sole and exclusive beneficiaries of the Agreement.

Employees

19. Employees, servants, or agents of any party shall not be deemed to be agents, servants or employees of any other party for any purpose, including but not limited to either Workers' Compensation or unemployment insurance purposes.

Funding and Appropriations

20. Northbridge agrees to make available annually sufficient money to pay for its obligations under this Agreement, and shall give written notice that such funds are available and the amount of same.

User Fee

21. Sutton shall bill Northbridge on a semi-annual basis a user fee of $295 based on 30,000 gallons. A fee of $6.25 per every thousand gallons above the minimal usage (30,000 gallons) is applied. The user fees are subject to changes to said rate duly adopted by Sutton. The connection fees and user rate bylaws and regulations may be changed by Sutton at any time and Northbridge users will be subject to said changes.

22. As set forth infra, Sutton will bill Northbridge, and Northbridge shall bill Walmart for sewer service. Northbridge will reimburse Sutton for all sewer bills according to the applicable Sutton sewer rate schedule for non-Sutton residents and any amendments thereto.

23. Sutton may, in its sole discretion, surcharge Northbridge and Northbridge may surcharge Walmart for discharge of wastewater containing pollutant levels exceeding concentrations found in Normal Strength Wastewater in proportion to the actual strength to the maximum normal strength based upon BOD or suspended solids.

Review of Agreement

24. The parties will review and revise this Agreement to ensure compliance with the United States Clean Water Act, 42 U.S.C. 1251 et seq. and the rules and regulations promulgated thereunder as necessary, but at least once every three (3) years on a date to be determined by the parties.

Service of Notice

25. All notices or communications permitted or required by this Agreement must be in writing except in emergencies, and shall:

As to Sutton, be delivered or mailed by certified mail, return receipt requested, to: Town Administrator, Sutton Town Hall, 4 Uxbridge Road, Sutton, MA 01590, and the Sutton Sewer Department, 4 Uxbridge Road, Sutton, MA 01590.

As to Northbridge, be delivered or mailed by certified mail, return receipt requested, to: Town Administrator, Northbridge Town Hall, 7 Main Street, Whitinsville, MA 01588, and the office of the Department of Public Works, 11 Fletcher Street, Whitinsville, MA 01588.

As to Walmart, be delivered or mailed by certified mail, return receipt request, to:

__________________________.

Extension of Term

26. During the 23rd year of this Agreement, unless it is sooner terminated, the parties shall meet to negotiate in good faith for an extension or renewal of this Agreement subject to authorizations that may be required by then applicable law. This acknowledgment that

the term of the Agreement, including any new terms or conditions, may be extended, does not impose on either party any express or implied obligations with regard to the potential negotiations or this Agreement. No party has any added or implied obligation to extend or renew the terms of the Agreement with or without modifications.

Regulatory Authority

27. This Agreement is subject to the lawful rules, regulations, decisions, order or directives of any agency of the state and federal government with jurisdiction over the parties or subject matter of the Agreement. Any and all conditions, rules, regulations, orders or other requirements heretofore or hereafter placed upon Sutton or Northbridge by the EPA or by the Department of Environmental Protection or any other agency, division, office or department of the United States or the Commonwealth of Massachusetts or by any court of competent jurisdiction and by any other applicable Federal, state or county agency, shall be construed to become a part of this Agreement unless the Agreement is terminated hereunder. Further, any additional costs, including attorneys' fees, placed upon Sutton as a result of any orders of the above-referenced court or agencies in connection with the supplying of sewage disposal by Sutton to the Property shall be borne by Walmart.

28. All claims, disputes and other matters in question between the parties to this Agreement arising out of or relating to this Agreement or the breach thereof shall be governed by the laws of the Commonwealth of Massachusetts.

29. This Agreement, including all documents incorporated herein by reference, constitutes the entire integrated agreement between the parties with respect to the matters described. This Agreement supersedes all prior agreements, negotiations and

representations, either written or oral, and it shall not be modified or amended except by a written document executed by the parties hereto.

30. This Agreement and each of its terms and conditions shall be binding upon all successors and assigns to the parties. Northbridge and Walmart shall notify Sutton in writing of any successor or assign in right or interest to any of the parcels that make up the Property.

31. If any provision of this Agreement is held invalid, the remainder of this Agreement shall not be affected thereby, and all other parts of this Agreement shall remain in force and affect.

IN WITNESS WHEREOF, the parties to this Agreement have hereunto set their hands and seals on the date and year first above written.

TOWN OF SUTTON

By its Board of Selectmen

____

Paul H. Maynard

____

____

____

____

TOWN OF NORTHBRIDGE

By its Board of Selectmen

____

____

Charles Cappadona

Thomas J. Melia

____

WALMART

By its ______________________

____

INTER-MUNICIPAL AGREEMENT
FOR
SEWERAGE
BETWEEN
TOWN OF MILLBURY, MASSACHUSETTS
AND
TOWN OF SUTTON, MASSACHUSETTS

JUNE 2008

INTER-MUNICIPAL AGREEMENT

FOR

SEWERAGE

BETWEEN

TOWN OF MILLBURY, MASSACHUSETTS

AND

TOWN OF SUTTON, MASSACHUSETTS

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Exhibit "C"	Sutton's Debt Payment Schedule for Force Main and Municipal Pumping Station
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INTER-MUNICIPAL AGREEMENT

FOR

SEWERAGE

BETWEEN

TOWN OF MILLBURY, MASSACHUSETTS

AND

TOWN OF SUTTON, MASSACHUSETTS

I. PREAMBLE

THIS AGREEMENT, made and entered into this 17th day of June __, 2008, executed in quadruplicate (each executed copy constituting an original), between the Town of MILLBURY (hereinafter referred to as "MILLBURY"), a Massachusetts municipal corporation with a principal place of business at Town Hall, 127 Elm Street, Millbury, MA 01527, acting by and through its Board of Sewer Commissioners and its Board of Selectmen, and the Town of Sutton (hereinafter referred to as "SUTTON"), a Massachusetts municipal corporation with a principal place of business at Town Hall, Sutton Center, Sutton, MA, acting by and through its Board of Sewer Commissioners and its Board of Selectmen.

II. RECITALS

WITNESSETH:

WHEREAS, Chapter 40, Section 4A of the General Laws allow a town to make contracts for the exercise of its corporate powers on such terms and conditions as are authorized by the town meeting;

WHEREAS, both MILLBURY and SUTTON have been authorized by town meeting[1] to enter into such a contract for sewerage transport.

[1] Millbury Special Town Meeting, November 4, 1968, Article 3 as further amended by Millbury Annual Town Meeting Vote of May 2006, Article 34. Article 1 of the 1975 Sutton Annual Town Meeting held on March 10, 1975 authorized the Board of Selectmen to enter into an intermunicipal agreement for the transport of sewage with Millbury. Article 15 of the 2006 Sutton Annual Town Meeting authorized the Board of Selectmen to enter into a intermunicipal agreement with Millbury for the purpose of treatment and disposal of domestic sewerage for a period not to exceed 25 years.

WHEREAS, Chapter 40, Section 4A of the General Laws allows the chief executive officer of a town or a board to enter into agreements with one or more other governmental units to perform jointly activities or undertakings which any of the contracting units is authorized by law to perform, and

WHEREAS, said Chapter 40, Section 4A sets forth the requirements for and parameters of such "inter-municipal agreements";

WHEREAS, MILLBURY and SUTTON have already planned, designed, constructed, operated, and maintained separate sewers and sewerage at their own expense within their respective boundaries;

WHEREAS, SUTTON currently contributes, and has planned for and will design and construct sewerage which will contribute sewage (sanitary and industrial) into the MILLBURY system;

WHEREAS, MILLBURY has planned for, designed and constructed, and will construct additional sewerage with the capacity to handle its own sewage and certain defined sewage from SUTTON;

WHEREAS, MILLBURY and SUTTON already have exercised their corporate power to jointly perform services, activities and undertakings related to sewerage through the execution of a May 6, 1975 "AGREEMENT ON SEWERAGE AND SEWAGE TREATMENT" as amended on July 31, 1975, July 25, 1978 and December 13, 1994 (hereinafter referred to as the "1975 AGREEMENT");

WHEREAS, said 1975 AGREEMENT was executed under the then current maximum term, not exceeding thirty (30) years and said 1975 AGREEMENT expired on or about May 5, 2005;

WHEREAS, MILLBURY and SUTTON propose to continue, expand and better define each aspect of their joint responsibilities for sewerage;

WHEREAS, the premises upon which the 1975 AGREEMENT was based have changed and MILLBURY and SUTTON want to contract for present and proposed future conditions;

WHEREAS, MILLBURY has decommissioned and abandoned its sewerage treatment plant and has constructed and placed into operation a replacement pumping station/force main, regional interceptor sewer which transmits MILLBURY/SUTTON sewage flow directly to the Upper Blackstone Water

Pollution Abatement District (hereinafter referred to as "UBWPAD") wastewater treatment facility located in Worcester, Massachusetts;

WHEREAS, under the Massachusetts Department of Environmental Protection (hereinafter referred to as "DEP") "Guidelines for the Preparation of Comprehensive Wastewater Management Plans, January 1996" MILLBURY has prepared a DEP-approved comprehensive wastewater management plan (hereinafter referred to as "CWMP") which recommend additional future, intermunicipal sewerage connections, the flows from which will also be conveyed through the MILLBURY sewer system to the UBWPAD. Sutton has prepared a draft CWMP which recommends certain additional flows to be conveyed through the Millbury system to the UBWPAD. [2]

WHEREAS, MILLBURY has designed and is currently arranging to implement the physical construction of all of the MILLBURY CWMP recommendations;

NOW, THEREFORE, MILLBURY and SUTTON, in consideration of the above premises and the mutual benefits to be derived and in further consideration of the mutual promises contained herein , do hereby mutually agree, as follows:

III. DEFINITIONS

For the purpose of this AGREEMENT, the following items are defined:

A

3.1 **"Average Daily Flow"** shall mean the total flow as measured at the metering locations, divided by the number of days in the flow period.

3.2 **"Biochemical Oxygen Demand"** (BOD) shall mean the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20 degrees centigrade (68 degrees Fahrenheit) expressed in milligrams per liter by weight (or pounds per day).

3.3 **"Building Service Connection"** is where a building service lateral connects to the public sewer; typically made using a wye or tee, with a chimney for deep public sewers.

[2] Comprehensive Wastewater Management Plan, Town of Millbury, Massachusetts, dated July 1998, Revised August 2002 (prepared by Earth Tech, Inc.). Town of Sutton, Massachusetts Facility Plan Update Draft Report August, 1998 (dated September, 2002) (prepared by BETA Engineering, Inc.)

3.4 **"Building Service Lateral"** is the pipe from a building to the public sewer.

3.5 **"Capital Cost"** shall mean building modifications or additions, fixtures, machinery, equipment, accessories, appurtenances, new or expanded pipes or other changes of any nature to the Common Sewerage System as defined in Section 3.8 which are intended to substantially replace or expand the capacity of the existing facilities in an amount costing $25,000 or more and having a useful life of more than ten (10) years.

3.6 **"Chlorine Demand"** shall mean the amount of milligrams per liter of chlorine required to be added to water, sewage, or other liquid to achieve a combined chlorine residual after fifteen (15) minutes contact of one (1) milligram per liter.

3.7 **"Combined Sewer"** shall mean a drain or sewer receiving stormwater run-off, groundwater, and sanitary sewerage and /or industrial wastes.

3.8 **"Common Sewerage System"** shall mean that portion of the MILLBURY sewerage system all in MILLBURY that will be used by MILLBURY and SUTTON., specifically, those pipes within Millbury and owned by the Town of Millbury, along which wastewater from Sutton flows and excluding wyes, tees, chimneys and service connection piping associated with connection from Millbury and its served accounts. The common sewerage system also includes the wastewater pumping station in Millbury where Sutton's flow is accepted and the force main along which same flow is transported to UBPWAD. The extents of the Common Sewerage System are show on the attached Exhibit A.

3.9 **"DEP"** shall mean the Massachusetts Department of Environmental Protection.

3.10 **"Excessive Infiltration/Inflow"** is the quantities of infiltration/inflow which are less costly to remove by sewer system rehabilitation than to transport to and treat at the receiving facility, when both capital costs of increased sewerage facilities capacity and resulting operating costs are included.

3.11 **"Industrial Wastes"** are the liquid wastes, other than sanitary sewage, resulting from manufacturing and/or industrial operations or processes.

3.12 **"Infiltration"** is water, other than wastewater, that enters a sewer system (including sewer service connections) from the ground through means which include, but are not limited to defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from inflow.

3.13 **"Inflow"** is water, other than sanitary flow, that enters a sewer system (including sewer service connections) from sources which include, but are not limited to, sump pumps, roof leaders, cellar drains, yard drains, area drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewer and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters, or drainage. Inflow does not include, and is distinguished from, infiltration.

3.14 **"Infiltration/Inflow"** ("I/I") is the quantity of water from both infiltration and inflow without distinguishing the source.

3.15 **"Infiltration/Inflow Rehabilitation"** is the construction associated with the removal of infiltration and inflow from a sewage collection system.

3.16 **"Local Sewerage System"** shall mean that portion of the sewerage system located either in SUTTON and used exclusively by SUTTON or in MILLBURY and used exclusively by MILLBURY.

3.17 **"mg/l"** shall mean milligrams per liter.

3.18 **"Maximum Daily Flow"** shall mean the maximum combined flow recorded at the metering stations during a 24-hour period during any calendar year.

3.19 **"MILLBURY"** is the Town of MILLBURY, a municipal corporation of the Commonwealth of Massachusetts. The "Millbury Commission" shall be the MILLBURY Board of Sewer Commissioners or its successors.

3.20 **"Millbury Average Metered Flow"** shall mean the wastewater flow from Millbury calculated by subtracting Sutton Average Metered Flow from the total flow metered at Millbury's pumping station (said flow consisting solely of flows from Millbury and Sutton) over a period, divided by the number of days during the period metered.

3.21 **"Millbury Peak Design Flow"** shall mean the peak hourly flow capacity at the Millbury pump station allocated to Millbury by UBPWAD. This is currently 6,752,000 gpd, calculated by subtracting Sutton Peak Design Flow from the total peak hourly flow capacity of the Millbury pump station, which is currently 8,327,000 gpd.

3.22 **"Net Cost of sewage treatment facilities"** shall mean the cost of development of sewage treatment facilities or of such sewers which shall serve the Common Sewage System, including construction, engineering, legal, administrative, land and easement costs, as well as interest charges for financing during construction (less interest earned on the invested portions of bond proceeds), less financial assistance from the State and Federal Governments.

3.23 **"NPDES"** is the abbreviation for the National Pollutant Discharge Elimination System.

3.24 **"Operating Costs"** shall mean the costs of operation and maintenance of Millbury's sewerage system, including the Common Sewerage System, and shall include the costs of labor, equipment, flow measuring equipment, wastewater sampling equipment, potential future analysis of wastewater samples and collection of flow meter readings from the main monitoring station at the pumping station. materials, power, fuel and other incidentals required for operation and maintenance of said facilities, and shall include charges levied by the UBWPAD.. Operating costs shall NOT include all costs which benefit only the Town of Millbury, including but not limited to the cost of MILLBURY's sewer billing system, meter readers for residential, commercial, industrial, institutional and other accounts, inflow removal within the Common Sewerage System, I/I removal outside of the Common Sewerage System, and I/I analysis costs.

3.25 **"pH"** shall mean the logarithm of the reciprocal of the weight of hydrogen ions in grams per liter of solution.

3.26 **"Peak Flow"** shall mean the greatest hourly flow measured at the metering locations.

3.27 **"Sanitary Sewage"** shall mean sewage discharging from sanitary conveniences such as toilets, washrooms, urinals, sinks, showers, drinking fountains, small laundries and from kitchens, restaurants and cafeterias essentially free of industrial wastes or toxic materials.

3.28 **"Sewer"** shall mean a pipe or conduit for carrying sewage.

3.29 **"Sewage or Wastewater Treatment Plant"** shall mean any arrangement of devices and structures used for treating sewage.

3.30 **"Sewerage System"** shall mean all facilities for collecting, conveying, pumping, treating and disposal of sanitary sewage and/or industrial wastes.

3.31 **"Shall"** is mandatory; "may" is permissive.

3.32 **"Slug"** shall mean any discharge of water, sewage, or industrial waste which in concentration of any constituent or in quantity of flow exceeds for any period of duration longer than fifteen (15) minutes, more than five (5) times the average twenty-four (24) hour concentration or flows during normal operation.

3.33 **"Stormwater"** shall mean the runoff of rainwater.

3.34 **"Sufficient capacity"** shall mean that hydraulic capacity which is great enough to prevent sewer surcharging under the highest flow conditions which may be expected within a period of 50 years from the time when new sewers are constructed.

3.35 **"SUTTON"** is the Town of SUTTON, a municipal corporation of the Commonwealth of Massachusetts. The "SUTTON Commission" shall be the SUTTON Board of Sewer Commissioners or its successors.

3.36 **"Sutton Average Metered Flow"** shall mean the sum of wastewater flow from Sutton measured at the designated metering stations, divided by the number of days during the metering period. .

3.37 **"Sutton Peak Design Flow"** shall mean the peak hourly flow at the Millbury Pump Station allocated to Sutton by UBPWAD. This is currently 1,568,000 gpd.

3.38 **"Total Flow"** includes the total amount of wastewater flowing into the MILLBURY sewerage system.

3.39 **"Total Flow Allocation"** shall refer to the amount of wastewater collection system and wastewater treatment facility capacity set aside for use by SUTTON.

3.40 **"Total Suspended Solids" ("TSS")** shall mean solids that either float on the surface of, or are in suspension in water, or sewage, or wastewater, or other liquids and which are removable by laboratory filtering, expressed in milligrams per liter by weight (or pounds per day).

3.41 **"UBWPAD"** is the Upper Blackstone Water Pollution Abatement District, located in Worcester, Massachusetts.

3.42 **"User"** shall mean any individual, firm, company, association, society, corporation or group having a connection to and deriving a benefit (either actual or potential) from the joint facilities.

3.43 **"User Charges"** shall mean a charge levied on all users of the wastewater facilities for the cost of operation and maintenance.

3.44 **"Wastewater"** shall mean the spent water of the Municipalities and may be a combination of the liquid and water carried wastes from residences, commercial buildings, industrial plants and institutions, together with any (non-excessive) groundwater and surface water that may be present.

IV. AGREEMENT TO RECEIVE WASTEWATER AND WASTEWATER CHARACTERISTICS

MILLBURY shall receive all of SUTTON's wastewater from the service area in Sutton approved by the Upper Blackstone and shown on The Service Area mapping attached herewith as Exhibit B, and shall collect, convey, and discharge said wastewaters into the UBWPAD in compliance with and pursuant to the UBWPAD Sewer and Pretreatment Regulations, the MILLBURY Sewer Use Regulations and the SUTTON Sewer Use Regulations, including the discharge prohibitions, limitations, and requirements set forth therein. Within one hundred twenty (120) days from receipt of notice that MILLBURY has amended the discharge limitations or requirements of its Sewer Use Regulations, SUTTON shall amend the discharge limitations or requirements of its Sewer Use Regulations as necessary to remain as stringent as the UBWPAD Sewer and Pretreatment Regulations and the MILLBURY Sewer Use Regulations. Any disagreement on the nature and extent of the Millbury regulations as applied to Sutton shall be mediated within the one hundred twenty (120) day adoption period.

4.1. SUTTON will not directly or indirectly discharge into the common sewerage system any sewage, drainage, substances or wastewater containing the following characteristics in a volume in excess of MILLBURY Sewer Use Regulations, the UBWPAD Sewer and Pretreatment Regulations, and applicable regulations promulgated by the DEP:

4.1.1 Any gasoline, benzene, naptha, oil, fuel oil, or other flammable, or explosive liquid, solid, or gas, including but not limited to wastewater with a closed cup flashpoint of less than 140°F (60°C) using the test methods specified in 40 CFR 261.21.

4.1.2 Any waters or wastes containing toxic or poisonous solids, liquids, gas vapors and fumes, in sufficient quantity either singly or by interaction with other wastes, to injure or interfere with any sewage treatment process, constitute a hazard to humans or animals, create a public nuisance, cause acute worker health and safety problems within the MILLBURY Collection System and/or the UBWPAD Treatment Plant, or constitute a violation of applicable regulations.

4.1.3 Any waters or wastes having a pH lower than 6.5, or having any other corrosive property capable of causing damage or be hazardous to structures, equipment, and personnel of the sewerage system, an the UBWPAD treatment plant.

4.1.4 Solid or viscous substances in quantities or of such size capable of causing obstruction to the flow in sewers, or other interference with the proper operation of the sewerage system and UBWPAD treatment works such as, but not limited to, ashes, cinders, sand, mud, straw, shavings, metals, sawdust, hair, lobster shells, oyster shells, clam shells, glass, rags, feathers, tar, plastics, wood, unground garbage, whole blood, paunch manure, fleshings, entrails, paper dishes, cups, milk containers, and similar paper or plastic containers (either whole or ground by garbage grinders) and other similar materials.

4.1.5 Any substance with heat in amounts that may adversely affect biological activity and interference, but in no case may temperature at the point of entry to the sewers exceed 150°F (66°C) to ensure that wastewater influent to the MILLBURY sewer system will not exceed 104°F (40°C).

4.1.6 Any pollutant as defined by the UBWPAD, including oxygen demanding pollutants released at a discharge rate or concentration that may interfere or pass through.

4.1.7 Petroleum, oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through.

4.1.8 Any trucked or hauled pollutants, as defined above, except at discharge points designated by MILLBURY or UBWPAD.

4.1.9 Waters or wastes containing substances which are not amenable to collection, pumping or treatment or reduction by the UBWPAD sewage treatment process employed, or are amenable to collection, pumping, or treatment only to such degree that MILLBURY and/or the UBWPAD sewage treatment plant cannot meet the requirements of other agencies having jurisdiction over the collection of wastewater and the discharge of effluent to the receiving waters.

4.1.10 Any water or waste containing fats, wax, grease, or oils whether emulsified or not, in excess of two hundred twenty-five (225 mg/L) or containing substances which may solidify or become viscous at temperatures between thirty-two (32) and one hundred fifty (150) F (0 and 65°C).

4.1.11 Any radioactive waste or isotopes of such half-life or concentration as may exceed limits established by applicable state or federal regulations.

4.1.12 Any water or wastes having a pH in excess of 10.

4.1.13 Any garbage that has not been properly shredded. The installation and operation of any garbage grinder equipped with a motor of 3/4 horsepower or greater shall be subject to the review and approval by MILLBURY.

4.1.14 Any waters or wastes containing strong acid iron pickling wastes, or concentrated plating solutions whether neutralized or not.

4.1.15 Any waters or wastes containing iron, chromium, cadmium, copper, zinc, barium, arsenic, silver, mercury, lead, cyanide, phosphates, sodium chlorate, and similar objectionable or toxic substances, or wastes exerting an excessive chlorine requirement to such a degree that any such material received in the composite sewage at the treatment plant exceed the local limits established by the Town of MILLBURY and/or the UBWPAD.

4.1.16 Any waters or wastes containing phenols or other taste or odor producing substances in such concentrations exceeding limits which may be established as necessary by the Town of MILLBURY and/or the UBWPAD after collection or treatment of the composite sewage to meet the requirements of the State, Federal, or other public agencies having jurisdiction for such discharge to the receiving waters.

4.1.17 Materials which exert or cause:

(1) Unusual concentrations of inert suspended solids (such as, but not limited to, Fuller Earth, lime slurries, and lime residues) or of dissolved solids (such as, but not limited to, sodium chloride, sodium sulfate and ferrous iron compounds).

(2) Excessive discoloration (such as, but not limited to, dye wastes and inks and vegetable tanning solutions).

(3) Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as to constitute a significant load on the MILLBURY system and/or UBWPAD wastewater treatment facility.

(4) Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein.

4.1.18 No person shall discharge or cause to be discharged any storm water, surface water, groundwater, roof runoff, substance drainage, uncontaminated cooling water, or unpolluted industrial process waters, directly or indirectly to any public sanitary sewer.

Storm water and all other unpolluted drainage shall be discharged to such drains as are specifically designated for such purpose or to a natural outlet approved by the responsible official in charge of such outlets.

4.1.19 Persons discharging wastewater into public sewers shall comply with Federal and State pretreatment standards 40 CFR 400-469. Compliance with categorical standards shall be achieved within the date set forth in the Federal Regulations unless a shorter compliance time is specified by the Town of MILLBURY.

4.1.20 Waters or wastes containing hydrogen sulfide in concentrations that cause objectionable odors. Hydrogen sulfide concentrations greater than 0.1 mg/L (aqueous) shall require mandatory odor control. Concentrations less than 0.1 mg/L may require odor control subject to the foregoing objectionable odor provisions, based on the Town of MILLBURY's sole discretion.

4.1.21 The following pollutant limits are established to protect against pass-through and interference. No person shall discharge wastewater containing in excess of the following:

Arsenic	3.7 mg/L
Beryllium	1.2 mg/L
Cadmium	.10 mg/L
Chromium	1.6 mg/L
Copper	1.09 mg/L
Lead	2.0 mg/L
Mercury	.056 mg/L

Nickel	13.4 mg/L
Selenium	.70 mg/L
Silver	.50 mg/L
Zinc	3.7 mg/L
Cyanide	2.0 mg/L

The above limits apply at the point at which the wastewater is introduced to the Town of SUTTON's Wastewater Collection System (end of pipe) prior to dilution with sanitary sewerage. In addition, the Town of MILLBURY reserves the right to establish additional or more stringent limitations or requirements on discharges to the wastewater collection and treatment system if deemed necessary by UBWPAD to prevent pass-through or interference.

4.1.22 All industrial users must comply with all applicable Massachusetts State Regulations in 314 CMR 12.00 for the operation and maintenance of wastewater pretreatment systems for indirect dischargers.

4.1.23 If SUTTON's BOD, TSS, pH, Hydrogen Sulfide (H_2S) or other parameter as defined herein exceeds any of the values as listed below, based on periodic sampling and monitoring if required by UBWPAD or as otherwise defined in Section VII, SUTTON shall be given 60 (sixty) days to reduce the parameter(s) of concern to compliance level. If after 60 (sixty) days the parameter(s) of concern still exceed the values listed below, then SUTTON shall pay the stipulated penalty for each day of violation: SUTTON and MILLBURY agree that the amount(s) of any such stipulated penalties shall be identical to the fines imposed on MILLBURY by UBWPAD for the pollutants in question, and shall not exceed such amounts.

4.1.24 MILLBURY acknowledges that Sutton does not presently measure flow on an hourly basis. SUTTON will use best efforts to install metering equipment to measure on an hourly basis.

V. TOTAL FLOW ALLOCATION

5.0 FLOW ALLOCATION

For the term of this agreement, Millbury agrees with Sutton to receive from Sutton at the Millbury pumping station a total flow allocation as defined herein . Total Flow Allocation to the Town of Sutton, as referenced in section 3.33 and used herein shall mean the right to send wastewater to the Millbury pumping station in quantities which will not exceed at any given time, the following maximum flows:

A. A peak hourly flow to the Millbury pumping station which exceeds 1,568,000 gallons per day or 1,093 gallons per minute over a period of one hour.

and,

B.

C. An average daily flow which measured over a period of 24 hours exceeds 589,600 gallons per day.

This allocation shall include total flow from any permitted source and from any location situated within approved UBWPAD locations in the Town of Sutton. Any assignment of flow allotment from Sutton to a third party shall not recalculate or otherwise increase the flow allotment as above stated.

All flows from Sutton are measured at the existing metering stations in Sutton with the requirements set forth in Section VI, "Method of Measurement/ Flow Metering Actual Flows".

VI. METHOD OF MEASUREMENT/FLOW METERING - ACTUAL FLOWS

MILLBURY and SUTTON both agree that measurement of flow shall be as follows:

6.1 The volume of flow used in computing the operation and maintenance costs shall be based upon readings obtained by metering equipment approved by MILLBURY. Such metering equipment shall be installed by the respective communities. The collection of flow meter readings and wastewater samples for the purpose of computing and distributing charges shall be the responsibility of SUTTON and/or its authorized agent, and all costs related to the collection of the data shall be SUTTON's responsibility. Once a month, SUTTON will provide MILLBURY with the wastewater volume for the preceding month, based upon the meter readings. MILLBURY will have the right to conduct non-invasive inspections of SUTTON's meters during normal business hours, with 24-hour advance notice to SUTTON. SUTTON shall have the right to have representative(s) or agent(s) present when MILLBURY inspects SUTTON'S meters. If MILLBURY causes any damage to SUTTON's meters or other property during such inspections, MILLBURY shall reimburse SUTTON for the cost to repair said damages within 30 (thirty) days after SUTTON provides MILLBURY with an invoice or other documentation in connection with the same. SUTTON shall also verify the reliability of said metering equipment semi-annually and perform calibration as necessary to ensure industry-standard accuracy. SUTTON shall provide semi-annual written calibration reports to MILLBURY certifying the accuracy of the metering equipment.

6.2 SUTTON shall provide flow measuring stations at its own expense to monitor all wastewater flows from SUTTON which cross town lines and enters the Common Sewerage System. The general arrangement, equipment and physical location of these monitoring stations shall be subject to MILLBURY's review and approval with such approval not to be unreasonably withheld. SUTTON shall operate and maintain the monitoring stations. The cost of maintaining these monitoring stations shall be borne by SUTTON.

6.3 MILLBURY has constructed and operates a pumping station that discharges all flow to UBWPAD. The general arrangement, equipment, maintenance and operations of the MILLBURY pumping station shall be subject to SUTTON's periodic inspection with 24 hour advance notice to MILLBURY. Any costs incidental to the operation and maintenance of the station shall be borne by MILLBURY and included as part of its operating costs.

6.4 Determination of the volume and strength of SUTTON's wastewaters shall be determined directly from the metering and required sampling conducted at the monitoring stations.

When necessary, determination of the volume and strength of the total SUTTON-MILLBURY wastewater shall be determined directly from any metering and sampling conducted at the pumping station.

When necessary, determination of the volume and strength of the MILLBURY wastewater shall be determined indirectly by subtracting the volume and strength of the wastewater from SUTTON from the volume and strength of the total wastewater at the pumping station inlet, or by data provided by the UBWPAD.

6.5 In the event the metering equipment is temporarily out of order or service for any reason, the volume and strength of wastewater shall be estimated and mutually agreed upon by the parties on the basis of historic flow and strength measurements. When either party to this AGREEMENT determines that a meter necessary to operation of this AGREEMENT has yielded an incorrect reading, MILLBURY shall prepare an estimate of the amount of sewage accepted through the faulty meter for the purposes of billing SUTTON. MILLBURY shall present evidence to SUTTON demonstrating that the meter reading is incorrect, and justifying its estimate of sewage flow for the billing period. The estimate shall be the average of three (3) preceding readings of the meters, exclusive of incorrect readings.

VII. SAMPLING OF WASTEWATER

Both Towns agree that the determination of character and concentration of wastewater if required by UBWPAD or otherwise as required by this section will be in accordance with the latest edition of "Standard Methods for the Examination of Water and Sewage" as proposed, approved and published jointly by the American Public Health Association, the American Water Works Association and the Water Environmental Federation, unless any other method is mutually agreed upon by the Towns, and subject further to the following:

7.1 If required by UBWPAD, the sampling and determination of the character and concentration of SUTTON's wastewater and the construction of monitoring stations for this purpose shall be the responsibility of SUTTON or its authorized agent. Sampling equipment and monitoring station locations shall be subject to MILLBURY's review and approval prior to construction, such approval not to be unreasonably withheld. MILLBURY shall be given access to SUTTON'S monitoring stations to observe or perform non-invasive inspections of such monitoring stations, upon the provision of 24 hours advance notice to SUTTON. . SUTTON shall have the right to have representative(s) or agent(s) present when MILLBURY inspects SUTTON'S monitoring stations. If MILLBURY causes any damage to SUTTON's monitoring equipment or other property during such inspections, MILLBURY shall reimburse SUTTON for the cost to repair said damages within 30 (thirty) days after SUTTON provides MILLBURY with an invoice or other documentation in connection with the same. SUTTON agrees to provide a schedule to MILLBURY detailing sampling date and times. MILLBURY shall be furnished with copies of all such determinations. The location of sampling stations shall be on or immediately near the Town boundary, unless otherwise approved by MILLBURY, such approval not to be unreasonably withheld.

7.2 Samples shall be collected by SUTTON at the SUTTON monitoring stations and by MILLBURY at any MILLBURY monitoring stations in such a manner as to be representative of the actual quality of the wastewaters. If required, SUTTON shall be capable of collecting representative twenty-four (24) hour proportional composite samples at quarterly intervals. MILLBURY shall have access to said locations as required to conduct intermittent or continuous wastewater sampling, if necessary, upon the provision of 24 hours advance notice to SUTTON or sooner if exigent circumstances require immediate access.

7.3 MILLBURY may, if disputing the SUTTON sampling results, conduct its own sampling and analytical program in SUTTON at its own cost and submit the results relating to the character and concentration of the wastewaters to SUTTON. Portions of wastewater samples collected by MILLBURY as part of a sampling and analytical program will be made available to SUTTON at no cost and in adequate quantities for analysis by SUTTON for characteristics and concentrations.

7.4 In the event that the sampling equipment is temporarily out of order or service, for any reason, the equipment shall be repaired forthwith or substitute portable equipment installed. Manually collected samples shall then be taken to make up for the samples missed during the malfunction.

7.5 Sampling for Hydrogen Sulfide (aqueous) shall be done by Sutton and results delivered to Millbury as requested by Millbury. From time to time the sampling of other parameters may be required to verify compliance with stated wastewater limits, or those parameters and limits as may be required by the UBWPAD or any rule, law or regulation.

VIII. INSTITUTIONAL REQUIREMENTS

SUTTON agrees that its sewer by-laws and rules and regulations for system use, pretreatment requirements and its infiltration/inflow and odor control policies shall be as stringent as the UBWPAD and MILLBURY requirements. MILLBURY acknowledges as of the date of this agreement that the current version of SUTTON's policies and regulations are as stringent as the UBWPAD and MILLBURY requirements presently in existence. Future conforming changes to SUTTON'S policies and regulations shall be adopted by appropriate SUTTON actions within 180 days notice by MILLBURY: except, however, when the UBWPAD specifies a time within which Millbury must conform to the UBWPAD regulations, Sutton will conform its policies and regulations to the Millbury policies and regulations within the same corresponding time period as long as Sutton is advised of these requirements in a timely manner and is given as much time as is feasible to comply..

Said requirements are hereby incorporated by reference and are as follows:

- Upper Blackstone Water Pollution Abatement District "Sewer and Pretreatment Regulations" dated May 5, 2004; which may be amended from time to time;

Town of MILLBURY "Sewer Use Rules and Regulations…" dated June 18, 1974, as amended through Addendum #20 dated July 23, 1996; which may be amended from time to time.

IX. CAPITAL COST RECOVERY
FORCE MAIN / INTERCEPTOR FACILITIES

SUTTON agrees to pay MILLBURY the required net capital facilities cost allocable to Sutton in payments hereinafter defined. SUTTON's net cost shall be a portion of MILLBURY's net cost for capital facilities with the apportionment described in the succeeding paragraphs.

9.1 SUTTON's net cost, as used herein, shall mean Sutton's pro rata share of the total cost to MILLBURY for the performance of its obligations for the construction of the common sewerage system in the capital projects described below; such costs including, but not limited to, actual construction, engineering, interest accrued during construction, the costs for arranging for and selling permanent bonds for the aforementioned, and all costs associated with financing the project under the State Revolving Fund, through the DEP and the Water Pollution Abatement Trust, less the full amount of any grants made to MILLBURY by State and Federal agencies to assist in financing the construction of this project.

9.2 UPPER Blackstone Connection -- Millbury Municipal Pump Station and Force Main.

9.2.1 SUTTON has paid MILLBURY $832,794.98 to date and shall pay MILLBURY additional funds of $301,511.2, in the First Quarter of FY 2009. The remaining balance of $377,694 will be paid in installments ranging from $19,668 to $23,606 through FY 2026 as full and final payment for use of the common facilities in connection with the Upper Blackstone Connection, Pumping Station and Force Main. The installments are more particularly detailed in the payment schedule attached herewith and incorporated herein as Exhibit ".C "

9.2.2 In the event MILLBURY must undertake major repairs, replacement of the Common Sewerage System, or the UBWPAD is directed or ordered to provide a higher degree of treatment in the future, then the net capital cost related thereto shall be apportioned between the parties based on the ratio of Average Metered Flows for the most recent two quarters and unless said further or additional treatment is caused by wastewater of a special character, in which case the added cost shall be borne by the Town in which the wastewater originates. A reasonable payment schedule shall be established by MILLBURY prior to the initiation of said replacement, repairs or additional facilities.

9.3 If the flow allotment as indicated in Section V is exceeded, or any future flow allotment based on an AGREEMENT amendment is exceeded, then the parties agree to re-calculate SUTTON's share of the capital costs, plus interest based on the percentage increase in inflation as determined in Section X, using the formula in Section X..

9.4 All final costs will be based upon actual audited costs. The method by which SUTTON recovers this payment from properties approved for connection to the system is at the sole discretion of SUTTON.

MILLBURY shall have primary responsibility for the implementation of Capital Projects. The implementation of Capital Projects shall include management and coordination of all design, public bidding and construction phase services. As the owner of the collection system, MILLBURY shall be responsible for obtaining funding for the full amount of the Capital Project, subject to SUTTON's timely reimbursement of its pro rata share of Capital Costs.

X. CAPITAL COST RECOVERY OF FUTURE WORK AND/OR FACILITIES REPAIRS, REPLACEMENT, SEWERS AND/OR CONNECTIONS

This AGREEMENT establishes, as explained below, the basis for capital cost allocation of 1) future work as may reasonably be expected for upkeep of the system and any physical improvements that may be necessary to maintain capacity for the Towns of MILLBURY and SUTTON, 2) new sewers and/or connections for SUTTON necessary to utilize the flow allotment Sutton has purchased, and 3) upgrades of the UBWPAD wastewater treatment facility.

10.1 For repairs and/or replacement sewers necessary to maintain capacity (due to infiltration or other issues) for the Towns of MILLBURY and SUTTON in the Common Sewerage System, the sharing of capital costs shall be established based on the ratio of Sutton's peak design flow capacity to total peak design flow capacity which ratio is currently 18.8%. Hence: SUTTON cost = Cost of Repair or Replacement x 18.8%.

MILLBURY shall be solely responsible for any and all costs associated with repairs and/or replacement of wastewater collection infrastructure that is not part of the Common Sewerage System and benefits only the MILLBURY local sewerage system. MILLBURY will be solely responsible for all inflow issues and associated costs related to MILLBURY Local Sewerage System and the Common Sewerage System.

10.2 If capacity is exceeded based solely on violation of the SUTTON flow allotment as indicated in Section V, as may be amended, then SUTTON shall bear the full cost of the necessary improvements. Similarly, if capacity is exceeded based solely on high flows from MILLBURY, then MILLBURY shall bear the full cost of the necessary improvements.

10.3 If additional piping, resizing of pipes or other improvements to the Common Sewerage System are necessary to handle increased flow through existing pipes from SUTTON, even though the quantity of such flow is within SUTTON's allotment, SUTTON shall bear the full cost of the necessary improvements. If additional piping, resizing of pipes or other improvements to the Common Sewerage System are necessary to handle increased flow through existing pipes from Millbury, even though the quantity of such flow is within MILLBURY's allotment, MILLBURY shall bear the full cost of the necessary improvements.

10.4 If the parties to this AGREEMENT dispute whether one party or another is solely responsible for the necessary improvements for purposes of increasing capacity, then such dispute will be governed by Section XIV of this AGREEMENT.

10.5 For upgrades of the UBWPAD wastewater treatment facility, the net capital cost related thereto shall be allocated as in Section 10.1, unless said further or additional treatment is caused by wastewater of a special character, in which case the added cost shall be borne by the Town in which the wastewater originates.

10.6 In the event that SUTTON's total wastewater flow entering the Common Sewerage System as stated in two consecutive quarterly invoices reaches 90% of the total flow allocation assigned to SUTTON over that period, through the provisions of Section V, then SUTTON and MILLBURY shall enter into negotiations to either allocate more capacity in accordance with the applicable divisions of this section or define measures to reduce the quarterly flow increase to keep the total within the allocation.

10.7 SUTTON shall have the right to make such additional connections to the Common Sewerage System as it deems appropriate, provided however, that all of the following conditions are met:

a. the cost of the connection is paid by SUTTON;

b SUTTON shall design the connection in accordance with the reasonable design standard and plans approved by MILLBURY's engineering consultants which connection may include resizing and reconstruction of the collection system within MILLBURY. In the event of a dispute, MILLBURY and SUTTON agree to submit the dispute for binding resolution to a mutually agreed upon, nonrelated, independent engineering firm for a binding decision.; and

c. the additional connections will not increase SUTTON's flow allotments as stated therein or as otherwise amended and in effect as of the date of such additional connection(s).

10.8 The MILLBURY BOARD shall act upon said requests for approval within a reasonable time.

10.9 All final costs will be based upon actual audited costs. The method by which SUTTON recovers this payment from properties approved for connection to the system is at the sole discretion of SUTTON.

10.10 MILLBURY shall have primary responsibility for the implementation of Capital Projects. The implementation of Capital Projects shall include management and coordination of all design, public bidding and construction phase services. As the owner of the collection system, MILLBURY shall be responsible for obtaining funding for the full amount of the Capital Project, subject to SUTTON's timely reimbursement of its pro rata share of Capital Costs.

XI. COSTS OF OPERATION AND MAINTENANCE

MILLBURY shall maintain an adequate cost accounting system which shall be the basis for the determination and allocation of costs for the operation, maintenance and repair of the sewerage system. The accounting system shall be available for inspection by SUTTON during normal business hours.

11.1 In the event that financial assistance from State and/or Federal agencies not otherwise provided for herein becomes available toward the annual operating costs of the common sewerage system, then such assistance shall be used to reduce the total operation, maintenance and repair costs.

11.2 The various parameters of flow and strength shall be determined for SUTTON on the basis of records obtained from the monitoring stations referred to in Section Nos. VI and VII.

11.3 SUTTON shall pay MILLBURY quarterly its share of Operating Costs as defined in Section 3.24, based on SUTTON's actual flow.

MILLBURY shall submit to SUTTON its estimated operating and maintenance costs of the Common Sewerage System for the next fiscal year, in writing, by January 30th of each year so that SUTTON can budget accordingly. The final appropriation, as approved by the MILLBURY Town Meeting, shall be submitted to SUTTON within thirty (30) days after approval.

In July of each year, MILLBURY shall individually determine the actual operating costs of the common collection facilities and UBWPAD charges for the previous fiscal year. In the event that the total amount of the quarterly payments exceeds the annual costs due from SUTTON, any excess shall be credited on the payment due for the period of July1-September 30th of the following fiscal year.

In the event that the total amount of the quartery payments is less than the actual annual cost, the difference will be payable within thirty (30) days of receipt of notice from MILLBURY, with appropriate back-up provided by MILLBURY.

11.4 The Town of SUTTON shall pay the Town of MILLBURY for operations costs as defined in Section III in accordance with the following formula expressed on a quarterly basis:

Sutton Cost = Millbury O & M Costs × (Sutton Average Metered Flow / Millbury Average Metered Flow + Sutton Average. Metered Flow).

11.5 Any costs that have not been considered under this article that may arise in the future will be designated by the MILLBURY Board. SUTTON shall be notified in writing ninety (90) days prior to being charged and shall be given the opportunity to be heard prior to imposition of any such charges.

11.6 Any disputes under this Section XI shall be governed by Section XIV of this AGREEMENT.

XII. PAYMENT OF COSTS

UBWPAD capital, operation and maintenance costs are assessed to MILLBURY annually. The costs are assessed each January and are payable quarterly in July, October, January and April of the next fiscal year.

MILLBURY's share of UBWPAD capital, operations and maintenance costs are appropriated at each year's annual town meeting along with MILLBURY's operation and maintenance costs. SUTTON's share of MILLBURY's operating costs shall be paid quarterly based on Sutton's actual flow.

SUTTON's share of MILLBURY's capital costs for the Common Sewerage System shall be assessed each fiscal year in accordance with Sections 9 and 10 and applicable debt service schedules as shown on Exhibit "C". Such debt service schedules and the pro-rata share bill shall be submitted by MILLBURY to SUTTON in a timely manner upon receipt of issuance documents and payment(s) shall be due at least four (4) weeks prior to the date(s) on which principal and/or interest payments are due, provided that SUTTON was timely provided with relevant information necessary to make such payments.

XIII. FISCAL/REPORTING RESPONSIBILITIES ACCESS TO RECORDS

In accordance with Chapter 40, Section 4A of the General Laws MILLBURY and SUTTON agree to develop and implement a mutual system of financial safeguards relating to the protection of this AGREEMENT.

In particular MILLBURY agrees to develop and maintain accurate and comprehensive records of services performed, costs incurred and reimbursements and contributions received, as described in Section 11 herein.

MILLBURY will issue financial statements every six (6) months during the term of this AGREEMENT regarding the activities undertaken and the respective shares of the capital and operations and maintenance expenditures incurred under this AGREEMENT.

MILLBURY will provide access to the AGREEMENT Records during regular business hours upon the provision of 24-hour advance notice for the purposes of conducting audit activities initiated by the Town of MILLBURY, SUTTON and/or any regulatory agency having jurisdiction.

XIV. DISPUTES/REMEDIES

14.1 In the event that one party alleges a default in a material obligation or condition of this agreement, that party shall send a detailed statement of default to the other party and the alleged defaulting party shall have a period of thirty (30) days from receipt of notice to cure the default and thereafter, in the further failure to cure the alleged default, the parties agree to a thirty (30) day effort to resolve their dispute in a nonbinding mediation process. In the event the dispute continues unresolved for sixty (60) days from the first receipt of notice of default, any party may submit the dispute to the Superior Court sitting in the County of Worcester and seek a declaration of rights together with contractual damages and injunctive relief, if appropriate.

14.1.1 If as the result of any final, non-appealable order of any agency, administrative board, commission or division of the state or federal government or any final non-appealable order of a court of competent jurisdiction, following exhaustion of appellate rights, MILLBURY is unable to perform its obligations under this agreement, SUTTON agrees to abide by such order to the extent that it applies to the rights to performance SUTTON may reasonably expect from this agreement. If such non-appealable final order is issued within the meaning of this section, MILLBURY shall work in good faith to assist SUTTON in identifying and implementing alternative means to transport SUTTON's sewage from SUTTON to the UBWPAD.

14.1.2 If either town fails to perform any obligation under this AGREEMENT, the other may perform on behalf of the defaulting town and charge the reasonable costs thereof, including administrative time, to the defaulting town as a sum due under the AGREEMENT provided prior written notice has been given to the defaulting town as provided in Section 14.1 allowing it a reasonable time to cure the default.

The remedies set forth in this AGREEMENT are separate and cumulative. The election of one does not preclude use of another.

XV. TERM OF AGREEMENT

This AGREEMENT shall become effective retroactive to January 1, 2008 upon approval by MILLBURY AND SUTTON and shall remain in full force and effect until December 31, 2032 or until either amended and/or rescinded in writing by the appropriate officials of both Towns, their nominees or successors. In no case in accordance with Chapter 40, Section 4A of the General Laws shall the term of this AGREEMENT exceed twenty-five (25) years from the date first above written.

This AGREEMENT may be amended from time to time by a written amendment between the parties or their nominees or successors in accordance with the governing provisions of local and state legislation.

XVI. INDEMNIFICATION

16.1 To the fullest extent permitted by law and subject to the provisions of The General Laws ch. 258, MILLBURY agrees to indemnify and hold SUTTON harmless against any and all liabilities, losses, costs, forfeitures, or damages, and all out-of pocket expenses, including reasonable attorney's fees and court costs (collectively, "Liabilities"), actually incurred, suffered, or sustained by, or sought to be imposed on, SUTTON that arise from the negligence, acts or omissions of MILLBURY in connection with this AGREEMENT.

16.2 MILLBURY shall defend any Lawsuits with regard to claims for such Liabilities, to the extent said Liabilities arise from the negligence, acts or omissions of MILLBURY, and shall pay any judgments which result from the Lawsuits, provided that SUTTON provides MILLBURY with adequate notice to enable MILLBURY to defend any such Lawsuits. "Lawsuits" include arbitration proceedings, administrative or enforcement proceedings, and all other governmental or quasi-governmental proceedings. The obligations of MILLBURY under this Section arising by reason of any such occurrence taking place during the term of this AGREEMENT shall survive any termination of thisAGREEMENT.

16.3 To the fullest extent permitted by law and subject to the provisions of General Laws ch. 258, SUTTON agrees to indemnify and hold MILLBURY harmless against any and all liabilities, losses, costs, forfeitures, or damages, and all out-of pocket expenses, including reasonable attorney's fees and court costs (collectively, "Liabilities"), actually incurred, suffered, or sustained by, or sought to be imposed on MILLBURY, that arise from the negligence, acts or omissions of SUTTON in connection with this AGREEMENT.

16.4 SUTTON shall defend any Lawsuits with regard to claims for such Liabilities, to the extent said Liabilities arise from the negligence, acts or omissions of SUTTON, and shall pay any judgments which result from the Lawsuits, provided that MILLBURY provides SUTTON with adequate notice to enable SUTTON to defend any such Lawsuits. "Lawsuits" include arbitration proceedings, administrative or enforcement proceedings, and all other governmental or quasi-governmental proceedings. The obligations of SUTTON under this Section arising by reason of any such occurrence taking place during the term of this AGREEMENT shall survive any termination of thisAGREEMENT.

XVII. MISCELLANEOUS PROVISIONS

17.1 Severability: If any provisions, section, phrase or word contained herein is determined by a court of competent jurisdiction to be unenforceable, for any reason, or beyond the scope of the statutory provisions of Chapter 40, Sections 4 and 4A, then it is the intention of the parties that for public good purposes, the remaining provisions hereof continue in full force and effect to the fullest extent permitted by law.

17.2 Force Majeure: Neither Millbury nor Sutton shall be liable to the other for failure or delay in the performance of its obligations under this Agreement to the extent such failure or delay is due to Force Majeure, and provided that the party claiming Force Majeure gives written notice thereof, including the full particulars and the expected duration thereof, to the other party as promptly as possible after the occurrence of the Force Majeure. Upon the giving of such notice, the obligations of the affected party, to the extent they are affected by such Force Majeure, shall be suspended during the continuance thereof, and for such additional time as is reasonably required to resume normal operations, but for no longer, and such Force Majeure shall, to the extent possible, be remedied with all reasonable dispatch. For purposes of this Section, "Force Majeure" shall mean all unforeseeable events entirely beyond the control of the party claiming such

Force Majeure, including without limitation fire, flood, earthquake, lightning or other acts of God; acts of civil or military authority, including any federal, state, local, municipal or other court or public authority; wars; insurrections; riots; and sabotage. Force Majeure shall not include transportation delays or other delays in receipt of materials or performance of work by subcontractors or suppliers (except to the extent occasioned by the same causes enumerated above), nor shall it include strikes or work stoppages (except for general area-wide strikes throughout the trade).

17.3 Binding Effect; Assignment: Neither party shall assign this contract without the prior written consent of the other party, such consent not to be unreasonably withheld.

17.4 No Third Party Rights: Except as expressly set forth herein, nothing in this AGREEMENT shall be construed as creating any third party beneficiary rights in any third party.

17.5 Fees: Except as otherwise provided herein, each party shall assume its own legal fees in any action. The cost of any mediation shall shared equally by each party.

17.6 Governing Law: This Agreement shall be governed by the law of the Commonwealth of Massachusetts and all litigation shall be filed in the Superior Court for the County of Worcester at Worcester.

17.7 Sewer Regulations: No provision contained herein shall be construed as limiting in any way Sutton's authority to enforce its sewer regulations.

XVIII. NOTICES

18.1 18.1 Notices and communications hereunder shall be in writing and shall be personally delivered or mailed by certified mail, return receipt requested, or by confirmed facsimile transmission to Sutton or Millbury, as the case may be, at the following addresses:

Town of Sutton Board of Selectmen Sutton Town Hall 4 Uxbridge Road Sutton, MA 01590	Town of Millbury Board of Selectmen Millbury Town Hall 127 Elm Street Millbury, MA 01527

Each party shall have the right to change its address for purposes of receiving notice from time to time by giving the other party notice as herein provided. Separate copies of any notices issued pursuant to this section also shall be delivered or mailed to the Sutton and Millbury Town Counsel at the addresses noted above, or such subsequent address(es) that may be provided in accordance with this section.

18.2 A notice shall be deemed received on the date of hand delivery (with signed acknowledgement of receipt) or the date noted on the return receipt in cases where notice was sent by certified mail, return receipt requested.

18.3 Each party shall notify the other of any emergency or condition in either party's system which may affect wastewater disposal system in either municipality. Notice shall be given as soon as practicable after the proper municipal official has knowledge of said emergency or condition.

XIX. ENTIRE AGREEMENT

This AGREEMENT, including the appendices referenced herein and any amendments approved in accordance with the procedures specified in Section 15 of this AGREEMENT, shall constitute the entire agreement between the parties and shall supersede all previous communications, representations, or agreements, either oral or written, between the parties with respect to the subject matter hereof and thereof. No agreement or understanding varying or extending the same shall be binding upon either party unless in writing signed by both parties.

IN WITNESS WHEREOF, the parties to these presents execute the above AGREEMENT in quadruplicate:

TOWN OF SUTTON, MASSACHUSETTS
By Its Board of Selectmen

TOWN OF SUTTON, MASSACHUSETTS
By its Board of Sewer Commissioners

Approved as to Form:

Christopher J. Petrini
Sutton Special Town Counsel
Dated: 6/17/08

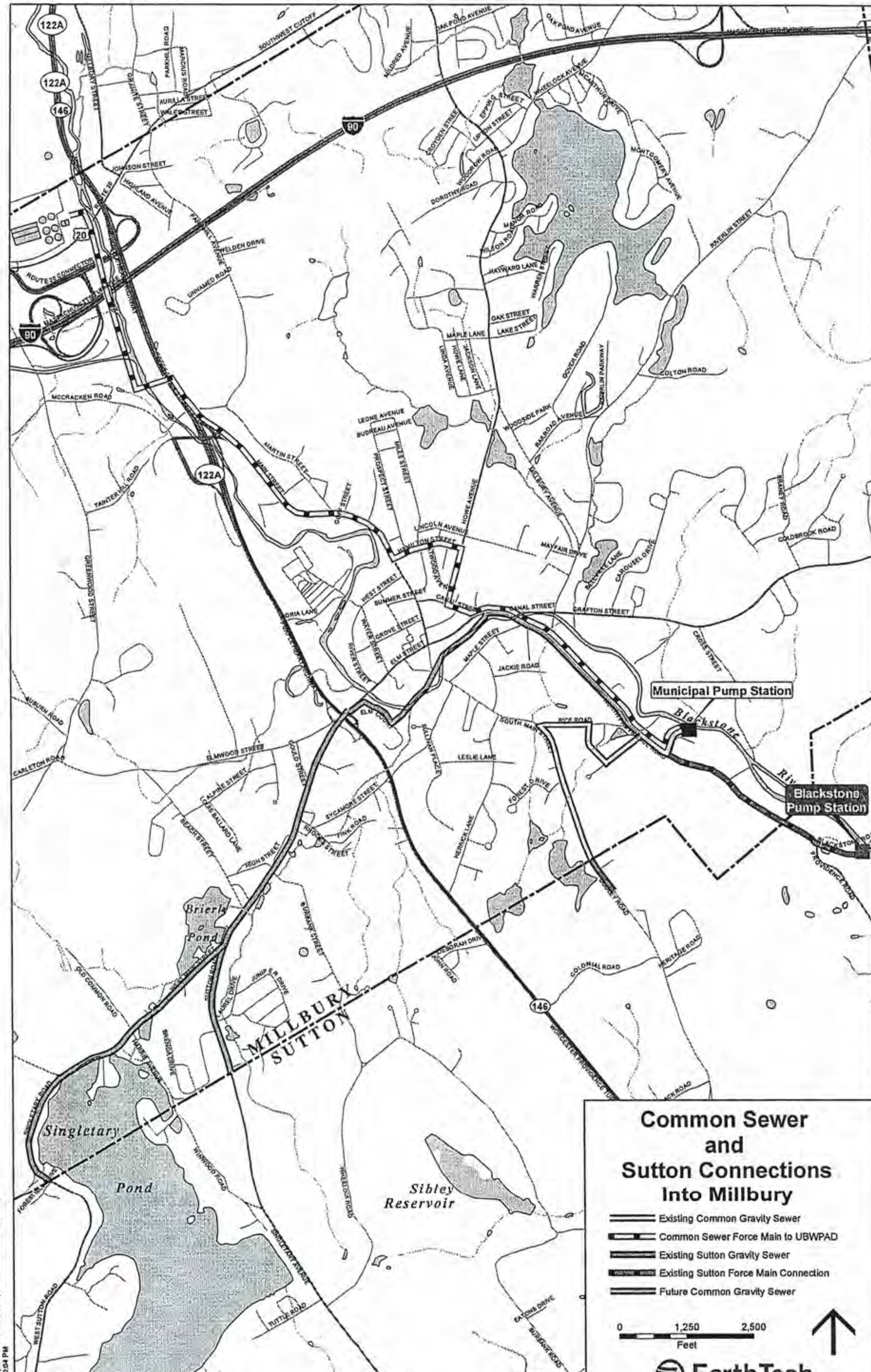
TOWN OF MILLBURY, MASSACHUSETTS
By Its Board of Selectmen

TOWN OF MILLBURY, MASSACHUSETTS
By its Board of Sewer Commissioners

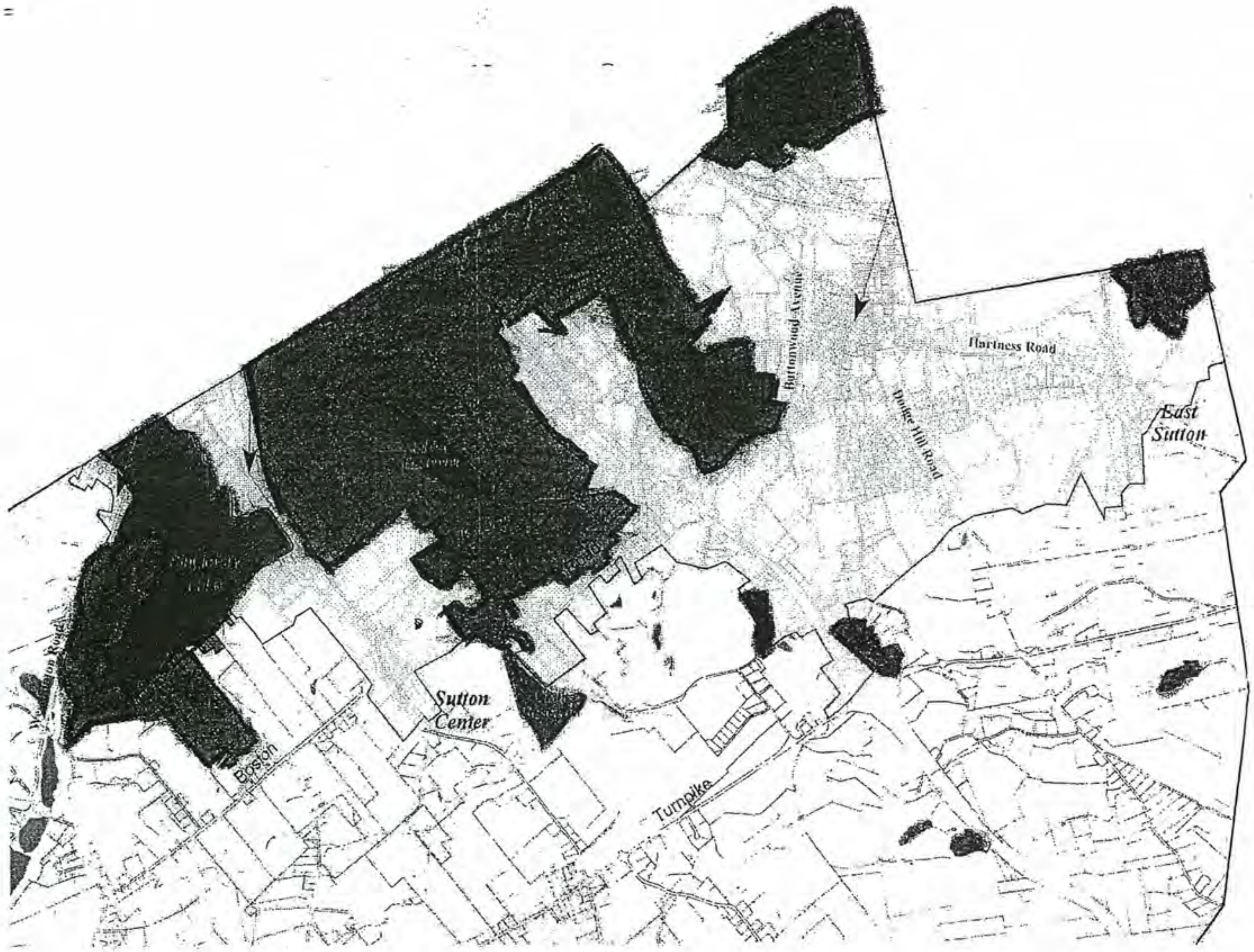
Approved as to Form:

Joseph Cove
Millbury Special Town Counsel
Dated: June 10, 2008

2008.05.28 Sutton-Millbury IMA v. 6.2.02 FINAL (1902-02)



Common Sewer
and
Sutton Connections
Into Millbury
Existing Common Gravity Sewer
Common Sewer Force Main to UBWPAD
Existing Sutton Gravity Sewer
Existing Sutton Force Main Connection
Future Common Gravity Sewer
0
1,250
2,500
Feet
EarthTech
A tyco International Ltd. Company
Municipal Pump Station
Blackstone Pump Station
Blackstone River
MILLBURY
SUTTON
Singletary Pond
Brierly Pond
Sibley Reservoir



Copy of
Portions of a
Map
by
BETA Engineers &
Scientists

Dated Jan, 1999

Titled
Upper Blackstone
Water Pollutuion
Abatement District
Sutton Buy In
Delineation

Areas in green and
yellow are within
the area served by
UBWPAD

Exhibit "C"

Town of Sutton
Payment schedule to Town of Millbury
for Sewer Pumping Station Upgrade

Total due Town of Millbury per Amortization Schedule	**$ 1,512,000.00**
Payment schedule from bond proceeds:	
FY'06 (amount per debt schedule)	136,740.73
FY'07 (amount/debt schedule)	134,938.27
FY'08 (amount per debt schedule)	561,115.78
FY"09 (balance)	301,511.22
	1,134,306.00
Balance remaining to be paid	**377,694.00**
Payment Schedule:	
FY"10	23,606.00
FY'11	23,606.00
FY"12	23,606.00
FY"13	23,606.00
FY"14	23,606.00
FY"15	23,606.00
FY"16	23,606.00
FY"17	23,606.00
FY"18	23,606.00
FY"19	23,606.00
FY"20	23,606.00
FY"21	19,669.00
FY"22	19,668.00
FY"23	19,668.00
FY"24	19,668.00
FY"25	19,668.00
FY"26	19,687.00
Total payments for sewer department budget	**377,694.00**
Total payment	**$ 1,512,000.00**

APPENDIX C

RULES AND REGULATIONS

OF THE TOWN OF MILLBURY

SEWER DEPARTMENT

Authorization to the Town to Construct a Sewerage System

CHAPTER 800.
THE COMMONWEALTH OF MASSACHUSETTS

In the Year One Thousand Nine Hundred and Sixty-three AN ACT authorizing the Town of Millbury to construct and operate a system or systems of sewerage and sewage disposal.

Be it enacted by the Senate and House of Representatives in General Court And by the authority of the same as follows:

SECTION 1. The Town of Millbury, hereinafter called the town, may layout, construct, maintain and operate a system or systems of common sewers for a part or the whole of its territory, with such connections and other works as may be required for a system or systems of sewerage and sewage treatment and disposal, and may construct such sewers in said town as may be necessary.

SECTION 2. The town may make and maintain, in any way therein where common sewers are constructed, such connecting sewers within the limits of such way as may be necessary to connect any estate which abuts upon the way.

SECTION 3. The town may, at the meeting when this act is accepted, vote that the Selectmen shall act as a Board of Sewer Commissioners. If the town does not so vote at said meeting, the town shall elect by ballot, at any town meeting not later than the second annual meeting after the commencement of construction hereunder of a system or systems of sewerage and sewage disposal, a board of three sewer commissioners, who shall be citizens of the town, to hold office, if elected at an annual meeting, one until the expiration of one year, one until the expiration of two years, and one until the expiration of three years, from such annual town meeting, and until their successors are qualified, or, if elected at a special meeting, one until the expiration of one year, one until the expiration of two years, and one until the expiration of three years from the next succeeding annual town meeting, and until their successors are qualified, and thereafter, at each annual town meeting when the term of a member expires, the town shall elect one member of the board to serve for three years and until his successor is qualified. Any Selectman shall be eligible to election to said board. In either case, whether the town votes that its Selectmen shall act as a Board of Sewer Commissioners, or elects a Board of Sewer Commissioners, the town may at any time thereafter, by any or all the methods permitted by general law, provide for the election of a board of three sewer commissioners, or that the Selectmen may act as a Board of Sewer Commissioners, as the case may be.

SECTION 4. Said Board of Sewer Commissioners, acting for and on behalf of said town, may take by eminent domain under Chapter seventy-nine of the General Laws, or acquire by purchase or otherwise, any lands, water rights, rights of way or easements, public or private, in said town, necessary for accomplishing any purpose mentioned in this act, and may construct such sewers under or over any bridge, railroad, railway, boulevard or other public way, or within the location of any railroad, and may enter upon and dig up any private land, public way, or railroad location, for the purpose of laying such sewers and of maintaining and repairing the same, and may do any other thing proper or necessary for the purposes of this act; provided, that they shall not take in fee any land of a railroad corporation, and that they shall not enter upon or construct any sewer within the location of any railroad corporation except at such time and in such manner as they may agree upon with such corporation, or, in the case of failure to agree, as may be approved by the department of public utilities.

SECTION 5. Until the board of Sewer Commissioners has first been elected as provided in this act or the Selectmen have first been authorized by vote to act as such board, as the case may be, but not in any event later than the second annual meeting after the commencement of the work of construction authorized hereby, the town may carry on such work by a duly authorized committee of the town. The committee shall serve without pay and shall have all the powers and authority given to the Board of Sewer Commissioners in this act or by general law. Whenever the phrase "said Board of Sewer Commissioners" or "said board" hereinafter occurs, it shall mean and include the Board of Sewer Commissioners, the Selectmen acting as such or the committee of the town provided for in this section, as the case may be.

SECTION 6. Any person injured in his property by any action of said Board of Sewer Commissioners under this act may recover damages from said town under said chapter seventy-nine.

SECTION 7. The town shall, by vote, determine whether is shall pay the whole or a portion of the cost of said system or systems of sewerage and sewerage disposal and if a portion, what proportion. If the town votes to pay less than the whole cost, in providing for the payment of the remaining portions of the cost of said system or systems the town may avail itself of any or all of the methods permitted by General Laws, and the provisions of said General Laws relative to the assessment, apportionment, division, reassessment, abatement and collection of sewer assessments, to liens therefore and to interest thereon, shall apply to assessments made under this act, except that interest shall be at the rate of four percent per annum. At the same meeting at which it determines that any portion of the cost is to be borne by the town, it may by vote determine by which of such methods the remaining portion of said cost shall be provided for. The Collector of Taxes of said town shall certify the payment or payments of such assessments, or apportionment's thereof to the Sewer Commissioners or the Selectmen acting as such, who shall preserve a record thereof.

SECTION 8. For the purpose of paying the necessary expenses and liabilities incurred under this act, the town may from time to time, within five years after the passage of this act, borrow such sums as may be necessary, not exceeding, in the aggregate, one million five hundred thousand dollars, and may issue bonds or notes therefor, which shall bear on their face the words Millbury Sewerage Loan, Act of 1963. Each authorized issue shall constitute a separate loan and such loans shall be payable in not more than thirty years from their dates. Indebtedness incurred under this act shall be in excess of the statutory limit, but shall, except as provided herein, be subject to chapter forty-four of the General Laws.

SECTION 9. The receipts from sewer assessments and from payments made in lieu thereof shall be applied to the payment of charges and expenses incident to the maintenance and operation of said system or systems of sewerage and sewage disposal or to the extension thereof, to the payment of interest upon bonds or notes issued for sewer purposes or to the payment or redemption of such bonds or notes.

SECTION 10. Said Board of Sewer Commissioners may annually appoint a clerk and may appoint a" superintendent of sewers who shall not be a member of the board, and shall define their duties. It may remove the clerk or superintendent at its pleasure. Said board may, in its discretion, prescribe for the users of said sewer system or systems such annual rentals or charges based on the benefits derived therefrom as it may deem proper, subject, however, to such rules and regulations as may be fixed by vote of the town.

SECTION 11. All contracts made by the Board of Sewer Commissioners shall be made in the name of the town and shall be signed by the board, but no contract shall be made or obligations incurred by said board for any purpose in excess of the amount of money appropriated by the town therefor.

SECTION 12. Said Board of Sewer Commissioners may, from time to time, prescribe rules and regulations regarding the use of common sewers to prevent the entrance or discharge therein of any substance which may tend to interfere with the flow of sewage or the proper operation of the sewerage system and the treatment and disposal for the connection of estates and buildings with sewers, for the construction, alteration, and use of all connections entering into such sewers, and for the inspection of all materials used therein; and may prescribe civil penalties, not exceeding five thousand dollars for each day of violation of any such rule or regulation. Such rules and regulations shall be published once in a newspaper published in the town of Millbury, if there be any, and if not, then in a newspaper published in the County of Worcester, and shall be available for inspection by the public, and shall not take effect until such publication is made.

SECTION 13. No act shall be done under authority of the preceding sections except in the making of surveys and other preliminary investigations, until the plan for said system or systems of sewerage and sewerage disposal has been approved by the state department of public health.

SECTION 14. This act shall take effect upon its acceptance by the Town of Millbury within four years after its passage, but not otherwise. No expenditure shall be made and no liability incurred hereunder until such acceptance.

Passage of this act was November 9, 1963.

RULES AND REGULATIONS FOR THE INSTALLATION AND CONNECTION OF BUILDING SEWERS AND THEDISCHARGE OF WATERS AND WASTES INTO THE PUBLIC SEWER SYSTEM(S) ; THE USE OF PUBLIC AND PRIVA TE SEWERS AND DRAINS; SEPTIC TRUCK DUMPING AREA; BETTERMENTS; AND PROVIDING PENALTIES FOR VIOLA TIONS THEREOF: IN THE TOWN OF MILLBURY COUNTY OF WORCESTER, STATE OF MASSA CHUSETTS.

Be it ordained and enacted by the Board of Sewer Commissioners of the Town of Millbury, State of Massachusetts as follows:

ARTICLE I

Definitions

Unless the context specifically indicates otherwise, the meaning of terms used in these rules
and regulations shall be as follows:

Sec. 1. "BOD" (denoting Biochemical Oxygen Demand) shall mean the quantity of oxygen utilized in. the biochemical oxidation of organic matter under standard laboratory procedure in five (5) days at 20°C, expressed in milligrams per liter.

Sec. 2. "Board of Sewer Commissioners" shall mean any elected official or appointed official which has jurisdiction over the sewerage treatment plant and/or sewer lines.

Sec. 3. "Building Drain" shall mean that part of the lowest horizontal piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer, beginning ten (10) feet (3.0 meters) outside the inner face of the building wall.

Sec.4. "Building Sewer" shall mean the extension from the building drain to the public sewer or other place of disposal. The words "Building Sewer" and "House Connection" are synonymous. (Addendum #1,9/26/74)

Sec. 5. "Combined Sewer" shall mean a sewer receiving both surface runoff and sewage.

Sec. 6. "Drainlayer" shall mean a person licensed to install drains for sewerage under supervision of the Superintendent of sewers or his appointed representative.

Sec. 7. "Garbage" shall mean solid wastes from the domestic and commercial preparation, cooking, and dispensing of food, and from the handling, storage and sale of produce.

Sec. 8. "Industrial Wastes" shall mean the liquid wastes from industrial manufacturing processes, trade or business as distinct from sanitary sewage.

Sec. 9. "Natural Outlet" shall mean any outlet into a watercourse, pond, ditch, lake or other body of surface or groundwater.

Sec.10. "Person " shall mean any individual, firm, company, association, society, corporation, or group.

Sec. 11. "pH" shall mean the logarithm of the reciprocal of the weight of hydrogenous in grams per liter of solution.

Sec. 12. "Properly Shredded Garbage" shall mean the wastes from the preparation, cooking, and dispensing of food that have been shredded to such a degree that all particles will be carried freely under the flow conditions normally prevailing in public sewers, with no particle greater than one-half {1/2) inch {1.27 centimeters) in any dimension.

Sec. 13. "Public Sewer" shall mean a sewer in which all owners of abutting properties have equal rights, and is controlled by public authority.

Sec. 14. "Sanitary Sewer" shall mean a sewer which carries sewage and to which storm, surface, and groundwater's are not intentionally admitted.

Sec. 15. "Sewage" shall mean a combination of the water-carried wastes from residences, business buildings, institutions, and industrial establishments, together with such ground, surface, and storm waters as may be present.

Sec. 16. "Sewage Treatment Plant" shall mean any arrangement of devices and structures used for treating sewage.

Sec. 17. " Sewage Works" shall mean all facilities for collecting, pumping, treating, and disposing of sewage.

Sec. 18. "Sewer" shall mean a pipe or conduit for carrying sewage. The words "Sewer", "Sewer Main", and "Laterals" are synonymous. {Addendum #1,9/26/74)

Sec. 19. "Shall" is mandatory; "May" is permissive.

Sec. 20. "Slug" shall mean any discharge of water, sewage, or industrial waste which in concentration of any given constituent or in quantity of flow exceeds for any period of duration longer than fifteen {15) minutes, more than five {5) times the average twenty-four {24) hour concentration or flows during normal operation.

Sec.21. "Storm Drain" (sometimes termed "Stormed Sewer") shall mean a sewer which carries storm and surface waters and drainage, but excludes sewage and industrial wastes, other than unpolluted cooling water.

Sec.22. "Superintendent" shall mean the Superintendent of the Millbury Sewerage System of the Town of Millbury, or his authorized deputy, agent, or representative.

Sec. 23. "Suspended Solids" shall mean solids that either float on the surface of, or are in suspension in water, sewage, or other liquids, and which are removable by laboratory filtering.

Sec. 24. "Watercourse" shall mean a channel in which a flow of water occurs, either continuously or intermittently.

Sec. 25. "Permits" shall mean a written permit granted by the Superintendent of the Sewer Department to a licensed drainlayer to connect a building sewer to a public sewer. (Addendum #3, 5/18/82)

ARTICLE II

Building Sewers and Connections

Sec. 1. No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any public sewer or appurtenance thereof without first obtaining a written permit from the Town of Millbury. Forty-five (45) days prior notification is required to the Town of Millbury Board of Sewer Commissioners by any person or persons of any proposed changes or connection as follows:

a. Any proposed substantial change in volume or character of pollutant over that being discharged into the public sewer system at the time of issuance of NPDES Permit (National Pollutant Discharge Elimination System Permit), which is January 1, 1975.

b. Any proposed new discharges into the public sewer system of pollutants from any source which would be a new source as defined in Section 306 of the Federal Act, if such source were discharging pollutants.

c. Any proposed new discharge into the public sewer system of pollutants from any source which would be subject to Section 301 of the Federal Act if it were discharging such pollutants.

Sec. 2. There shall be two (2) classes of building sewer permits: (a) for residential and commercial service, and (b) for service to establishments producing industrial wastes. In either case, the installer or drainlayer shall make application on a special form furnished by the town. The permit application shall be supplemented by any plans, specifications, or other information considered pertinent in the judgment of the Board of Sewer Commissioners. Effective April 1, 2000, a permit and inspection fee of $50.00 dollars for a residential building sewer permit and $200.00 dollars for a commercial and industrial building permit shall be paid to the Town at the time the application is filed for a sewer connection or repair. In the case of a residential-commercial building, the commercial building permit fee shall prevail. (Addendum #10, 11/14/89) (Addendum #23,2/22/00)

Sec. 3. Permits are to be obtained weekdays at the office of the Sewer Department between the hours of 9.00 A.M. and 4.00 P.M.

a. Permits will be issued to only drainlayers licensed to lay drains in the Town of Millbury.
b. Permits are not transferable.
c. Permits shall be subject to revocation when any of the rules and regulations contained herein are not being followed.
d. Effective April 1, 2000, if the work is not completed within 90 days, a new permit must be obtained with a fee of$50.00 for residential and $200.00 for commercial or industrial buildings. (Addendum #10, 11/14/89) (Addendum #23, 2/22/00).

e. Permits will not be issued until the drainlayer has filed a layout plan showing the location of existing service connection, house location, and route of sewer service, and said layout has been approved by the Sewer Department.

f. Permits must be obtained for repair work to existing sewer services.

g. Permits must be obtained 24 hours before construction for convenience of the Sewer Department.

h. Whenever plans and specifications are necessary or required by the Sewer Department for any, or additions to the sewer line, prior to issuing of the permit, such plans or specifications must be submitted. Said plans must have on them the name and address of the designer and certification that they are in compliance with the Rules and Regulations of the Sewer Department. (Addendum #3,5/18/82)

Sec.4. Licenses to connect particular sewers to the common sewers will be issued to experienced and competent drainlayers.

a. Drainlayers shall maintain insurance as mandated by the Town of Millbury, and can obtain this special Certificate of Insurance form at the Selectmen's Office or at the Sewerage Department Office. This insurance must cover at least the full period of the license.

b. Drainlayers shall sign a Hold Harmless Clause form, which also can be obtained at the Selectmen's Office or the Sewerage Department Office.

c. Drainlayers shall post an insurance performance bond in the amount of $3,000.00 to guarantee the satisfactory completion of his work. This bond must cover at least the full period of the license, and show an expiration date.

d. Drainlayers licenses are renewable annually on January 1.

Sec.5. All costs and expense incident to the installation and connection of the building sewer shall be borne by the owner. The owner shall indemnify the town from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.

Sec.6. A separate and independent building sewer shall be provided for every building; except where one building stands at the rear of another on an interior lot and no private sewer is available or can be constructed to the rear building through an adjoining alley, court, yard, or driveway, the building sewer from the front building may be extended to the rear building and the whole considered as one building sewer.

Sec.7. Old building sewers may be used in connection with new buildings only when they are found, on examination and test by the Superintendent, to meet all requirements of this regulation.

Sec.8. The size, slope, alignment, materials of construction of a building sewer, and the methods to be used in excavating, placing of the pipe, jointing, testing, and backfilling the trench, shall all conform to the requirements of the building and plumbing code or other applicable rules and regulations of the town. In the absence of code provisions or in amplification thereof the materials and procedures set forth in appropriate specifications of the A.S.T.M. and W.P.C.F. Manual of Practice No.9 shall apply.

Sec. 9. Pipe and fittings to be used in the work shall be either PVC pipe, asbestos-cement pipe, extra heavy cast-iron soil pipe, 4-inches or more in diameter. PVC (Polyvinyl-chloride) pipe shall conform to ASTM D3034- 73. Asbestos-cement pipe shall conform to ASTM C644 Class 2400, Type II, in lengths not exceeding five (5) feet. Cast-iron soil pipe shall conform to Federal specification WW-P-401. (Addendum #3,5/18/82)

Sec. 10. In general, sewer services will not be allowed to have more than two (2) angle points, or a total angular deviation of 180 degrees. Cleanouts shall be installed at each deflection or every 100 ft. or unless otherwise directed by the Superintendent.

Sec. 11. All services shall be laid in an envelope of washed-screened gravel with not less than 6 inches of said material all around the barrel of the pipe, unless otherwise directed by the Superintendent. Maximum stone size shall be 3/4 inch. (Addendum #3,5/18/82)

Sec. 12. All pipe and fittings shall be laid to a minimum slope of 1/4 inch per foot.

Sec. 13. Line and grade of the pipe and fittings shall be controlled by the use of batter boards and string lines set for this purpose. Batters shall not exceed a distance of 30 feet apart unless otherwise directed by the Superintendent.

Sec. 14. In general, the trenches shall be excavated from the end of the existing sewer service to its point of connection to the building plumbing outlet before backfilling any pipe beyond the gravel envelope.

Sec. 15. Services in excess of 100 feet in length are subject to review and such other requirements as may be found necessary to assure a functional connection.

Sec. 16. In new construction, and where practicable in existing buildings when the common sewer is sufficiently deep, service shall be laid directly, without deflections from the house plumbing vent stack to the connection provided at the common sewer.

Sec. 17. Tunneling will not be allowed unless special permission for same is given.

Sec. 18. Connection made to the building plumbing system, shall be upstream of any septic tanks or cesspools.

Sec. 19. Pipe and fittings shall not be backfilled beyond the screened washed gravel envelope until the work is inspected.

Sec. 20. The drainlayers shall be responsible for all defects in materials and workmanship for a period of one year following the Town of Millbury Sewer Department acceptance of the sewer service installation.

Sec. 21. Upon connection with the building plumbing system to the common sewers, the existing septic tanks and cesspools shall be abandoned and completely filled with suitable fill material. The property owner must sign a statement to the effect that he will fill said tank or cesspool within thirty (30) days of the date on which connection is made to the common sewers. This statement shall be in an approved form, and filed with the Board of Sewer Commissioners and Board of Health before a Sewer Connection Permit is issued to the installer or drainlayer. (Addendum #19,5/9/95)

Sec. 22. Connections shall not be cut into common sewers without permission of the Board of Sewer Commissioners.

Sec. 23. Whenever possible, the building sewer shall be brought to the building at an elevation below the basement floor. In all buildings in which any building drain is too low to permit gravity flow to the public sewer, sanitary sewage carried by such building drain shall be lifted by an approved means and discharged to the building sewer.

Sec. 24. No person shall make connection of roof downspouts, exterior foundation drains, areaway drains, or other sources of surface runoff or ground water to a building sewer or building drain which in turn is connected directly or indirectly to a public sanitary sewer.

Sec. 25. The connection of the building sewer into the public sewer shall conform to the requirements of the building and plumbing code or other applicable rules and regulations of the town or the procedures set forth in appropriate specifications of the A.S.T.M. and the W.P.C.F. Manual of Practice No.9. all such connections shall be made gastight and watertight. Any deviation from the prescribed procedures and materials must be approved by the (Superintendent) before installation.

Sec.26. The applicant for the building sewer permit shall notify the (Superintendent) when the building sewer is ready for inspection and connection to the public sewer. The connection shall be made under the supervision of the (Superintendent) or his representative.

Sec. 27. Requests for inspections on sewer service connections to be installed shall be made before 4:00 P.M. on the day preceding the installation.

Sec.28. Inspections will be made only during the normal working hours of the Department.

Sec. 29. A charge of $50.00 per inspection will be made for any inspection made outside the normal working hours of the Department, and is payable to the inspector. (Addendum #19, 5/9/95)

Sec. 30. When ledge is encountered in the excavation a permit must be obtained from the

Fire Chief for the use of explosives.

Sec. 31. All blasting shall be done in accordance with the requirements of the Mass. Dept. of Public Safety and such other requirements as imposed by the Fire Chief

Sec.32. All blasting must be done by a person licensed by the Dept. of Public Safety for this purpose.

Sec. 33. When conducting blasting operations, the drainlayer or the person doing the blasting must have a $20,000.00 bond posted with the State Treasurer of the Commonwealth of Massachusetts or the Town Treasurer and such greater amounts as may be required by the Fire Chief.

Sec. 34. All excavations for building sewer installation shall be adequately guarded with barricades and lights at all times so as to protect the public from hazard. streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the town, and shall be the responsibility of the drainlayer, who must also abide by the state statute shown below:

State Statute -Chapter 84, as amended by adding Section 27 A:

The owner of any land which abuts a public way and on which an excavation has been made within fifty feet of said way shall cause a fence or other barrier not less than five feet in height to be erected at the street line of such way. Such fence or barrier shall not be removed until the area abutting such way has been made level with the same for a distance of fifty feet from said street line. Whoever violates any provision of this section shall be punished by a fine of not less than two hundred or more than five hundred dollars.

Sec.35. Before opening a trench in the street a permit must be obtained at the Selectmen's Office.

Sec. 35a. No permit shall be issued, except in cases of emergency, to dig up or make an excavation in a public way until the applicant files with the Superintendent copies of the notices to public utility companies as required by General laws, Chapter 82, Section 40. (Addendum #4,
5/18/82)

Sec. 36. All work in the street must be done by the (Standards for the backfilling of Street Openings in the Town of Millbury.)

Sec.37. Failures in the temporary patch shall be restored within 8 hours of notification to do so.

Sec. 38. If the drainlayer does not restore the permanent road surfaces within 14 days following notification to do so, the Town of Millbury Sewer Department shall have the work done and charge the drainlayer for same.

Sec. 39. Power shovels, bulldozers, loaders, trucks, and other equipment shall not be operated on or across sidewalks, berms, curbings, etc., until they have been property protected from damage by planking or other approved means. All damage resulting from the drainlayer's operations shall be repaired by him.

Sec. 40. When making sewer connections in State Highways, the Town of Millbury will obtain the necessary permits from the Massachusetts Department of Public Works prior to the issuance of a sewer connection permit. All work shall then be done in accordance with the requirements set forth in the permit from the Massachusetts Department of Public Works.

Sec.41. Deleted per Addendum #4,5/18/82.

Sec. 42. Deleted per Addendum #4, 5/18/82.

Sec. 43. All testing and materials to conduct testing for the acceptance by the Town of Millbury Sewer Department must be performed by contractor under the supervision of the Town of Millbury Sewer Department.

Sec. 44. The owner of any new structure which will discharge sewage and having accessibility to a public sewer shall at his expense connect said waste directly to the said sewer in accordance with the provisions contained herein as a condition for occupying the structure. (Addendum #4, 5/18/82)

Sec. 45. The homeowner is responsible for the maintaining and repairing of the building sewer from the inside foundation wall to the public sewer. (Addendum #4,5/18/82.)

Sec.46. Manhole walls must conform to W.P.C.F. Manual, Chapter 7, Section 7, except that concrete blocks will not be allowed in the Town of Millbury. Manhole steps shall be of gray cast iron which shall meet the requirements of the ASTM Specifications for A-43 Class 25. The parts of the steps that are not imbedded in concrete shall be coated with hot coal tar before the steps are delivered. In precast manhole sections, forged aluminum type steps of an approved design may be used. Steps must be not less than eight (8) inches wide.

Sec.47. The owner or developer of any property situated within the Town and accessible to the public sanitary sewer of the Town is hereby required at his expense to connect directly to the proper public sewer in accordance with the provisions of these Rules and Regulations. Permission for said connection to be granted by the Board of Sewer Commissioners and installation to be completed by a licensed drainlayer in the Town with the proper bonding insurance requirements under the supervision of the Superintendent of Sewers of his appointed representative. (Addendum#7, 6/25/85) The date of inspection by the Sewer Department of a sewer line installed under a Sewer Connection Permit constitutes the actual sewer connection date for Sewer Department purposes, making properties eligible for sewer use fees. (Addendum #12,3/12/91)

Sec. 48. The owner, developer, or agent of any property situated within the Town and accessible to the public sanitary sewers of the Town in the opinion of the Town of Millbury shall be responsible for any costs and expenses for professional planning reviews as required; and for inspection services in connection with or for said property. The Town of Millbury Sewerage Commission reserves the right to have the inspection services carried out by a Registrered Professional Engineer in the Commonwealth of Massachusetts. Said costs and expenses shall be payable to the Town of Millbury, Sewerage Commission within 30 days of billing. A progress schedule shall be required so that an estimate of inspection costs can be made. (Addendum #21, 5/10/99)

Any new proposed subdivision or commercial/industrial business that requires a sewer extension discharging into the sewerage system <u>shall require</u> the removal, on the ratio of at least 3 gallons removed for each gallon proposed, of excess infiltration/ inflow (I & I) within the existing sewerage system, thus decreasing the total flow to the wastewater treatment facility. The removal of identified and quantified infiltration/inflow (I & I) shall be as approved by the Board of Sewer Commissioners. If at this time, there is no identified and quantified location where infiltration/inflow (I & I) may be removed, the Board of Sewer Commissioners will require that a sum of money in the amount of $1.00 per gallon of infiltration/inflow (I & I) proposed for removal shall be deposited with the Town Treasurer. This money may be used to seek the assistance of an outside consultant to identify and specify the exact nature and amount of infiltration/inflow (I & I) reduction to be undertaken.(Addendum #25, 4/24/01)

This amendment shall be in full force and effect form publication as provided by law, as specified in Chapter 800, Section 12 of the Acts of 1963. Passed and unanimously adopted by the Board of Sewer Commissioners of the Town of Millbury, State of Massachusetts on December 18, 2001.

ARTICLE III.

U se of the Public Sewers

Sec. 1. No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, sub-surface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer.

Sec. 2. Stormwater and all other unpolluted drainage shall be discharged to such sewers as are specifically designated as combined sewers or storm sewers, or to a natural outlet approved by the Board of Sewer Commissioners. Industrial cooling water or unpolluted process waters may be discharged, on approval of the Board of Sewer Commissioners, to a storm sewer, combined sewer, or natural outlet.

Sec. 3. No person shall discharge or cause to be discharged any of the following described pollutants into any public sewer:

a. Any pollutant which is a toxic pollutant in toxic amounts as defined in standards issued from time to time under Section 307(a) of the Federal Act or any applicable State Act.

b. Any pollutant which creates a fire or explosion hazard in the sewage treatment works.

c. Any pollutant which causes corrosive structural damage to sewage treatment works, including all waters or wastes having a pH lower than 6.5.

d. Any pollutant which contains solid or viscous substance in amounts which would cause obstruction to the flow in sewers or other interference with proper operation of the sewage treatment works.

e. Any pollutant which, in the case of major contributing industry, as defined herein, contains an incompatible pollutant, as further defined herein, in an amount or concentration in excess of that allowed under standards or guidelines issued from time to time pursuant to Section 304,306 and/or 307 of the Federal Act, or pursuant to any applicable State Act.

f. Any pollutant which has not been subjected to any pretreatment that may be required under Federal or State Law. (Addendum #2,7/15/75)

Sec. 4. No person shall discharge or cause to be discharged the following described substances, materials, waters, or wastes if it appears likely in the opinion of the Board of Sewer

Commissioners that such wastes can harm either the sewers, sewage treatment process, or equipment, have an adverse effect on the receiving stream, or can otherwise endanger life, limb, public property, or constitute a nuisance. In forming their opinion as to the acceptability of these wastes, the Board of Sewer Commissioners will give consideration to such factors as the quantities of subject wastes in relation to flows and velocities in the sewers, materials of *construction* of the sewers, nature of the sewage treatment process, capacity of the sewage treatment plant, degree of treatability of wastes in the sewage treatment plant, and other pertinent factors. The substances prohibited are:

a. Any liquid or vapor having a temperature higher than one hundred fifty (150°F) (65°C).

b. Any water or waste containing fats, wax, grease, or oils, whether emulsified or not in excess of one hundred (100) mg/l or containing substances which may solidify or become viscous at temperatures between thirty-two (32) and one hundred fifty (150°F) (0 and 65°C).

c. Any garbage that has not been properly shredded. The installation and operation of any garbage grinder equipped with a motor of three-fourths (3/4) horsepower (0.76 hp metric) or greater shall be subject to the review and approval of the Board of Sewer Commissioners.

d. Any waters or waste containing strong acid iron pickling wastes, or concentrated plating solutions whether neutralized or not.

e. Any waters or wastes containing iron, chromium, copper, zinc, and similar objectionable or toxic substances; or wastes exerting an excessive chlorine requirement, to such degree that any such material received in the composite sewage at the sewage treatment works exceeds the limits established by the Board of Sewer Commissioners for such materials.

f. Any waters or wastes containing phenols or other taste or odor producing substances, in such concentrations exceeding limits which may be established by the Board of Sewer Commissioners as necessary, after treatment of the composite sewage to meet the requirements of the State, Federal, or other public agencies or jurisdiction for such discharge to the receiving waters.

g. Any radioactive wastes or isotopes of such half-life or concentration as may exceed limits established by the Board of Sewer Commissioners in compliance with applicable State or Federal regulations.

h. Any waters or wastes having a pH in excess of (9.5).

i. Materials which exert or cause:

1. Unusual concentrations of inert suspended solids (such as, but not limited to, Fullers earth, lime slurries, and lime residues) or of dissolved solids (such as but not limited to, sodium chloride and sodium sulphate).

2. Excessive discoloration (such as, but not limited to, dye wastes and vegetable tanning solutions).

3. Unusual BOD, chemical oxygen demand, or chlorine requirements in such quantities as constitute a significant load on the sewage treatment works.

4. Unusual volume of flow or concentration of wastes constituting "slugs" as defined herein.

j. Waters or wastes containing substances which are not amenable to treatment or reduction by the sewage treatment processes employed, or are amenable to treatment only to such degree that the sewage treatment plant effluent cannot meet the requirements of other agencies having jurisdiction over discharge to the receiving waters.

Sec. 5. When wastes other than sanitary sewage are to be connected to the sewer system, a permit will not be issued until the applicant furnishes certified data that the wastes to be connected will not have detrimental effects upon the collection system and the treatment processes; create offensive odors; contain inflammable substances; or have a pH of 6.5 to 9.5.

Sec. 6. When the general conditions outlined under Sec. 5 above exist, and the applicant wishes to connect, the wastes must be made compatible by an approved pretreatment process with proper control and inspection facilities.

Sec. 7. If any waters or wastes are discharged, or are proposed to be discharged, to the public sewers, which waters contain the substances or possess the characteristics enumerated in Section 4 of this Article, and which in the judgment of the Board of Sewer Commissioners may have a deleterious effect upon the sewage works, processes, equipment, or receiving waters, or which otherwise create a hazard to life or constitute a public nuisance, the Board of Sewer Commissioners may:

a. Reject the wastes,

b. Require pretreatment to an acceptable condition for discharge to the public

sewers.

c. Require control over the quantities and rates of discharge, and/or

d. Require payment to cover the added cost of handling and treating the wastes not covered by existing taxes or sewer charges under the provisions of Section 12 of this article.

If the Board of Sewer Commissioners permits the pretreatment or equalization of waste flows, the design and installation of the plants and equipment shall be subject to the review and approval of the Board of Sewer Commissioners, and subject to the requirements of all applicable codes, bylaws, and laws.

Sec. 8. Grease, oil, and sand interceptors shall be provided when, in the opinion of the Board of Sewer Commissioners, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any flammable wastes, sand, or other harmful ingredients; except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be of a type and capacity approved by the Board of Sewer Commissioners and shall be located as to be readily and easily accessible for cleaning and inspection.

Sec 8A. "All new food preparation facilities are required to install and maintain grease removal units. Acceptable grease removal systems include outdoor passive, in-ground grease interceptor, 500 gallon minimum size, 24 hour detention for process flow stream. Grease removal units size determined at 15 gallons per seat, or based on actual water usage for existing facilites." (Addendum #24, 4/24/01)

Sec. 9. Where preliminary treatment or flow-equalizing facilities are provided for any waters or waste, they shall be maintained continuously in satisfactory and effective operation by the owner at his expense.

Sec. 10. When required by the Board of Sewer Commissioners, the owner of any property serviced by a building sewer carrying industrial wastes shall install a suitable control manhole together with such necessary meters, and other appurtenances in the building sewer to facilitate observation, sampling, and measurement of the wastes. Such manhole, when required, shall be accessibly and safety located, and shall be constructed in accordance with plans approved by the Board of Sewer Commissioners. The manhole shall be installed by the owner at his expense, and shall be maintained by him so as to be safe and accessible at all times. All manhole covers used in sewer construction shall show the cast word" SEWER" .All manhole covers and frames must comply with W.P. C.F. Manual of Practice No.9. (Addendum #2,7/15/75)

Sec. 11. All measurements, tests, and analyses of the characteristics of waters and wastes to which reference is made in these rules and regulations shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Wastewater', published by the American Public Health Association, and shall be determined at the control manhole provided, or upon suitable samples taken at said control manhole. In the event that no special manhole has been required, the control manhole shall be considered to be the nearest downstream manhole in the public sewer to the point at which the building sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effect of constituents upon the sewage works and to determine the existence of hazards to life, limb, and property. (The particular analyses involved will determine whether a twenty-four-(24) hour composite of all outfalls of a premise is appropriate or whether a grab sample or samples should be taken. Normally, but not always, BOD and suspended solids analyses are obtained from 24-hr. composites of all outfalls whereas pH's are determined from periodic grab samples.

Sec. 11 a. Any industry discharging into the public sewer system is required to perform such monitoring of its discharges as the Town of Millbury Sewer Department may reasonable require, including the installation, use, and maintenance of monitoring, and to report the results of such monitoring to the Town of Millbury. Such records shall be made available upon request by the Town of Millbury Sewer Department to other Agencies having jurisdiction over discharges to the receiving waters. (Addendum #2, 7/15/75)

Sec. 11 b. The Board of Sewer Commissioners, Superintendent or any other authorized representative are authorized to enter into, upon, or through the premises of any industry discharging into the sewage treatment works to have access to and copy any records, to inspect any monitoring equipment or method required under subsection Sec. 11a. above, and to sample any discharge into the sewage treatment works. (Addendum #2, 7/15/75)

Sec. 11 c. The Board of Sewer Commissioners reserves the right to surcharge --i.e., levy any additional charge or charges, from any industry that discharges into the public sewer, concentrations, quantities and/or loadings over and above normal limits, as determined by the Board of Sewer Commissioners. (Addendum #18, 5/13/97)

Sec. 12. No statement contained in this article shall be construed as preventing any special agreement or arrangement between the town and any industrial concern whereby an industrial waste of unusual strength or character may be accepted by the town for treatment, subject to payment therefore, by the industrial concern.

Sec. 13. Users fees, per Article V, shall be assessed as follows: Any sewer connections installed between July 1 and December 31 of any year shall be assessed sewer use fees as of the following January I; and any sewer connections installed between January I and June 30 of any year shall be assessed sewer use fees as of the following July I. Property owners who are required to install a sewage pump for their main dwelling unit, or for any apartment, shall be abated one (1) unit only on their sewer use fees to cover some of the additional maintenance cost to operate said pump. (Addendum #4, 5/18/82 deleted; Addendum #18, 5113/97)

Sec. 14. Any records or recordings of any industry which flows into our sewer system shall be provided, if requested, by the Town of Millbury Sewer Department; such as, total floor space, flow data, people employed, water consumption, processes, laboratory analyses, or design of pretreatment facilities. (Addendum #2, 7/15/75).

ARTICLE IV

Deleted per Addendum #4, 5/18/82.

ARTICLE IV -A
Septage Disposal and Treatment

Sec. 1. Each trucker must have a proper septage license issued by the Millbury Board of Health on January 1st of each year to pump septage. (Addendum #11,5/22/90)

Sec. 2. Septage permit slips must be obtained from the Board of Health by the trucker before he opens and pumps a cesspool or septic tank. (Addendum #11,5/22/90)

Sec.3. Only domestic sanitary septage from the Town of Millbury shall be disposed at the Upper Blackstone Plant -no industrial waste shall be allowed. (Addendum #11,5/22/90)

Sec. 4. Effective July 1, 1999, the Town of Millbury will be responsible for the Upper Blackstone Water Pollution Abatement District cost for the disposal and treatment of septage from the Town ofMil lbury. (Addendum #22, 5-4-99)

Sec 5. Effective November 1, 1992, any Septage Disposal Company that does not discharge 90% of their truck capacity at the Upper Blackstone Plant shall be charged by the Town of Millbury Sewer Department for the difference. The Septage Disposal Company shall be responsible for not meeting the 90% rule of the Upper Blackstone Water Pollution Abatement District, and shall be billed once a month for the total gallons difference of all their septage slips that do not meet the 90%. (Addendum # 17, 9/29/92)

Article V

Betterment Act. Amended -Chapter 156

THE COMMONWEALTH OF MASSACHUSETTS

In the Year One Thousand Nine Hundred and Seventy-eight AN ACT relative to betterment assessments for sewerage facilities in the Town of Millbury.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows

SECTION 1. Chapter 307 of the acts of 1973 is hereby amended by striking out sections 2 and 3 and inserting in place thereof the following two sections

SECTION 2. Whenever a building or structure is accessible either directly or indirectly, to the town sewer system, or any connection already made, or whenever the use of a sewer previously connected is subsequently changed as hereinafter provided, a permanent sewer privilege fee shall be assessed. Such fee shall be that which is in effect at the time the sewer construction is completed; or, in case of a change in use of a sewer previously connected, then the fee in effect at the time an application for a building permit is filed; or if no such permit is required then at the time the new use begins. (Addendum #5, 5/18/82)

SECTION 3. The permanent sewer privilege fee shall be at the rate of five thousand dollars per unit, as voted at the May 7, 2002 Annual Town Meeting. (Addendum #16, 7/14/92, Addendum #18, 5/13/97, Addendum #26, May 14, 2002)

A. Residential use:

1. Each single family building accessible directly to the town sewer system shall be assessed as one unit. If any units in a multiple family dwelling are individually owned, they shall be assessed as one full unit. (Addendum #12,3/12/91)

2. Each dwelling unit in a multiple family dwelling, accessible to the town sewer system directly or Indirectly, shall be assessed one full unit and one-half unit for each additional unit in the dwelling. F or the purpose of this section, multiple family dwellings shall be deemed to include, but not to be limited to, more than single family buildings, apartment houses, complexes, townhouses, condominiums, or otherwise. If any units in a multiple family dwelling are individually owned, they shall be assessed as one full unit.

3. In the case of approved subdivisions, when branch or secondary mains are installed and paid for by developers, or by persons other than the town of Millbury, each single family dwelling accessible to the town sewer system shall be assessed one-half unit for a period of five years from the date of the original subdivision plan approval by the planning board. Paragraph 1 shall apply to all assessments made after the original five-year period. (Addendum #5,5/18/82)

B. <u>Other uses.</u>

1. For uses other than residential, there shall be assessment of a minimum of one unit, and an additional unit for every ten thousand square feet of floor space, or major portion thereof, exceeding an initial ten thousand square feet, up to a total of fifty thousand square feet of floor space; and an additional unit for every twenty-five thousand square feet of floor space, or major portion thereof exceeding the initial fifty thousand square feet.

2. In the case of approved commercial or industrial subdivisions, when branch or secondary mains are installed and paid for by developers or by persons other than the town of Millbury the charges assessed shall be one-half of the charges described in Paragraph 1 for a period of five years from the date of the original subdivision plan approval. Paragraph I shall apply to all assessments made after the original five-year period.

SECTION 4. The owner or occupant of any building upon land abutting on a public or private way, in which there is a common sewer, shall connect the same therewith by a sufficient drain. If such land, by reason of its grade or level or any other cause, cannot be drained into such sewer, a variance from this requirement may be granted by the Board of Health until said incapacity is removed, provided that a private septic system is installed which meets the requirements of the Board of Health, with variance to be only for so long as said system continues to meet those requirements as they may be amended or revised.

SECTION 5. The fee under this act shall be assessed by the Sewer Commissioners upon the estate benefited thereby. Such assessment shall be made by filing with the Board of Assessors of the town a certificate, designating the way on which the premises connected lies, and giving the name or names of the owners of the estate for which such connection has been made and the amount of the assessment to be paid by such owner or owners. A copy or duplicate of this certificate shall, within thirty days after the filing of the same with the Board of Assessors, be recorded in the Registry of Deeds for the County of Worcester , or, in the case of registered land, filed in the office of the assistant recorder for the Worcester County Registry District. The Board of Assessors shall, upon receipt of such certificate, forthwith commit such assessment with this warrant to the Collector of Taxes, who shall forthwith made a demand in writing for the payment of such assessment, and every owner shall, within three months after such demand is served upon him or on the occupant of such estate, or sent by mail to the last address of the owner known to the Collector of Taxes pay to the Collector of Taxes the sum so assessed or charged.

SECTION 6. Except as herein provided, the provisions of the General Laws relative to the assessment, apportionment, division, reassessment, abatement, and collection of sewer assessments, to liens therefor, and to interest thereon shall apply to assessments made under this act. In applying said provisions to the assessments made under this act, the notice referred to herein shall be deemed to be the demand of the Tax Collector. The lien for any assessment made under this act shall attach upon the recording or filing for registration of the copy or duplicate of the certificate of assessment.

SECTION 7.. In addition to the fees prescribed by this act, the owner shall pay the rates established from time to time for sewer usage and shall also pay for all service work, materials, and inspection from the main to the building or buildings serviced.

SECTION 8. This act shall take effect upon its passage, which was May 24, 1973

ARTICLE VI

Protection from Damage

Sec. 1. No unauthorized person shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface or tamper with any structure, appurtenance, or equipment which is a part of the sewage works. any person violating this provision shall be subject to immediate arrest under charge of disorderly conduct.

Sec. 2. The use of lands acquired in fee or easement for sewer purposes shall be subject to the approval of the Board of Sewer commissioners. (Addendum #6, 5/18/82)

ARTICLE VII

Powers and Authority of Inspectors and Board of Sewer Commissioners

Sec. 1. The Board of Sewer Commissioners and Superintendent and other duly authorized employees of the town bearing proper credentials and identification shall be permitted to enter all properties for the purposes of inspection, observation, measurement, sampling, and testing in accordance with the provisions of these rules and regulations. The (Superintendent) or his representatives shall have no authority to inquire into any processes including metallurgical, chemical, oil, refining, ceramic, paper, or other industries beyond that point having a direct bearing on the kind and source of discharge to the sewers or waterways or facilities for waste treatment.

Sec. 2. While performing the necessary work on private properties referred to in Article VII, Section I above, the (Superintendent) or duly authorized employees of the town shall observe all safety rules applicable to the premises established by the company and the company shall be held harmless for injury or death to the town employees and the town shall indemnify the company against loss or damage to its property by town employees and against liability claims and demands for personal injury or property damage asserted against the company and growing out of the gauging and sampling operation, except as such may be caused by negligence or failure of the company to maintain safe conditions as required in Article III, Section 10.

Sec. 3. The Board of Sewer Commissioners and Superintendent and other duly authorized employees of the town bearing proper credentials and identification shall be permitted to enter all private properties through which the town holds a duly negotiated easement for the purposes of, but not limited to, inspection, observation, measurement, sampling, repair, and maintenance of any portion of the sewage works lying within said easement. All entry and subsequent work, if any, on said easement, shall be done in full accordance with the terms of the duly negotiated easement pertaining to the private property involved.

ARTICLE VIII
Penalties

Sec. I. Any person found to be violating any provision of these rules and regulations except Article VI shall be served by the town with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shal I within the period of time stated in such notice, permanently cease all violations.

Sec. 2. Any person who shall continue any violation beyond the time limit provided for in Article VIII, Section 1, shall be guilty of a misdemeanor, and upon conviction thereof, shall be fined in the amount not exceeding ($5,000.00) dollars for each day of violation, as specified in Chapter 174, Section 7 of the Acts of 1987 effective on September 23,1987. Each day in which any such violation shall continue shall be deemed a separate offense. (Addendum #9,1/19/88)

Sec. 3. Any person violating any of the provisions of these rules and regulations shall become liable to the town for any expense, loss, or damage occasioned the town by reason of such violation.

Sec. 4. Violations by licensed drainlayers of the requirements enumerated herein will be cause for revocation of his license for a period to be determined by the Board of Sewer Commissioners.

Sec. 5. Violations by septic truck operators of the requirements enumerated herein will be cause for revocation of the owners license for a period to be determined by the Board of Sewer Commissioners.

ARTICLE IX

Validity

Sec. 1. These rules and regulations or parts of rules and regulations in conflict herewith are hereby repealed.

Sec. 2. The invalidity of any section, clause, sentence, or provision of these rules and regulations shall not affect the validity of any other part of these rules and regulations which can be given effect without invalid part or parts.

ARTICLE X

Rules and Regulations in Force

Sec. 1. These rules and regulations shall be in full force and effect from publication as provided by law, as specified in Chapter 800, Section 12.

Sec. 2. Passed and unanimously adopted by the Board of Sewer Commissioners of the Town of Millbury, State of Massachusetts, on the 18th day of June, 1974.

Approved this Eighteenth day of June, Nineteen hundred and Seventy Four.

BOARD OF SEWER COMMISSIONERS

George E. Buron

Leo P. Bachant

Richard E. Prue

Amendment to Rules and Regulations
Of the
Town of Millbury Sewer Department

The Town of Millbury Sewer Commissioners hereby agree to the following amendments to the Rules and Regulations passed and unanimously adopted by said Board on September 26, 1974, and further amendments adopted by said Board on July 15, 1975, May 18, 1982, June 25, 1985, December 24, 1986, January 19, 1988, November 14, 1989, May 22, 1990, March 12, 1991, April 23, 1991, May 28, 1991, December 17, 1991, July 14, 1992, September 29, 1992, May 13, 1997, March 9, 1999, May 25, 1999, February 22, 2000, April 24, 2001, December 18, 2001, May 14, 2002:

Page C18- Article III, Section 13, Addendum 20- 5/13/97

Delete the following:

"Property owners who are required to install a sewage pump shall be abated one (1) unit only on their sewer use fees to cover some of the additional maintenance cost to operate said pump". Insert the following in place thereof-

"Effective 7/1/07 all properties connected into the town sewer system, including those who were required previously or in the future to install a sewage pump for their discharge, shall be charged full sewer fees."

Effective 7/1/07, the minimum sewer usage fee shall be increased from $15.00 to $30.00.

Article V. Section 3- A3

Delete in its entirety paragraph 3 of subsection A, Section 3 of Chapter 307, of the acts of 1973 as appearing in Section 1 of 156 acts of 1978, which reads as follows:

" In the case of approved subdivisions, when branch or secondary mains are installed and paid for by developers, or by persons other than the town of Millbury, each single family dwelling accessible to the town sewer system shall be assessed one-half unit for a period of five years from the date of the original subdivision plan approval by the planning board. Paragraph 1 shall apply to all assessments made after the original five-year period (Addendum #5, 5/18/82)

Page C21- Article V Section 5-

Section 5 of Chapter 307 of the Acts of 1973, as amended by section 2 of Chapter 156 of the Acts of 1978 is hereby further amended by striking out the third sentence and inserting in place thereof the following sentence- A copy or duplicate of this certificates of this certificate shall, within 120 days after its filing with the Board of Assessors, be recorded in the Registry of Deeds for Worcester County, or in the case of registered land, filed in the office of the assistant recorded for the Worcester County registry district, unless the owner of the premises assessed pays the assessment before the filing as specified in this section.

This amendment shall be in full force and effect from publication as provided by law, as specified in Chapter 800, Section 12 of the Acts of 1963. Passed and unanimously adopted by the Board of Sewer Commissioners of the Town of Millbury, State of Massachusetts on the 22nd of May, 2007.

Addendum #27

ATTACHMENT C: 2012 MASTER PLAN VISION, ISSUES & ACTIONS

TOWN OF SUTTON
MASTER PLAN

The Town of Sutton has historically been a mostly rural and a typical New England town that features unique mill and farming villages and scenic expanses in between. As we look toward the future, what do we see? We hope to see much of the same open space beauty but also a vibrant community full of jobs and services. The Master Plan is the central planning document that will help guide community growth while protecting it's varied assets. It is imperative that this Plan remain active with goals and strategies that can be met based on timelines and responsible parties. It will be important to publically review this document and the changes the plan has guided on an annual basis at a Selectman's Meeting or Spring Town Meeting.

A vision statement is a declaration of desire and intent written in the present tense. It is a clear description of a desired outcome that inspires, energizes and helps us create a mental picture of our goals. In the context of a Master Plan the goals are the results that we expect after taking the actions outlined in the plan, perhaps looking to the future five to ten years away. The purpose of the vision statement is to open our eyes to what is possible. It is our inspiration, the framework for all our strategic planning.

Participants in the master planning process in Sutton, Massachusetts looked to the Town's history, its current conditions and its future potential. Over a year of committee meetings and public outreach we developed the following vision statement which represents a shared vision for Sutton.

> ***"The Town of Sutton appreciates its open space, cultural and natural assets, its village centers, its sense of community and distinct rural feel. Sutton's open space, vistas, agricultural land, forests, lakes, ponds, historic structures, places and their ultimate protection are one of the most important aspects to the community.***
>
> ***The Town, through this master planning effort, will foster economic growth encouraging local services, job creation and increased tax base that is in balance with the Town's rural character. The strength of the town lies in its past and future planning efforts, and its ability to challenge itself to make organized thoughtful decisions regarding its future.***
>
> ***Ultimately, the Town of Sutton will thrive on its unique balance of growth and rural character that has attracted generations of families. This sustainability will be a model that visitors remember."***

There were several key issues brought forth during this public process. They are highlighted below based on the categories set forth in this Master Plan.

Land Use Statement

The citizen's of Sutton indicated that there is a need for zoning changes to satisfy the needs of the Town including the following: resource protection; infrastructure expansion; development for economic growth and village centers; various housing needs.

Housing Statement

During the master planning process there were in-depth discussions regarding the development of housing in Sutton. Many resident's felt strongly about not changing how housing is developed in Sutton while others felt that there are unmet housing needs for the aging population as well as young families. Issues surrounding what "affordable housing" really means and how the town can control the outcome were important points of discussion.

Economic Development Statement

The citizen's of the town are most concerned about the balance between creating jobs for themselves and for their children while at the same time protecting the land assets that they appreciate so much.

Community Services

Residents expressed the desire to make sure public facilities are adequately maintained and that the Town pursues improved Police, DPW and Library facilities. Additionally there was a general desire for more programs and services.

Transportation Statement

Not surprisingly, over 83% of residents honed in on the need for a grade separated interchange at Route 146 and Boston Road as the primary transportation and circulation concern. Additionally, the incomplete Blackstone River Bikeway, substandard bridges and inadequate sidewalks were also expressed needs.

Natural & Cultural Resources Statement

Protecting and highlighting the towns cultural and natural resources was the theme of survey responses. There was also a notable lack of knowledge about the towns natural and cultural resources.

Open Space Statement

Maintenance and continued development of existing facilities were primary desires expressed in the process. Again , a lack of knowledge about open space and recreation locations and programs was noticeable.

The following priorities consistently surfaced through workshop discussions and survey results. They are detailed in the goals and objectives pages for each topic as well as highlighted in Section 9.0 Implementation Matrix. These strategies are defined as Priority 1 to be reviewed, designed and implemented in the first five years (2013-2018).

Land Use Statement

The master plan concludes that lands that are critical to Sutton's character should be identified and a plan should be put in place to preserve and/or improve them. The town can make zoning improvements and/or implement polices to guide development that meets the town's vision for the future.

Housing Statement

A variety of housing that serves different needs will foster a diverse population and create long term viability of Sutton. The town can decide to be proactive in this arena by informing it's residents of the benefits of a diversified housing stock. The town can also develop specific design standards, review procedures and document future plans for new housing units.

Economic Development Statement

Developing supportive infrastructure is seen as a key strategy for encouraging economic development where it is most desirable.

Community Services

The Plan recommends creating brochures about town services and programs and distributing them and posting them to the Towns website. Additionally, the Plan recommends the design process begin for Police, DPW and Library facilities with an eye to obtaining any available grants to help with the funding.

Transportation Statement

Goals include continuing to work with officials to pursue a grade separated interchange at Route 146 and Boston Road. Pursing installation of sidewalks around the school complex, completing the Blackstone River Bikeway, and repair of our substandard bridges are also priorities.

Natural & Cultural Resources Statement

Completing nomination for the Villages of Manchaug and Wilkinsonville to the National Register of Historic Places is a major goal of the Plan. Educating residents and visitors through the creation of brochures that are distributed and also posted to the towns website are additional desires.

Open Space Statement

Continued improvements to existing facilities like Marion's Camp and a plan for long term maintenance are top goals. Additionally, highlighting the Towns assets through brochures and online resources is planned.

ATTACHMENT D: FUNDING OPTIONS

Mass.gov

MassWorks Infrastructure Grants

The MassWorks Infrastructure Program provides funds for municipalities and other eligible public entities to support and accelerate housing and job growth in the Commonwealth.

The MassWorks Infrastructure Program is a competitive grant program that provides a robust and flexible source of capital funds for municipalities and other eligible public entities to complete public infrastructure projects that support and accelerate housing and job growth throughout the Commonwealth.

MassWorks is committed to preparing communities for success and contributing to the long term strength and sustainability of our Commonwealth with a particular emphasis on projects that support the production of multi-family housing in appropriately located walkable, mixed-use districts, and resulting in direct and immediate job creation, and/or that support economic development in weak or distressed areas.

2018 MassWorks

This year was the fourth round of the MassWorks Infrastructure Program under the Baker-Polito Administration. To date, the program has invested about $357 million in 176 public infrastructure projects in 129 of the Commonwealth's cities and towns. MassWorks is a competitive grant program that was launched in 2011 to provide a robust and flexible source of capital funds for municipalities and other eligible public entities to support and accelerate housing and job growth throughout the state.

By the Aug. 10, 2018 deadline, EHOED had received 107 applications requesting $207.8 million in grant funds. The 2018 round yielded 39 grant awards totaling over $80 to 37 communities. This round of awards is expected to leverage $2.9 billion in private investment, 4,000 units of new housing, and over 9,000 full time jobs. **This round is now closed and award winners are listed here** (/service-details/massworks-2018-award-winners).

The award recommendations are based on internal review by MassWorks staff and outside reviewer comments provided by MassDOT, the Executive Office of Energy and Environmental Affairs, the Executive Office of Administration and Finance, the Regional Planning Agencies and the Smart Growth Alliance.

Frequently Asked MassWorks Questions (/files/documents/2018/07/05/2018%20MassWorks%20Program%20Questions%20-%20FAQ.pd

RELATED

MassWorks 2018 Award Winners (/service-details/massworks-2018-award-winners)

MassWorks 2017 Award Recipients (/service-details/massworks-2017-award-winners)

MassWorks 2016 Award Recipients (/service-details/massworks-2016-awards)

MassWorks Out of Round Awards (/service-details/massworks-out-of-round-awards)

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SEND FEEDBACK

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF HOUSING AND ECONOMIC DEVELOPMENT

2018 MASSWORKS INFRASTRUCTURE PROGRAM

Frequently Asked Questions (FAQ)

GENERAL

What is the MassWorks Infrastructure Program?

The MassWorks Infrastructure Program is a competitive grant program that provides a flexible source of capital funds to municipalities and other eligible public entities to support and accelerate job growth and economic development throughout the Commonwealth. MassWorks is authorized by MGL, Chapter 23A, Section 63 and administered by the Executive Office of Housing & Economic Development (EOHED).

What is new with the 2018 MassWorks round?

In 2018, EOHED is introducing a more streamlined application form to assist all applicants in preparing the strongest possible proposal. **An updated grant guidelines booklet outlines all of the program requirements and application instructions.** While there are some new sections and inquiries, the majority of the questions are the same from previous years, just reorganized into more topical sections. Key changes include:

1. Expanded section on the public infrastructure project, by grouping together related questions and providing opportunity for applicants to more effectively demonstrate shovel-readiness.
2. Expanded Preparing for Success section where applicants can demonstrate strategies and planning tools that they have employed to attract private investment and development.
3. A new series of questions related to the applicability of MEPA review.

Who can apply for a MassWorks grant?

Any Massachusetts city, town, or public entity, directly or through another public agency, may submit an application to MassWorks requesting a grant. Two or more municipalities may apply jointly, with one municipality or another public entity acting as fiscal agent. MassWorks grants can be in addition to other forms of secured local, state, and federal assistance that the applicant will receive.

What can MassWorks funds be used for?

The MassWorks Program provides capital grant funds to eligible communities to pay for improvements to and/or construction of public infrastructure that helps spur economic and housing development and/or address roadway safety concerns. Eligible projects must be located on public land or on public leasehold, right-of-way or easement. Funds can be used to pay for infrastructure work including, but not limited to, sewers, utility extensions, streets, roads, traffic signalization, curb-cuts, parking facilities, site preparation and improvements on publicly owned land, demolition, pedestrian walkways, and water treatment systems.

Is there a maximum grant amount that can be requested?

No. There is no set minimum or maximum amount that can be requested for a MassWorks grant, except in the case of small communities (pop. under 7,000) seeking funds for roadway safety projects. (*See rural community section below for more information.*) Applications under the economic development or housing categories are encouraged to submit a proposal for the full scope of a project (or full project phase) and provide clear justification for the amount requested. The grant amount requested should realistically align with the proposed project. While the program is not always able to award the full amount requested, if a project is determined to be strong and is recommended for funding, EOHED will work with the municipality to prioritize the portion of the project that can be funded by MassWorks.

How will my application be evaluated?

Generally, EOHED and external reviewers use various criteria to assess proposals. The main review includes: a) ensuring completeness of the application, b) confirming alignment with the Sustainable Development Principles, c) verifying feasibility of the proposed infrastructure work and rationality of the amount requested, d) confirming the extent to which the project unlocks major development and the amount of private investment leveraged, e) the amount of local funding for the project, if any; and, most significantly, f) determining whether or not the project is "shovel-ready" meaning prepared to begin in the upcoming construction season. Applications are scored and ranked based on these criteria. As outlined in the program guidelines, the strongest proposals are then measured against the state's spending targets to ensure appropriate geographic distribution and consistency with the program's goals.

What is the program looking for in terms of unlocking major development?

As outlined in the guidelines, the MassWorks Program provides capital funds to eligible communities for the improvements to and/or construction of public infrastructure that helps spur economic activity. The program is highly competitive; each year receiving a large number of great application, but having a limited pool of funding available to distribute. The highest rankings will be given to proposed projects that are likely to lead to private investment, economic growth and/or revitalization of an economically distressed area.

Who will review and approve the applications?

All applications are reviewed by the MassWorks team at EOHED in consultation with various state agency partners, including representatives from the Executive Office of Administration and Finance (ANF), Executive Office of Energy and Environmental Affairs (EEA), Department of Housing and Community Development (DHCD), and the Department of Transportation (MassDOT). In addition, EOHED solicits feedback from MassDOT Regional Directors, Regional Planning Agencies, and the Smart Growth Alliance. All feedback and review notes are gathered and evaluated to determine and rank the strongest applications. MassWorks staff presents the strongest proposals to the EOHED Secretary for further review and approval. Final decision are confirmed by the Governor and Lieutenant Governor.

Do I need an account to submit an application through the online system?

Yes. All applications to the MassWorks Program must be submitted electronically through the online portal, *Intelligrants*. To access the system, users must have a login and password. If you have submitted an application during a previous MassWorks round, your login credentials remain the same and are saved in the system. If you are a new user, you will be required to set up an account. See Appendix 3 in the Grant Guidelines document for assistant with accessing the online application system. A link to the online portal is available at https://www.mass.gov/service-details/massworks.

PROJECT AND BUDGET QUESTIONS

If my project was not funded in a previous MassWorks round, and I want to submit the same project again, will I need to reapply to be considered in the 2018 MassWorks round?

Yes. If you wish to resubmit a previously unfunded project for consideration in the 2018 funding round, you are required to start a brand new application. The information from the previous application is saved in the system. Therefore, you should be able to copy information from the old application in the system and put it into the new application.

Can I apply for more than one project during a round?

Yes. Eligible applicants may submit funding requests for more than one project in the same round. However, a separate application is required for each project. Each proposal will be evaluated independently against the criteria.

Are there new MEPA rules affecting the program this year?

No. The updated section in the application on MEPA applicability does not indicate any new rules. It seeks to outline more clearly the existing guidelines and expectations related to MEPA. The goal is to identify, during the application evaluation, if the project might need MEPA review and, if so, how that review affects the project schedule The fact that a project may be subject to MEPA review will not disqualify an application. For projects that are strong and likely to be recommended, the intention is, if needed, to have the MEPA office begin its review earlier to ensure that the project is able to start construction on time.

Do I need to get a MEPA review completed before I can apply to MassWorks?

No. A completed MEPA review is not required to apply to MassWorks. However, the awarding of MassWorks funding is a form of state action that creates jurisdiction under the MEPA regulations, and requires a further analysis of projected environmental impacts. If those impacts exceed certain thresholds, MEPA review is required before EOHED can disburse MassWorks funds. Therefore, all projects that are selected for MassWorks awards are expected to follow and comply with any applicable MEPA rules and/or requirements.

Is a local or private match required?

No. However, applications that include funding support from other government or private sources (particularly local funds), will be more competitive.

Are pre-constructions costs, such as design and engineering, eligible grant expenses?

Yes. However, no more than 10% of the total grant requested can be used for pre-construction costs. EOHED expects communities to have plans for covering the cost of pre-construction activities, such as surveying, permitting, and design/engineering, as these items would need to start prior to MassWorks contracting, for projects to be able to advance to construction in the upcoming construction season. The only exception to the 10% cap is for communities applying for a roadway safety in small towns grant. Communities with a population of 7,000 or less seeking funding for transportation improvements to enhance safety are eligible to include all pre-construction along with construction costs in their request. Nevertheless, these projects are also expected to complete design/engineering in time to advance to construction in the upcoming season.

Do I need to submit project designs with my application?

No. In most cases design specifications will not be required. However, for road improvement projects that impacts a state-owned roadway, specifications may be required to evaluate the project and may be requested during the review period. Any project which impacts a state owned roadway should consult with the MassDOT District Office about the project prior to submitting a MassWorks application.

What is the Commonwealth's Municipal Vulnerability Preparedness (MVP) Program?

In 2016, Governor Charlie Baker signed Executive Order 569, instructing state government to provide assistance to cities and towns to complete climate change vulnerability assessments and resiliency planning. Massworks does not generally provide funding for resiliency planning or infrastructure. However, MVP provides support for Massachusetts cities and towns to plan for completing vulnerability assessments and developing action-oriented resiliency plans. For information on the MVP Program, please visit: https://www.mass.gov/municipal-vulnerability-preparedness-program

Can I apply for a dredging project through the 2018 MassWorks competitive grant round?

No. Grants for dredging projects will be available through a separate RFP process later this year. EOHED will be soliciting applications for capital grants to support saltwater dredging of public waterways. Program information and guidelines will be available on EOHED's website.

GRANTS FOR SMALL AND RURAL COMMUNITIES

Who is eligible for funding under the roadway safety improvements category?

Communities with a population of under 7,000 are eligible to apply under the category for roadway safety in small towns, formally known as the STRAP program. Grant funding in this category does not exceed $1 million per award. If awarded, towns are eligible to receive 1 grant every three fiscal years.

Can a joint application be submitted under the roadway safety category?

Yes. Two or more eligible communities may submit a joint application and are eligible for up to $1 million per community. If awarded, one municipality will serve as the fiscal agent/grant administrator and will be responsible for overseeing the distributions of funds. Any required inter-municipal agreements should be in place prior to submitting an application.

Can rural communities apply in the housing and economic development categories?

Yes. The housing and economic development categories are open to any eligible public entity. Rural communities that have housing or mixed-use projects can submit application(s) that support those projects by completing all of the economic development sections. These applications are evaluated and are competing with all other general proposals. (Applications submitted by rural communities in the economic development round are not subject to a grant maximum or three year award restriction.)

Are rural communities allowed to submit more than one application?

Communities submitting an application for roadway safety improvements may also submit additional applications so long as those are under the economic development and/or housing categories.

AWARD NOTIFICATIONS

How will I be notified if my community is awarded a MassWorks grant?

Applicants that are approved for MassWorks funding will be notified in writing. The applicant will received a Letter of Intent (LOI) outlining the award amount and any specific conditions and/or instructions for confirming shovel-readiness of the project. Awardees will be contacted by MassWorks staff to coordinate next steps toward contracting once all award announcements are made.

Occasionally, there are strong applications that do not receive an award because the program does not have sufficient funds available at the time. In those cases, the applicant may receive a letter informing them that the proposal may be reconsidered later in the fiscal year if/when funds become available, before the next round.

How will I be notified if my community is denied a MassWorks grant?

Applicants that are not recommended for MassWorks funding in this round, will also be notified in writing. These letters are usually sent after all award announcements have been made in late fall. After the round closes, MassWorks Infrastructure Program staff will be available to discuss individual proposal decisions upon request.

Additional questions may be submitted to massworks@mass.gov.

Mass.gov

SRF Clean Water Program

Learn how your community can receive low-interest loans to help create clean water systems.

Overview

This program is designed to provide a low-cost financing method that communities can take advantage of to make sure they are meeting water-quality standards.

The program emphasizes:

- Watershed management priorities
- Stormwater management
- Green infrastructure

One major goal of the program is to encourage communities to undertake projects with meaningful water quality and public health benefits and which address the needs of the communities and the watersheds.

Eligible Projects

Funding is available for the planning and construction of projects including:

- CSO mitigation
- New wastewater treatment facilities and upgrades of existing facilities

CONTACT

State Revolving Fund Contacts

Online

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Northeast Region Contact

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Southeast Region Contact

david.johnston@mass.gov (mailto:david.johnston@mass.gov)

- Infiltration/inflow correction
- Wastewater collection systems
- Nonpoint source pollution abatement projects, such as:
  - Landfill capping
  - Community programs for upgrading septic systems (Title 5)
  - Brownfield remediation
  - Pollution prevention
  - Stormwater remediation

In addition, non-structural projects are eligible for SRF funding, such as:

- Green infrastructure planning projects for nonpoint source problems which are consistent with the MassDEP's Nonpoint Source Management Plan and that identify pollution sources and suggest potential remediation strategies.
- An enhanced loan subsidy is also available for certain wastewater nutrient management projects: **Instructions for zero percent interest rate projects** (https://www.srfmadep.com/state-revolving-fund-applications-forms/cwdw/srfrate.pdf).

See:

Clean Water SRF Eligible Project Costs (/doc/clean-water-srf-eligible-project-costs-0/download)

Additional Resources

Getting an SRF Loan (/how-to/getting-an-srf-loan)

Western Region Contact
deirdre.doherty@mass.gov (mailto:deirdre.doherty@mass.gov)

RELATED

SRF Drinking Water Program (/service-details/srf-drinking-water-prog

State Revolving Fund (SRF) Loan Program (/state-revolving-fund-srf-loan-program,

Energy Efficiency at Water Utilities (/lists/energy-efficiency-at-water-utilities,

State Revolving Fund Applications & Forms
(/lists/state-revolving-fund-applications-forms)

Massachusetts Clean Water Trust Annual Reports for State Revolving Fund Programs
(https://www.mass.gov/info-details/investor-resources#reports-)

SRF Requirements for Disadvantaged Businesses
(/guides/disadvantaged-business-enterprise-program-and-utilization-of-mbe-and-wbe-firms)

Program Details

Competitive proposals:

- Will have demonstrable water quality benefits
- Will eliminate or mitigate a risk to public health
- Is needed to achieve or maintain compliance with applicable discharge permits or other water pollution control requirements
- Will implement or be consistent with watershed management plans (or addresses a watershed priority) and is consistent with local and regional growth plan

The current subsidy is provided via a 2% interest loan. In recent years the program has operated with $400 to $450 million per year, representing the financing of 50 to 70 projects annually.

Additional Resources

Water Resource Management Planning Guidance Document
(https://www.mass.gov/doc/water-resource-management-planning-guidance-document/download)
(PDF 106 KB)

Wastewater Facility Planning Guidance
(https://www.mass.gov/doc/wastewater-facility-planning-guidance/download)
(PDF 228.19 KB)

Guidance for Abatement of Pollution from CSO Discharges
(https://www.mass.gov/doc/guidance-for-abatement-of-pollution-from-cso-discharges-0/download)
(PDF 54.42 KB)

Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys
(https://www.mass.gov/doc/guidelines-for-performing-infiltrationinflow-analyses-and-sewer-system-evaluation-surveys/downloac
(PDF 2.79 MB)

Pollution Abatement from Combined Sewer Overflows - Policy
(https://www.mass.gov/doc/pollution-abatement-from-combined-sewer-overflows-policy/download)
(PDF 183.94 KB)

Drinking Water Policy 03-1: Review of Sewer Line/Water Supply Protection
(https://www.mass.gov/doc/drinking-water-policy-03-1-review-of-sewer-linewater-supply-protection-0/download)
(PDF 49.6 KB)

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Mass.gov

Getting an SRF Loan

A detailed description of the State Revolving Fund loan process.

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THE DETAILS

What you need

Applying for SRF Financing

Each June, the Division of Municipal Services (DMS) launches a solicitation of proposals for SRF financial assistance for the next calendar year. The applications, called Project Evaluation Forms, along with supporting documentation, are due by the August deadline noted in the solicitation. The information provided in the PEF allows the Division to rate and rank projects based upon the severity of the problem being addressed and the appropriateness of the solution described. Some local governments submit the PEFs themselves, but most applicants engage environmental consulting companies that are familiar with the condition of the local infrastructure and with the SRF financing process.

During each funding round, an online application form will be available for use.

The proposals selected to receive SRF financing are published in the fall on the Draft Intended Use Plan IUP. The IUP lists proponents, project name and cost, for the selected projects. Following a 30-day public comment period, the IUP is finalized, typically with some additional projects added. As dictated by Congress, only projects listed on an IUP may receive SRF financing.

See SRF Clean Water Program (/service-details/srf-clean-water-program)

See SRF Drinking Water Program (/service-details/srf-drinking-water-program)

Readiness to Proceed

Readiness to proceed is a central theme for SRF financing. Proponents must secure local borrowing authorization of the cost of the project by June 30 of the IUP year. Proponents must complete and submit a Loan application with buildable plans and specifications, by Oct 15 of the same year. Once a proposal is approved by DMS, the proponent has 6 months to initiate construction. Proposals that do not meet those deadlines may be removed from the IUP, and replaced by a lower ranked project which is ready to proceed.

SRF Administration

DMS administers the SRF program in partnership with the Massachusetts Clean Water Trust. DEP's role is to oversee the project, while CWT oversees the financial aspects. DMS and CWT conduct **Borrowers' Meetings** (/info-details/borrower-documents-reports-and-publications#borrower-presentation-and annually, at the four MassDEP regional offices. At those meetings, the two agencies walk borrowers through the SRF administrative processes and allow for Q&A interaction between SRF and the audience. DMS and CWT strongly encourage new borrowers to attend the session nearest them.

DMS staff reviews Loan applications to insure that the applicant has developed a suitable project plan which will address the problem described in the PEF. Design plans and specifications, environmental or building permits, and federal program requirements must be satisfied, for the project to receive an SRF loan. The Division then certifies the completed application to the Clean Water Trust, initiating the formal financing offer, and setting the project bidding process in motion.

CWT will subsequently execute interim financing agreements and later the permanent loan documents, then will work with the Borrowers through the following years to insure timely repayment and management of accounts.

Bidding and Construction

SRF financed projects are owned and managed locally. DEP's oversight role is to insure that the project is eligible for SRF financing to the maximum extent possible, within SRF requirements. DMS will therefore review project bid documents before they are published, and then inform the Borrower that the bid language conforms to SRF requirements. If there are ineligible costs in the bid, DMS will so inform the Borrower, before the local bid is published.

Once the Borrower receives good bids, a copy of the executed construction contract, the construction services contract, certain administrative costs and a 5% contingency are combined as the basis for the loan amount. DMS will develop a regulatory agreement committing to the loan amount, the rate, and the term; while detailing the Division's and the owners' responsibilities to oversee the project during construction and through to completion.

Interim Financing

CWT has interim financing available for SRF borrowers. CWT charges 0% interest on the interim loans, saving the borrowers the interest costs associated with Bond Anticipation Notes. The proceeds of the interim loan are available to the Borrower to pay its consultants and contractors in a timely manner. DEP and CWT work aggressively to process the requisitions for the interim financing, within five business days of receipt.

Permanent Financing

Approximately once per year, the CWT converts outstanding interim loans into permanent loans, for projects at or near completion. The CWT will notify all interim borrowers of the conversion and will work with borrowers to formulate the loan repayment schedule and terms. The standard terms are 2% interest for 20 years, though 30-year repayment periods are available with interest rates inching up to 2.4% Certain projects that are intended to address nutrient pollution are possibly eligible for 0% interest, under state law.

Repayment

CWT sends debt service schedules to SRF borrowers with outstanding obligations. The schedule includes semi-annual payments, in January and July of each year the loan is outstanding.

How to apply

Online

During each funding round, an online application will be available for use at State Revolving Fund Applications & Forms (/lists/state-revolving-fund-applications-forms).

Next steps

Determine the eligible project costs through the Clean Water SRF Program.

Clean Water SRF Eligible Project Costs
(https://www.mass.gov/doc/clean-water-srf-eligible-project-costs-0/download)
(PDF 168.32 KB)

Determine the eligible project costs through the Drinking Water SRF Program.

Drinking Water SRF Eligible Project Costs
(https://www.mass.gov/doc/drinking-water-srf-eligible-project-costs-0/download)
(PDF 214.91 KB)

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RELATED

SRF Clean Water Program (/service-details/srf-clean-water-program)

SRF Drinking Water Program (/service-details/srf-drinking-water-program)

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SRF Requirements for Disadvantaged Businesses (/guides/disadvantaged-business-enterprise-program-and-utilization-of-mbe-and-wt

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Commonwealth of Massachusetts - Department of Environmental Protection
Clean Water State Revolving Fund Program

Policy on Eligible Project Costs

Purpose

This document establishes MassDEP's guidelines for determining the eligible project costs of water pollution abatement projects financed through the Clean Water State Revolving Fund Program (CWSRF).

Applicability

This guidance is intended for use by Local Governmental Units (LGUs) and their consultants in the preparation of applications for CWSRF funding, and by MassDEP SRF Program staff in reviewing loan applications.

Users of this guidance are strongly encouraged to review the regulatory provisions that address eligibility of costs (310 CMR 44.08), a copy of which is included as Appendix 2. For information on the types of projects eligible for financing through the CWSRF, refer to 310 CMR 44.04 (Appendix 1).

Applicants should also refer to the relevant Intended Use Plan (IUP) on which their project appears, since the annual IUP may limit which stages of project implementation (i.e., planning, design, or construction) are eligible. Because the demand for construction financing has significantly outstripped available funding, since the late 1990s, MassDEP has excluded from SRF eligibility design stage costs and design projects.

I. Introduction

This policy summarizes how MassDEP distinguishes *eligible costs* (those necessary for the completion of a water pollution abatement project) from *ineligible costs* (those which are not necessary for the completion of the project.) The guidance is provided primarily in the form of examples and includes separate listings for eligible and ineligible costs. Applicants should contact MassDEP for further guidance concerning any other categories of costs not clearly appearing on either list. In general, in addition to being **necessary**, eligible costs must be (a) **reasonable**, (b) **allocable** to the project, (c) **not a general expense** of carrying out the overall responsibilities of the LGU, and (d) **not funded** under another state or federal financial assistance program.

MassDEP determines the eligible costs of each project on a case-by-case basis after reviewing the LGU's loan application. This determination is incorporated within the Project Approval Certificate. Issuance of the Project Approval Certificate is contingent upon an applicant satisfying the criteria and procedures set forth in the CWSRF program regulations, 310 CMR 44.00.

II. Eligible Costs

The eligible costs in this guideline are divided into project phases and categories and include the Planning phase, the Design phase, the Construction phase, a Miscellaneous and Administrative category, and an Allowance category. *[Neither design costs nor allowances are currently eligible costs.]*

A. Planning Phase Eligible Costs

The costs of wastewater planning directly related to the water pollution abatement project are eligible costs. Examples of eligible planning projects include:

1. Integrated Water Resource Management Planning;
2. Comprehensive Wastewater Management Planning;
3. Storm Water Management Planning; and
4. Project Evaluation Reports (PER).

Eligible Project costs include:

1. The costs of professional and consulting services including necessary travel to meet project objectives.
2. The costs incurred in complying with the requirements of the National Environmental Policy Act (NEPA) and/or the Massachusetts Environmental Policy Act (MEPA).
3. The costs of infiltration/inflow (I/I) analysis, sewer system evaluation survey (SSES), hydrogeological studies, and activities incidental thereto.
4. Pilot studies.

B. Design Phase Eligible Costs [DESIGN PHASE COSTS ARE CURRENTLY INELIGIBLE FOR AN SRF LOAN]

The costs for preparation of construction drawings, specifications, pre-design reports, estimates, and construction contract documents related to the water pollution abatement project are eligible costs and include but are not limited to:

1. The costs of professional and consulting services including necessary travel to meet project objectives.
2. The costs of survey and borings.

C. Construction Phase Eligible Costs

The costs of construction and related activities necessary to build the water pollution abatement project are eligible costs and include but are not be limited to:

1. The costs of professional and consulting services including necessary travel to meet project objectives.
2. The construction contract including a 5 % construction contingency

3. Costs of start-up services for on-site training of operating personnel in operation and control of specific treatment processes, laboratory procedures, and maintenance and records management.
4. The cost of an O & M manual or revisions to an existing O & M manual for wastewater treatment plants and major pumping stations.
5. The cost for post construction certification.
6. The costs of groundwater monitoring facilities necessary to determine the possibility of groundwater deterioration, depletion or modification resulting from building the project.
7. The cost (including associated legal, administrative and engineering costs) of land that will be an integral part of land application treatment acquired in fee simple or by lease or easement; including:
   a) Costs of a reasonable amount of land, considering irregularities in application patterns, and the need for buffer areas, berms, and dikes;
   b) Cost of land acquired for a soil absorption system for a group of two or more homes or municipal buildings;
   c) Cost of land acquired for storage of treated wastewater in land treatment systems before land application. Only the volume necessary for storage that is greater than the volume necessary for treatment is eligible. The eligible cost will be determined by the ratio of the storage volume to the total volume of the pond.
   d) Cost of land appraisals.
8. Relocation costs associated with wastewater treatment plant construction.
9. Cost of acquiring all or part of an existing publicly or privately owned wastewater pollution abatement works provided all the following criteria are met:
   a) The acquisition, in and of itself, considered apart from any upgrade, expansion or rehabilitation, provides new pollution control benefits;
   b) The acquired pollution abatement works was not built with previous federal or state financial assistance;
   c) The primary purpose of the acquisition is not the reduction, elimination, or redistribution of public or private debt; and
   d) The acquisition does not circumvent the requirements of 310 CMR 44.00, or other state or local requirements.
10. Cost of a reasonable inventory of laboratory chemicals and supplies necessary to initiate plant operations and laboratory equipment necessary to conduct tests required for plant operation.
11. Costs for purchase and/or transportation of biological seeding materials required for expeditiously initiating the treatment process operation.
12. Cost of permanently fixed shop equipment (i.e., lathes, drill press other power shop equipment) installed at the pollution abatement works necessary for the operation of the works.
13. Costs of necessary safety equipment to be used exclusively at the pollution abatement facility provided the equipment meets applicable federal, state, local or industry safety requirements.
14. Costs of a reasonable inventory of necessary maintenance equipment (such as lawn mowers, snow blowers, and power and shop tools) and customary furniture and office equipment for new treatment works, provided these purchases are to be used exclusively for that treatment facility. These purchases should receive prior MassDEP approval, be appropriate for the facility's size and usage and should be limited in cost.

15. Vehicles having as their purpose the transportation of liquid or dewatered wastes from the collector point (including individual or on-site systems) to the treatment facility or disposal site, or other purposes for which MassDEP agrees is a necessary part of the project.
16. Computers and ancillary software necessary for efficient operation of the water pollution abatement facility.
17. Costs of royalties for the use of or rights in a patented process or product.
18. Costs allocable to the water pollution control purpose of multiple purpose projects.
19. Costs necessary to mitigate direct, adverse, physical impacts resulting from building pollution abatement works.
20. Change orders and the costs of meritorious contractor claims for increased costs under sub agreements provided the costs are within the scope of the project, not caused by the borrower's mismanagement; and not caused by the borrower's vicarious liability for the improper actions of others. Eligible costs include:
    a) Building costs resulting from defects in the plans, design drawings and specifications, or other sub agreement documents only to the extent that the costs would have been incurred if the sub agreement documents had been free of defects, and excluding the costs of any rework, delay, acceleration, or disruption caused by such defects.
    b) Costs of equitable adjustments for differing site conditions.

    Settlements, arbitration awards, and court judgments which resolve contractor claims shall be eligible only to the extent that they meet the requirements of 310 CMR 44.00, are reasonable, and do not attempt to pass on to the state the cost of events that were the responsibility of the borrower, the contractor, or others.
21. The costs (including legal, technical, and administrative costs) of assessing the merits of or negotiating the settlement of a claim by or against a borrower under a sub agreement provided the claim arises from work within the scope of the project, a formal amendment to the loan agreement is executed specifically covering the costs before they are incurred, and the costs are not incurred to prepare documentation that should be prepared by the contractor to support a claim against the awardee.
22. The cost associated with the preparation of the pollution abatement works site before, during and, to the extent agreed on in the loan agreement, after building, including the cost of demolition of existing structures on the pollution abatement works site (including rights-of-way) if building cannot be undertaken without such demolition.
23. The cost of removal, relocation or replacement of utilities, if the borrower is legally obligated to pay such costs under state or federal law.
24. The cost of restoring streets and rights-of-way to their original condition. The need for such restoration must result directly from the construction and will generally be limited to those costs of temporary and permanent paving and repaving of sewer trenches and road surfaces.
25. The cost of mobile stand-by generator necessary to supply power for the transmission of wastewater or residuals from small low pressure (STEP or grinder pumps 5 horsepower or under) systems or small pumping stations where permanently installed generators are not feasible, not cost effective, nor have been required by MassDEP.
26. Purchase and installation of equipment for permanent monitoring of flow in sewer systems.
27. Costs for removing, and assuring elimination of infiltration or inflow that is cost-effective or value-effective to remove and may be for any or all of the following:
    a) Joint testing and sealing;
    b) Manhole sealing;
    c) Manhole cover raising and cover and frame replacement to prevent inflow;
    d) Service lateral repair and replacement in public ways only;

e) Pipe and manhole replacement and lining;
f) The costs of services incurred during the rehabilitation to ensure that the work was accomplished in accordance with the design drawings and specifications.
g) Studies and investigations on private property to determine sources of infiltration and inflow.
h) Work related to storm drainage systems where it is demonstrated that the work is essential to the permanent removal of inflow.
i) Development of an I/I manual which shall include, at a minimum, improvements to sewer use ordinances, user charge systems and collection system operation and maintenance programs.
j) Post rehabilitation certification.
k) Sewer separation in partially combined systems.

28. Abatement of combined sewer overflows (CSO), including sewer separation, storage, and treatment. The eligibility of replacements with larger pipe sizes and/or additional catch basins may be eligible only with prior consultation with MassDEP.
29. Purchase and installation of grinder pump systems or septic tank effluent pump (STEP) systems and piping to the sewer main, provided the LGU has obtained an easement (including a blanket easement) and the community is responsible for the maintenance of the grinder or STEP pump system. In general electrical work and piping from the house to grinder and or STEP pump system is ineligible, however electrical work from the grinder pump to any necessary control/alarm panels is eligible.

D. Miscellaneous and Administrative Eligible Costs

Other costs necessary to plan or implement a water pollution abatement project include, but are not limited to:

1. The costs of police traffic details during construction.
2. Preliminary and or final Plan of Operation.
3. Costs of force account work provided the borrower demonstrates to the satisfaction of MassDEP that the work can be accomplished more economically by the use of the force account method, or that emergency circumstances dictate its use, and that it possesses the necessary competence required to accomplish, document, and audit such work.

III. Ineligible Costs

Ineligible Project Costs are those costs that MassDEP determines are the Local Government Unit's (LGU's) responsibility and or are not necessary for the completion of the project. MassDEP has determined that ineligible costs include, but are not limited to, the following:

1. Costs that are incurred in excess of the approved project costs shall not be eligible for a subsidy under the loan unless MassDEP has approved the increase through an amendment to the project approval certificate and the loan has been amended to include the increased amount.
2. The operational costs of water pollution abatement projects shall be ineligible for SRF assistance.

3. Costs which are incurred in violation of applicable federal and state statutes, regulations, or requirements;
4. Bonus payments, not legally required, for completion of building before a contractual completion date.
5. Costs of basin or area wide planning which is not directly related to the project.
6. Removal, relocation or replacement of utilities located on land by privilege, such as franchise or privilege of sufferance.
7. The cost of vehicles for the transportation of the borrower's employees.
8. Items of routine "programmed" maintenance such as ordinary piping, air filters, couplings, hose, bolts, to major system components.
9. Ordinary operating expenses of the borrower including salaries and expenses of elected and appointed officials and preparation of routine financial reports and studies.
10. Personal injury compensation, claims related to wrongful deaths, or property damages arising out of the project.
11. Fines and penalties due to violations of, or failure to comply with, federal, state or local laws, regulations or procedures.
12. Costs outside the scope of the approved project as defined by the Project Evaluation Form.
13. Costs for capacity beyond the design life of the project.
14. Costs for which payment has been or will be received from another federal or state agency.
15. The cost of pollution abatement works that would provide capacity for new habitation or other establishments to be located in environmentally sensitive land such as wetland or floodplain.
16. The pro-rata portion of the costs for utilities, which cannot be dedicated for the sole purpose of the water pollution abatement project.
17. The costs of solutions to aesthetic problems, including design details which require expensive building techniques and architectural features and hardware, that are unreasonable or substantially higher in cost than approvable alternatives.
18. Preparation of applications, plans of study, and permits required by federal, state or local regulations or procedures unless previously deemed eligible in writing by MassDEP.
19. Architectural or engineering services or other services necessary to correct defects in a comprehensive wastewater management plan, design drawings and specifications, or other sub agreement documents *except meritorious contractor claims as allowed in section II, Construction Eligible Cost, #20.*
20. The costs of acquisition (including associated legal, administrative and engineering etc.) of sewer rights-of-way, waste treatment plant sites (including small system sites), sanitary landfill sites.
21. Any amount paid by the borrower for eligible land in excess of just compensation, based on the appraised value, the borrower's record of negotiation or any condemnation proceeding, as determined by the Commissioner.
22. Rehabilitation, enlargement or replacement of an existing pumping station or construction of a new pumping station not associated with or necessary for servicing the collection system to be built as part of the project shall not be an eligible portion of the project.
23. Costs associated with service connections outside the public way or easement; no more than one service connection per occupied lot or more than a Y fitting per vacant buildable lot.
24. Costs of electrical work and piping from the house to the grinder pump or STEP system.
25. Costs of non-technical services (legal or administrative) for development of a municipal pretreatment program, user charge system, sewer use ordinance, or inter-municipal agreement;

26. The cost (including associated legal, administrative and engineering costs) of land acquired in fee simple or by lease or easement
27. Buy-in cost to another community's system.
28. Corrective Action Reports and related corrective action construction for conventional technology.
29. Costs of issuance including administrative, legal and financial costs of the Trust or the local governmental unit associated with the approval, preparation, issuance and use of bonds as required by the Water Pollution Abatement Trust.

APPENDICES

1. 310 CMR 44.04 – Eligible Projects

2. 310 CMR 44.08 – Eligible Project Costs

3. Allowances for Planning and Design

Appendix 2

310 CMR 44.04: Eligible Projects

44.04 Eligible Projects

(1) Any water pollution abatement project, as defined in 310 CMR 44.03, is eligible to receive financial assistance from the Trust pursuant to 310 CMR 44.00. More specifically, eligible projects fall into the following categories:

(a) Wastewater Treatment Projects, as defined in 310 CMR 44.03;

(b) Infiltration Inflow (I/I) Projects, as defined in 310 CMR 44.03;

(c) Collection System Projects, as defined in 310 CMR 44.03, provided, however, that at least 85% of the expected wastewater flow into the proposed collection system will be for wastewater flows in existence as of July 1, 1995, except, subject to the approval of the Department, in areas designated as city or town centers, rural village districts, or brownfields redevelopment areas, areas designated under M.G.L. c. 40R as "smart growth districts" or projects in Growth Districts designated by the Executive Office of Housing and Economic Development with the concurrence of the Executive Office of Energy and Environmental Affairs;

(d) Nonpoint Source Projects, as defined in 310 CMR 44.03, including but not limited to projects financed under the Community Septic Management Program within the Fund to assist eligible homeowners to upgrade failed septic systems in compliance with 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 through underlying betterment agreements between a Local Governmental Unit and such homeowners;

(e) The planning and/or design for any one of the project categories identified in 310 CMR 44.04(1)(a) through (d), including but not limited to comprehensive wastewater management planning under 310 CMR 44.09(2) and (3) and planning projects which implement the Nonpoint Source Management Plan, as developed and updated by the Department pursuant to § 319 of the CWA, provided that the total funding allocated for planning and/or design projects shall not exceed 10% of the total financial assistance authorized on the calendar year Intended Use Plan Project Listing portion of the priority list. The Department may modify the allocation of funds consistent with its identification of planning and/or design projects as a funding priority in a particular calendar year pursuant to 310 CMR 44.06(3);

(f) Any project in the categories identified in 310 CMR 44.04(1)(a) through (d) which utilizes a single contractor to design, build and/or operate the project facilities, provided the procurement and use of such contractor is authorized by law, the project conforms with the state constitutional requirements governing the use of Commonwealth funds for public purposes, and the project otherwise meets the requirements of 310 CMR 44.00. The operational costs of such projects shall be ineligible for SRF assistance;

(g) Projects for the development and implementation of a conservation and management plan under § 320 of the CWA, 33 U.S.C. § 1330;

(h) The construction, repair, or replacement of publicly- or privately-owned decentralized wastewater treatment systems that treat municipal wastewater or domestic sewage;

(i) Publicly and privately owned, permitted and unpermitted projects that manage, reduce, treat, or recapture stormwater or subsurface drainage water;

(j) Projects that reduce the demand for POTW capacity through water conservation, efficiency, or reuse, regardless of whether the activity takes place at publicly or privately owned properties;

(k) Projects that develop and implement a watershed pilot project related to at least one of the six areas identified in § 122 of the CWA, 33 U.S.C. § 1274: watershed management of wet weather discharges, stormwater best management practices, watershed partnerships, integrated water resource planning, municipality-wide stormwater management planning, or increased resilience of treatment works;

(l) Projects that reduce energy consumption needs for POTWs and related planning activities, such as energy audits and optimization studies;

(m) Projects that include the equipment and piping required to reuse or recycle wastewater, stormwater, or subsurface drainage water;

(n) Projects that provide financial assistance to any qualified nonprofit entity to provide assistance to small- and medium-sized POTWs for training activities, planning, design, and associated preconstruction activities and to assist POTWs in achieving compliance with the CWA. Ongoing operation and maintenance activities are not eligible;

(o) Acquisition of land that is an integral part of the treatment system (e.g., land for spray

irrigation or subsurface disposal) and that is necessary for construction of POTWs, including surface and subsurface easements, a place to store equipment and material during construction, land needed to locate eligible projects (e.g., pumping stations), and land integral to the treatment process;
(p) Projects that increase the security of POTWs; and
(q) Projects that use regional water resources to offset, by at least 100%, the impact of water withdrawals on local water resources in the watershed basin of the receiving community.

310 CMR 44.07: Eligible Project Costs

44.08 Eligible Project Costs

(1) Costs which the Department determines are necessary for the completion of the project are eligible for financing in the loan and to receive a subsidy under the loan.

(2) Costs which the Department determines are not necessary for completion of the project are ineligible for financing in the loan.

(3) The Department will base its eligible project cost determinations on its "Policy on Eligible Project Costs", which identifies the specific types of costs that are within the two categories under 310 CMR 44.08(1) and (2).

(4) Project costs incurred by an applicant prior to the date of issuance of the Department's project approval certificate are not eligible for a subsidy under the loan, except as follows:
(a) Preliminary engineering, comprehensive wastewater management planning, design or related professional services and construction work, may be approved by the Department prior to the issuance of a project approval certificate as project costs eligible for subsidy if:
1. the applicant has submitted a written and adequately substantiated request for approval;
2. written approval by the Department is obtained before initiation of the project and award of any loan for the project; and
3. the project is included and maintains its status on the current calendar year priority list.
(b) The Department's prior approval of costs in accordance with 310 CMR 44.08(4)(a) does not constitute a commitment to approve financial assistance for any project. Instead, such costs will be considered eligible project costs only if a loan is made by the Trust for the project. Accordingly, an applicant receiving the Department's prior approval of costs in accordance with 310 CMR 44.08(4)(a) proceeds at its own risk.

(5) Costs incurred in excess of the approved project costs are not eligible for financing by the loan unless the project approval certificate and the loan are both amended to include the cost increase.

(6) A loan recipient shall exercise its best efforts to accomplish the work program set forth in the loan within the loan amount. Whenever a loan recipient reasonably believes that its project costs will exceed or be substantially less than the approved loan amount, it must promptly notify the Department in writing. The loan recipient must submit revised cost estimates for the project to the Department as soon thereafter as practicable. Neither the Department, nor the Trust, is under any obligation to approve costs in excess of the amount previously approved in the project approval certificate and loan.
(7) The final eligible project costs shall be the eligible costs approved by the Department upon completion of the project, unless audited. If such project costs are audited, the final eligible costs shall be the eligible costs approved by the Department at the completion of the audit.

Appendix 3

[DESIGN PHASE COSTS ARE CURRENTLY INELIGIBLE FOR AN SRF LOAN]

Allowances for Planning and Design

(1) MassDEP will use the following tables to determine the allowance for Comprehensive Wastewater Management Planning, Project Evaluation Reports, engineering reports and design or design only. The allowance is not intended to reimburse the local government unit for all costs actually incurred for the project evaluation report or the project design. Rather, the allowance is intended to assist in defraying those costs.

(2) The estimated and final allowance will be determined in accordance with these tables. The table is to be used in the event that the local government unit is not seeking cost reimbursement for an engineering report or project evaluation report. The amount of the allowance is computed by applying the resulting allowance percentage to the initial allowable building cost.

(3) The initial allowable building cost is the initial allowable cost of constructing a project whether accomplished through subagreements or forced account. Specifically, the initial allowable building cost is the allowable cost of the following:

(a) The initial award amount of all prime subagreements for building the project.

(b) The initial amounts approved for force account work performed in lieu of awarding a subagreement for building the project.

(c) The estimated allowance is to be based on the estimate of the initial allowable building cost.

(d) The final allowance will be determined one time only for each project, based on the initial allowable building cost, and will not be adjusted for subsequent cost increases or decreases.

(e) Prior to being reimbursed in the amount of the allowance, the local government unit must certify that it has expended at least the amount of the allowance, and certify the amount and percentage of such allowance paid to MBE(s) and WBE(s).

(f) If the professional service allowance amount paid to MBE(s) is less than________% and/or the amount paid to WBE(s) is less than________%, the applicant shall ensure that the remaining unmet portion of______% MBE (dollar amount) and/or the remaining unmet portion of______% MBE (dollar amount) are added to MBE/WBE professional services utilization requirements of the implementation (construction services) phase of the project.

Appendix 3 (continued)

[DESIGN PHASE COSTS ARE CURRENTLY INELIGIBLE FOR AN SRF LOAN]

Allowance for Planning and Design

Building Cost	Allowance as % of Building Cost
$100,000 OR LESS	14.4945
120,000.	14.1146
150,000	13.6631
175,000	13.3597
200,000	13.1023
250,000	12.6832
300,000	12.3507
350,000	12.0764
400,000	11.8438
500,000	11.4649
600,000	11.1644
700,000	10.9165
800,000	10.7062
900,000	10.5240
1,000,000	10.3637
1,200,000	10.0920
1,500,000	9.7692
1,750,000	9.5523
2,000,000	9.3682
2,500,000	9.0686
3,000,000	8.8309
3,500,000	8.6348
4,000,000	8.4684
5,000,000	8.1975
6,000,000	7.9827
7,000,000	7.8054
8,000,000	7.6550
9,000,000	7.5248
10,000,000	7.4101
12,000,000	7.2159
15,000,000	6.9851
17,500,000	6.8300
20,000,000	6.6984

United States Department of Agriculture
Rural Development

Water & Environmental Programs

To apply for Water & Environmental Grant and Loan funding, visit **RD Apply, our newly developed, online application system**

Through Rural Utilities Service Water and Environmental Programs (WEP), rural communities obtain the technical assistance and financing necessary to develop drinking water and waste disposal systems. Safe drinking water and sanitary waste disposal systems are vital not only to public health, but also to the economic vitality of rural America. Rural Development is a leader in helping rural America improve the quality of life and increase the economic opportunities for rural people.

WEP provides funding for the construction of water and waste facilities in rural communities and is proud to be the only Federal program exclusively focused on rural water and waste infrastructure needs of rural communities with populations of 10,000 or less. WEP also provides funding to organizations that provide technical assistance and training to rural communities in relation to their water and waste activities. WEP is administered through National Office staff in Washington, DC, and a network of field staff in each State.

USDA Rural Development Water and Environmental Programs:

- Circuit Rider Program
- Emergency Community Water Assistance Grants
- Grants for Rural and Native Alaskan Villages
- Household Water Well System Grants
- Individual Water & Wastewater Grants
- SEARCH - Special Evaluation Assistance for Rural Communities and Households
- Solid Waste Management Grants
- Water & Waste Disposal Grants to Alleviate Health Risks on Tribal Lands and Colonias
- Water & Waste Disposal Loans & Grants
- Water & Waste Disposal Loan Guarantees
- Water & Waste Disposal Predevelopment Planning Grants
- Water & Waste Disposal Revolving Loan Funds
- Water & Waste Disposal Technical Assistance & Training Grants

Reports

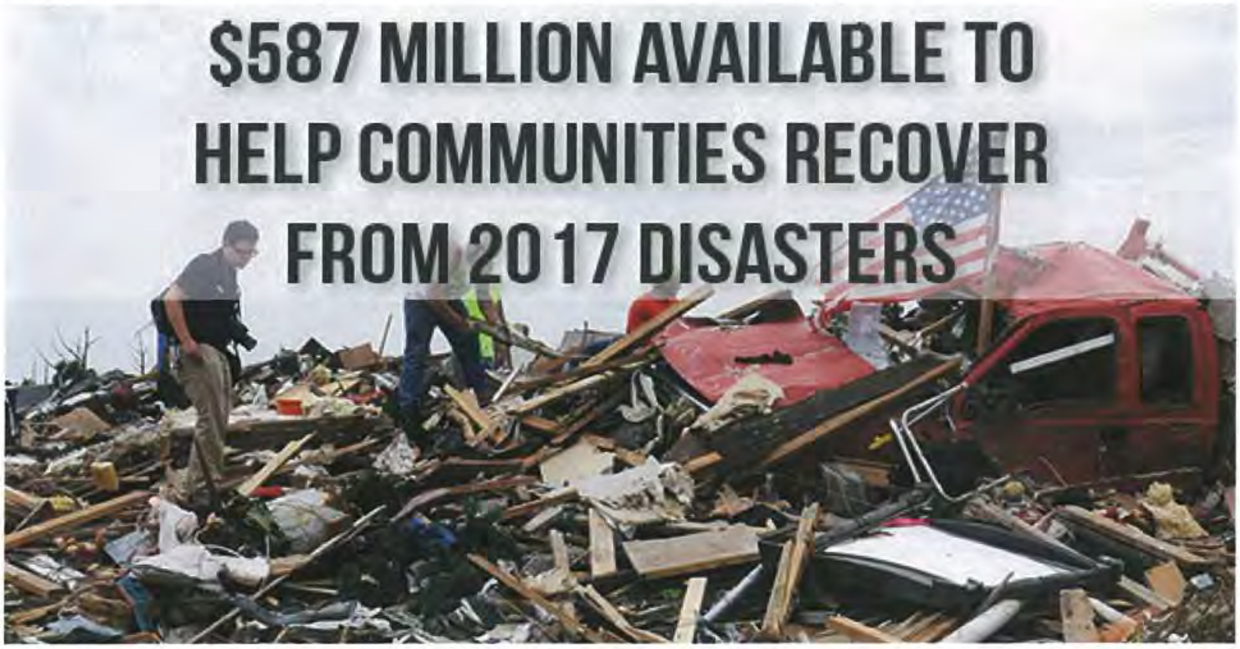
- WEP FY 2016 Annual Progress Report

Special Initiatives

- American Iron and Steel Requirement
- Electronic Preliminary Engineering Report (ePER)

[Success Stories (/success-stories/)]

Read how EDA has helped communities



(/programs/disaster-recovery/2018-supplemental/)

Apply for funding to help support your long-term recovery strategies. [Learn More] (/programs/disaster-recovery/2018-supplemental/)

NEWS/EVENTS

April 30, 2019
U.S. Department of Commerce Invests to Support Businesses Development at Blue Lake Rancheria (/news/press-releases/2019/04/30/blue-lake-rancheria-ca.htm)

April 26, 2019
U.S. Department of Commerce Invests $1.6 Million to Protect Manufacturers from Future Flood Events in Harrison, Arkansas (/news/press-releases/2019/04/26/harrison-ar.htm)

April 25, 2019

[U.S. Department of Commerce Invests $1.6 Million to Support Critical Infrastructure Improvements in Brunson, South Carolina (/news/press-releases/2019/04/25/brunson-sc.htm)]

Read More > (/news/)

Tweets by @US_EDA

EDA
@US_EDA

Our first #PSRW success story is out of our Seattle region where support of a recovery strategy in Calaveras County helped turn wildfire devastation into growth: bit.ly/2UuSkXx #PSRW @CALED_EconDev

2h

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HIGHLIGHTS

[Former Louisiana Congressman John Fleming promoted to federal position in the EDA (https://louisianaradionetwork.com/2019/04/13/2519/)]

Louisiana Radio Network (4/13/2019)

[Feds invest $2 million in Frankfort, Illinois (https://suburbanchicagoland.com/2019/04/11/feds-invest-2-million-in-frankfort-illinois/)]
Suburban Chicagoland (4/12/2019)

[Durant awarded $1.5M grant for wastewater improvements (https://journalrecord.com/2019/04/08/durant-awarded-1-5m-grant-for-wastewater-improvements/)]
Journal Record (4/9/2019)

[Viroqua receives $2.6M in federal funds to update water infrastructure (https://www.news8000.com/news/viroqua-receives-26m-in-federal-funds-to-update-water-infrastructure/1065817884)]
News8000.com – WKBT (4/4/2019)

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FUNDING OPPORTUNITIES

FRAUD ALERT

EDA has become aware of a telephone/email scam in which the perpetrator claims that the victim has won an EDA award and needs to provide personal information and a processing fee to claim it. Please note that EDA does not provide grants or other forms of financial assistance or benefits (including unemployment benefits) to individuals and does not ask individuals to disclose personal information. In addition, EDA does not require applicants to submit a processing or other fee. EDA grants can only be obtained by following the procedures described in the Notices of Funding Opportunities provided for the programs below.

If you believe you have been the victim of one of these scams, or for more information, please read the following notice (/about/disclaimer/).

DISASTER SUPPLEMENTAL NOTICE OF FUNDING OPPORTUNITY

The Economic Development Administration (EDA) has published the Fiscal Year 2018 (FY2018) Disaster Supplemental Notice of Funding Opportunity (NOFO) (https://www.grants.gov/web/grants/view-opportunity.html?oppId=302953) making $587 million available to eligible grantees in communities impacted by natural disasters in 2017.

Current Closing Date for Applications: *There are no application deadlines and the agency will accept proposals on a rolling basis until the publication of a new Disaster Supplemental NOFO, cancellation of this NOFO, or all funds are obligated.*

FISCAL YEAR 2019 REGIONAL INNOVATION STRATEGIES (RIS) PROGRAM

The Economic Development Administration (EDA) has published the Fiscal Year 2019 Notice of Funding Opportunity (NOFO) (https://www.grants.gov/web/grants/view-opportunity.html?oppId=312519) for the Regional Innovation Strategies Program. Under this NOFO, EDA is soliciting applications for two separate competitions—the 2019 i6 Challenge and the 2019 Seed Fund Support (SFS) Grant Competition.

- **FY19 i6 Challenge** — catalyzing high-growth entrepreneurship throughout the country, the i6 Challenge awards up to $750,000 for projects that increase regional capacity to accelerate the translation of innovations, ideas, intellectual property, and research into products, services, companies, and jobs.
- **FY19 Seed Fund Support (SFS) Grant Competition** — unlocking risk capital for entrepreneurs and startups to grow, SFS grants provide up to $300,000 for projects that create, launch, or expand equity-based seed funds or that create networks and tools that enable capital to flow into high-growth startups in all parts of the U.S.

The RIS Program is managed by the Office of Innovation and Entrepreneurship (/oie/), and more information can be found on the RIS webpage (/oie/ris/).

Current Closing Date for Applications: *April 4, 2019*

FY 2018 ECONOMIC DEVELOPMENT ASSISTANCE PROGRAMS APPLICATION SUBMISSION AND PROGRAM REQUIREMENTS FOR EDA'S PUBLIC WORKS AND ECONOMIC ADJUSTMENT ASSISTANCE PROGRAMS

The Economic Development Administration's (EDA's) mission is to lead the Federal economic development agenda by promoting innovation and competitiveness, preparing American regions for economic growth and success in the worldwide economy. EDA fulfills this mission through strategic investments and partnerships that create the regional economic ecosystems required to foster globally competitive regions throughout the United States. EDA's Public Works and EAA programs provide economically distressed communities and regions with comprehensive and flexible resources to address a wide variety of economic needs. Projects funded by these programs will support the DOC Strategic Plan (2018-2022) by, among other things, leading to the creation and retention of jobs and increased private investment, advancing innovation, enhancing the manufacturing capacities of regions, providing workforce development opportunities and growing ecosystems that attract foreign direct investment. Through these programs, EDA supports bottom-up strategies that build on regional assets to spur economic growth and resiliency. EDA encourages its grantees throughout the country to develop initiatives that present new ideas and creative approaches to advance economic prosperity in distressed communities.

Under this Notice of Funding Opportunity (NOFO), EDA solicits applications from applicants in order to provide investments that support construction, non-construction, planning, technical assistance, and revolving loan fund projects under EDA's Public Works program and Economic Adjustment Assistance (EAA) programs (which includes Assistance to Coal Communities). Grants and cooperative agreements made under these programs are designed to leverage existing regional assets and support the implementation of economic development strategies that advance new ideas and creative approaches to advance economic prosperity in distressed communities, including those negatively impacted by changes to the coal economy.

Please access this opportunity, "EDAP2018", on Grants.gov (https://www.grants.gov/web/grants/view-opportunity.html?oppId=306735) that supersedes the previously published "EDAP-2017" opportunity.

Current Closing Date for Applications: *There are no submission deadlines under this opportunity. Proposals and applications will be accepted on an ongoing basis until the publication of a new EDAP NOFO.*

FISCAL YEAR 2018 EDA UNIVERSITY CENTER ECONOMIC DEVELOPMENT PROGRAM (UC) NOTICE OF FUNDING OPPORTUNITY

The Economic Development Administration (EDA) has published the Fiscal Year 2018 Notice of Funding Opportunity (NOFO) for the University Center Economic Development Program Competition for EDA's Austin and Denver Regional Offices. This NOFO makes approximately $7.4 million available for the program ($2.5 million for the first year of awards under this competition).

The purpose of EDA's University Center Economic Development Program (also referred to in this announcement as the University Center program) is to enable institutions of higher education and consortia of institutions of higher education to establish and operate University Centers specifically focused on using university assets to build regional economic ecosystems that support innovation and high-growth entrepreneurship. University Centers collaborate with other EDA partners by providing expertise and technical assistance to develop, implement, and support regional strategies that result in job creation, high-skilled regional talent pools, and business expansion in a region's innovation clusters. Expertise and technical assistance may address, for example, workforce training programs, applied research centers, technology commercialization, feasibility studies, market research, economic impact analyses training, and other technical assistance to help communities foster vibrant economic ecosystems.

Since FY 2004, EDA has administered the University Center program as a competitive multi-year program, holding competitions in two of its six regional offices on a rotating basis. EDA encourages the submission of applications that will create and nurture regional economic ecosystems through science, technology, engineering and math (STEM) skill development, workforce training opportunities, applied research and development, technology commercialization, and targeted activities that cultivate entrepreneurship and improve regional economic development.

- Denver: https://www.grants.gov/web/grants/view-opportunity.html?oppId=305794 (https://www.grants.gov/web/grants/view-opportunity.html?oppId=305794)
- Austin: https://www.grants.gov/web/grants/view-opportunity.html?oppId=305793 (https://www.grants.gov/web/grants/view-opportunity.html?oppId=305793)

AURO and DRO will each be holding informational webinars on this NOFO. More details to follow.

Current Closing Date for Applications: *July 15, 2018*

FISCAL YEAR 2018-2020 RESEARCH AND NATIONAL TECHNICAL ASSISTANCE (RNTA) NOTICE OF FUNDING OPPORTUNITY

The Economic Development Administration (EDA) has published the Fiscal Year 2018 - 2020 Notice of Funding Opportunity (NOFO) for Research and National Technical Assistance projects (https://www.grants.gov/web/grants/view-opportunity.html?oppId=305782). This NOFO makes $1.5 million available for Research and Evaluation (R&E) projects and $1.0 million available for National Technical Assistance (NTA) projects.

Through the R&E program, EDA supports the development of tools, recommendations, and resources that shape Federal economic development policies and inform economic development decision-making. R&E program investments provide critical, cutting-edge research and best practices to regional, state, and local practitioners in the economic development field, thereby enhancing understanding and implementation of economic development concepts throughout the country. EDA also regularly evaluates the impacts and outcomes of its various programs as a means of identifying policy and program modifications that will increase the Agency's efficiency and effectiveness.

EDA's NTA program supports a small number of projects that provide technical assistance at a national scope. These projects support best practices among communities trying to solve problems related to economic development goals. By working in conjunction with its national technical assistance partners, EDA helps States, local governments, and community-based organizations to achieve their highest economic potential. The NTA program supports activities that are beneficial to the economic development community nationwide and includes, but is not limited to, outreach, training, and information dissemination. It can also provide assistance with implementation of economic development best practices and proven techniques.

Current Closing Date for Applications: *September 30, 2020*

FY 2016 – FY 2019 EDA PLANNING PROGRAM AND LOCAL TECHNICAL ASSISTANCE PROGRAM

Through its Planning and Local Technical Assistance programs, EDA assists eligible recipients in developing economic development plans and studies designed to build capacity and guide the economic prosperity and resiliency of an area or region. The Planning program helps support organizations, including District Organizations, Indian Tribes, and other eligible recipients, with Short Term and State Planning investments designed to guide the eventual creation and retention of high-quality jobs, particularly for the unemployed and underemployed in the Nation's most economically distressed regions. As part of this program, EDA supports Partnership Planning investments to facilitate the development, implementation, revision, or replacement of Comprehensive Economic Development Strategies (CEDS), which articulate and prioritize the strategic economic goals of recipients' respective regions. The Local Technical Assistance program strengthens the capacity of local or State organizations, institutions of higher education, and other eligible recipients to undertake and promote effective economic development programs through projects such as feasibility studies and impact analyses.

Please see the Federal Funding Opportunity for full information on how to apply. Please note that applicants must apply to their respective EDA regional office. The chart below is provided as a reference for the Competition ID and Competition Title information needed to complete the application process.

Also note that any applicants who are in the process of developing an application under the previous FFO will need to apply under the new FFO and use the associated new forms.

Competition ID	Competition Title
PKG00239463 (https://www.grants.gov/web/grants/view-opportunity.html?oppId=301958)	Atlanta Regional Office: AL, FL, GA, KY, MS, NC, SC, TN
PKG00239442 (https://www.grants.gov/web/grants/view-opportunity.html?oppId=301959)	Austin Regional Office: AR, LA, NM, OK, TX
PKG00239443 (https://www.grants.gov/web/grants/view-opportunity.html?oppId=301960)	Chicago Regional Office: IL, IN, MI, MN, OH, WI
PKG00239444 (https://www.grants.gov/web/grants/view-opportunity.html?oppId=301961)	Denver Regional Office: CO, IA, KS, MO, MT, ND, NE, SD, UT, WY

PKG00239464 (https://www.grants.gov/web/grants/view-opportunity.html?oppId=301936)	Philadelphia Regional Office: CT, DE, DC, ME, MD, MA, NH, NJ, NY, PA, RI, VT, VA, WV, PR, VI
PKG00239445 (https://www.grants.gov/web/grants/view-opportunity.html?oppId=301962)	Seattle Regional Office: AK, AZ, CA, HI, ID, NV, OR, WA, AS, MP, GU, FM, MH, PW

Current Closing Date for Applications: *Applications are accepted on a continuing basis and processed as received. This Planning and Local Technical Assistance opportunity will remain in effect until superseded by a future announcement.*

ENVIRONMENTAL TEMPLATES (/FILES/PROGRAMS/EDA-PROGRAMS/ENVIRONMENTAL-NARRATIVE-TEMPLATE-AND-APPLICATION-CERTIFICATION-CLAUSE.DOCX) (DOCX (/PLUG-INS.HTM))

(Required documents for submitting an application for construction assistance to EDA)

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Disaster Recovery (/programs/disaster-recovery/index.htm)

How does EDA support Disaster Recovery?

ATTACHMENT E: BOARD OF SELECTMEN & SEWER COMMISSION MEETING DOCUMENTS

Towle has issued his comments and as noted on the One Day License, a detail police officer must be present during the hours beer and wine is to be served (1pm to 5pm). The BOS offer support as this is an annual event. Selectman Chizy motions to approve the One Day Beer and Wine Selectman Fattman seconds the motion, All in favor Passes 5-0

Co-sponsor warrant article-Right to Farm Bylaw: Jen Hager gives background information on this article. This is currently a State law but restating it as a bylaw serves several purposes including gaining points as far as capitalizing on grant opportunities. Its main purpose is to state that the Town of Sutton encourages, promotes, and protects agriculture in the community. Farming has always been very important to residents in Sutton, this just reaffirms it. Over 3,500 acres in Sutton is currently under Ch 61 protection as agricultural operations. Selectman Geraghty is concerned with the possibility of for instance, a logging business running 24 hours a day. Jen Hager replies that the nuisance by law is still in place to protect residents and the bylaw doesn't say agricultural operations can run rampant it says they should operate with "minimal conflict" and according to "normally accepted agricultural practices" Jen stated that if this "Right To Farm" article should pass, a disclosure notification would have to be available for all residents and perspective residents via posting in at least one of four locations. Selectman Chizy motions to co-sponsor the warrant article for the Right to Farm, Selectman Frustaci seconds the motion, All in Favor Passes 5-0

Proposals for CWMP Update: Jen Hager informs board that she has received proposals from Graves Engineering as well as Dewberry for the Comprehensive Wastewater Treatment Plan update. Four sections in the plan must be updated immediately to aid Sutton's current IMA negotiations with Millbury. Jen Hager feels that Dewberry is competent but is limited to what they will provide where as Graves is competent and responsive to our needs. The proposals came back between $22,000.00 and $24,000.00. Jen informs BOS that this plan must be certified with DEP, Graves is willing to see it through the certification with DEP. Dewberry does not state that. The BOS feel Graves would be a wise choice but question where the funds will come from as it was not budgeted. The BOS do not want to put this cost onto the currant sewer users as it would not benefit the currant users directly. Accountant Tim Harrison is called into the meeting. Tim informs BOS that this must be approved at the October Town Meeting. He feels free cash would be the best source. The Selectmen request Laura Rodgers and Jen Hager to talk to the Sewer Commissioner Don Obuchowski to see if the funds (Graves proposal $22,400.00) could be borrowed from the Sewer Enterprise Fund and then paid back after the October Town Meeting with funds out of the free cash account. Laura is asked to work on the article for the warrant. Selectman Chizy motions to hire Graves Eng. to update the four sections in the CWMP, Selectman Hebert seconds the motion, All in favor Passes 5-0

Town Administrator Updates:

Waters Farm Fire & Burglary systems: Acting TA Laura Rodgers met with Acting President of Waters Farm Brian Jamros, Acting Fire Chief Paul Maynard and the Building Commissioner John Couture. John and Paul went to the farm and both agree that a residential alarm system could be used. All present are in agreement to move forward with a residential fire and burglar system. Specifications and scope of work is to be drafted. The Town Clerks office or the TA's office will handle bids, per request of Brian Jamros. This should be in early November. They all agree that the price should be around $5,000.00.

Cingular Wireless: notification was received that Cingular will terminate Cell Tower lease in April of 2009. This will mean a loss to the town of $19,000.00 annually as well as $1,850.00 monthly.

Announcements:
Selectman Chizy: September 7th, Senior Center Breakfast
Selectman Fattman: MMA Statewide Essay Contest for 6th graders
Selectman Geraghty: Lions Club Wine Tasting at Blackstone National on September 15th 7-11pm

Round Table:
Selectman Frustaci: Private Roads to be discussed. Thanks Laura and Jen for work well done as Acting TA
Selectman Fattman: would like to schedule another meeting at Senior Center, get dates from Michelle for availability
Selectman Geraghty: agrees that Laura and Jen have done an exceptional job as Acting TA. Commends them both

Chairman Geraghty entertains a motion to enter into brief Executive Session:
Selectman Frustaci so moves that the Board enter into executive session for the purpose of discussing pending litigation with the intention of returning back to open session for the purpose of adjournment. Selectman Chizy seconds the motion. All in Favor, Motion passes 5-0

6.19.2018

John L. Hebert, Chairman
David Hall, Vice Chair
Wendy M. Mead, Clerk
Jesse Limanek
Michael Kenney

James A. Smith, Town Administrator

Sutton Town Hall
4 Uxbridge Road
Sutton, MA 01590
Telephone (508)865-8727
Fax :(508)865-8721

Town Of Sutton
Board of Selectmen
Meeting Minutes

Minutes Accepted and filed with the Town Clerk on 7/10/2018 by a vote of 4-0-1
(Selectman Kenney abstains)

7:00p.m. – June 19, 2018
Sutton Town Hall, Selectmen's Meeting Room

Members in Attendance:
Chairman John L. Hebert, Vice Chair David Hall, Clerk Wendy Mead, Selectman Jesse Limanek (Selectman Kenney absent)
Town Administrator James Smith & Deb Jacques, secretary

Chairman Hebert calls the meeting to order at 7:00pm followed by the Pledge of Allegiance
Public Forum: N/A

Selectman Limanek motions to accept as presented the June 5, 2018 meeting minutes, Selectman Mead 2nds passes 4-0
Selectman Limanek motions to accept as presented Executive Session Minutes from the June 5, 2018 Selectmen's meeting, Selectman Mead seconds passes 4-0

Public Hearing Pole Hearing Rich Road- Public Hearing notice read by Selectman Mead as advertised in the 6/7/18 Millbury Sutton Chronicle. Present from NGrid is Merrill Harvey. Selectman Mead asks if all easements have been signed, Mr. Harvey replies yes, the builder has signed them all. Hearing no other comments from the board, chairman Hebert asks for public comments, hearing none, Selectman Limanek motions to close the public hearing Vice Chair Hall seconds passes 4-0. Vice Chair Hall motions to approve pole hearing #26105955 from NGrid and Verizon New England as advertised in the June 7, 2018 Millbury Sutton Chronicle Selectman Mead seconds passes 4-0.

Summer Programs at the Library: present is Lisa Kane, Chairman of the Library Trustees and Library Director Betsy Perry. Lisa Kane states the Summer Reading program is the most important program as it keeps kids' reading throughout the summer. Last year there were close to 700 participants. This summer there are several scheduled concerts on the common as well as story tellers and a juggler. June 26th is the kick off date. Also beginning is the Home Bound delivery program. There are 6 volunteers that have been coryied and will display a magnet on their car doors to show that are with this program. Vice Chair Hall asks how they get the word out for all the programs, they do have flyers distributed throughout the town as well as local papers covering the activities. Selectman Limanek is excited to see the Home Bound program begin. Selectman Mead agrees the Home Bound delivery is a great program that she is excited to see begin. Wendy does ask if there could be transportation provided to bring seniors to the library. TA Smith replies there is a car and driver at the Sr. Center that seniors can schedule a ride. Chairman Hebert thanks them for coming in and updating the board and agrees the common is a great place for the activities.

Presentation by WPI for Sewer Project: present is Professor Paul Mathisen, Graduate Student Adam Weiss of WPI and Sewer Superintendent Don Obuchowski. TA Smith says this is review a plan to bring sewer from the Villas to the center of town. Eventually to include the School which currently costs $150,000. a year for the Waste water treatment center. If this goes forward we would take Adams work and work with an engineer to obtain stamped plans. Adam Weiss gives a power point presentation (attached to final minutes) which he has been work on since January 2018. In his presentation he discusses sewer coming up Boston Road to the center which would allow the Town Hall which has a failing septic to tie in as well as residents along the sewer line. Due to the hills we would have to include a gravity sewer, a pump station and a force main to transport the wastewater to the existing sewer on route 146. An estimated cost to run up to the center would be 1.5 million dollars. If we include the school it would be approx. 3 million dollars. Adam offers his thanks to Prof. Mathisen, TA Smith and Don Obuchowski for giving him the opportunity to design this project. Vice

Chair Hall asks what resources were accessed for this. Adam says he obtained information from MA GIS as well as flow estimates from Don Obuchowski. Dave also asks where a pump station would be pt. Adam replies there are two areas, one is town owned property the other is in an area that the town could get an easement on. Selectman Limanek says the presentation was fantastic and asks if there will be geographic wings for future expansion. Adam replies there could be future tie ins to this project. Jesse asks as far as the estimated project cost, would there be enough usage to offset. Adam replies with the school and a potential project on Boston Road there would be a significant number of users. Adam goes on to say the soils around the town are on the low spectrum for septic systems. Selectman Mead thanks all present as well as TA Smith for facilitating this project and looks forward to seeing this project move forward. Chairman Hebert says this would be good for the town hall as we have to pump frequently. John thanks Don for always putting his whole heart into everything he does. TA Smith will continue to keep the BOS up to date on this potential project.

Amendment for lease agreement for Town Farm Road: TA Smith states Wireless Edge is requesting an amendment (#5) for the cell tower located at 154 Town Farm Road. They would like to increase the monopole by 10 feet to 160 feet. This is to accommodate AT & T to come in to town. Vice Chair Hall states the 10 foot addition will be imperceptible. Having a second carrier will be great for the residents plus a little added revenue. Selectman Limanek asks if the extension will exceed the height recently changed in ZBA. TA Smith replies no it was increased to 195' for another business in town, this will be at 160'. Jesse also asks if additional carriers wish to come in will the monopole have to be extended, TA Smith says there are spots for additional carriers, AT & & requested the extension. Selectman Mead says this is a win win win for the town and everyone in it, Wendy agrees that we really won't notice a 10 foot extension. Selectman Limanek motions to approve and sign Amendment #5 for the lease agreement for a monopole extension at 154 Town Farm Road with Wireless Edge, Vice Chair Hall seconds passes 4-0

Approval of 3 year Police Union Contract: TA smith states this was discussed during Executive Session previously. This contract will run from July 1, 2018-June 30, 2021. There is a 2.5% increase for each year as well as a $1,000. Increase in stipends. We will not consider bring back the Quinn for newer hires so this increase will encourage the officers to further their education. The increase will be rolled in to the weekly payroll which will reflect in their salary as well as pension. All agree this is a positive benefit. Vice Chair Hall appreciates the Union working with the Town. Each year the increase in health insurance makes it difficult. Selectman Limanek says insurance premiums are an ongoing problem with plan design changes constantly changing. Under MGL, the TA has the authority to make needed changes but it is always done in a collaborative effort. Regarding the increase in educational benefits, that would mean better trained, better educated officers. Selectman Mead was not here for the Exec. Session but does know the insurance is always a tremendous burden. Wendy applauds both sides for what looks like a fair and equitable contract, she is also happy with the educational incentives. Chairman Hebert thanks Jim for all his work and effort in this contract and boosting the moral of the employees. Selectman Limanek motions to approve as presented the 3 year contract agreement between the Town of Sutton and The Sutton Police Union from July 1, 2018 – June 30, 2021, selectman Mead seconds passes 4-0

TA Update:

- Boiler Replacement at Elem School going out to bid June 20th. $140,000. Is in the capital plan and we also have an application in with Green communities. Bids are due in July 19th.
- The Municipal Vulnerability Preparedness Grant- Sutton received $15000. To complete a community resiliency planning process for vulnerability and strengths of our community as the climate changes. Thanks to Doreen Defazio and Lee Dillard Adams.
- Communication Tower behind the Town Hall was increased over the weekend by 20 feet. This will help with public safety communications.
- Town Hall annual cookout is Tuesday June 26 11:30-12:30. TA Smith is requesting to close town hall
- BOS goals & Objectives meeting- usually takes place within month of July, how is July 31st?
- Army Band Concert June 30th: special thanks to Selectman Limanek for arranging this.

Announcements/Round Table:

- Chairman Hebert is happy to say the solar powered stop signs are up at the intersection by the new police station Special thankyou to Tom Donnelly with MA DOT for work on the M Route. John reads the aquatic treatment schedule for Singletary Lake. Treatment will be June 21st, there will be no boating or swimming that day.
- Selectman Limanek reads the needs for the Mike Chizy Food Pantry. Jesse also reads an email sent to him by Andrew DeWolfe (who could not be at tonight's meeting) regarding the possibility of having a food truck go to Marion's Camp.

Vice Chair Hall motions to adjourn Selectman Limanek seconds passes 4-0 meeting adjourned 8:30pm

4.16.19

John L. Hebert, Chairman
David Hall, Vice Chair
Wendy M. Mead, Clerk
Jesse Limanek
Jonathan Anderson

James A. Smith, Town Manager

Sutton Town Hall
4 Uxbridge Road
Sutton, MA 01590
Telephone (508)865-8727
Fax :(508)865-8721

Town of Sutton
Board of Selectmen
Meeting Minutes

Minutes Accepted and filed with the Town Clerk on 5/7/2019 by a vote of 5-0

7:00 p.m. – April 16, 2019
Sutton Town Hall, Meeting Room 1A

Members in Attendance:
Chairman John L. Hebert, Vice Chair David Hall, Clerk Wendy Mead, Selectmen Jesse Limanek, & Jonathan Anderson
Town Manager James Smith & Deb Jacques, secretary

Pledge of Allegiance

Public Forum: N/A

Vice Chair Hall motions to accept as presented, April 2, 2019 meeting minutes, Selectman Limanek seconds passes 5-0
Arbor Day Proclamation as read by Selectman Mead

Onsite Engineering Sewer presentation: Present from Onsite is Raymond Willis, PM and David Formato, Project Officer. A Power Point presentation is given (attached to final minutes). Mr. Formato states Onsite was chosen by the Sewer Commissioners through an RFP process. Onsite came in to town, assessed the route for sewer, inventoried the properties, held two work sessions with town staff as well as attended 2 Sewer Public Hearings. The design was then prepared based on the Sewer Commissioners direction. The design consists of a gravity collection along Uxbridge Rd, along Cole and Singletary Ave. and Boston Road from 298 to the intersection of Singletary. There would be a sewage pump station at town owned property on 7 Singletary Ave with a force main to the Boston Rd and Club House way intersection. The cost of this project is $3,153,150. The Onsite Engineers were asked if this project includes all residents along the route to tie in, they reply no only the Town Hall is factored into this for the flow. Vice Chair Hall says so with this design the Town Hall is the primary customer, they reply yes, if they want to run a second pipe that would handle the residents at an added cost to the project. Vice Chair Hall says he is concerned not knowing if a second pipe is needed or not. Selectman Limanek states this is a Town Meeting Warrant article; we need additional information and cost associated with that to be able to present in a few weeks. Onsite Engineer David Formato states the cost to add a second pipe would increase the project to about $3.65 million. Onsite was charged with focusing on the center of town so other flows were not calculated. Selectman Anderson is concerned asking for money when we see what is included in this plan. Selectman Mead says it is the complete unknown, what would the cost be for a second pipe. Don Obuchowski, Sewer Commissioner states this is an environmental issue, this project will give the school options in a few years. Town Manager Smith says it was his expectation that all could tie in along the route, he was not aware a second pipe would be needed. Jim says there are a number of unanswered questions he doesn't see us moving forward on this for Town Meeting, we should wait and get the exact cost. Chairman Hebert suggests postponing the warrant article until the fall Town Meeting to get the correct answers and cost associated with the project. Robert Nunnemacher, 24 Singletary Ave states there is no question for the need of sewer but we should not rush to judgement, we should delay the article until the fall meeting.

Request to increase Capital stabilization fund by 2.5%: Town Manage Smith requests to increase the FY19 override figure of $623,241 to $638,822 for FY20. Jim states the goal of this fund is to continue to grow so we can afford larger purchases without a debt override needed. The BOS all fully support this fund. Selectman Anderson motions to authorize the Assessor's Office to increase the Capital Stabilization Fund by an additional 2.5% increase to the FY2019 override figure of $623,241. to $638,822. Selectman Limanek 2nds passes 5-0 better. She whole heartedly supports this policy. Selectman Anderson says there are a lot of challenges that go along with maintaining the roads, great that Matt is looking for creative ways to help. Jonathan would like to see sidewalks from Eightlots road up to where the sidewalk begins on Boston Road. Selectman Bannon is all in favor of this policy. Chairman Hall questions we need to have this policy in order to access these funds, Jim replies yes. Vice Chair Mead motions to accept the Complete Streets Policy for the Town of Sutton as presented, Selectman Limanek seconds passes 5-0

Town Managers Update:

- Central Tpk bids were opened on Friday July 26th. The low bidder was Lynch out of Millbury. The winning bid was $630,327.80. This was the bid price with alternates 1 & 2.
- Chapter 90 road work: 5 roads are to have road repairs, they are Hutchinson, McGuire, Hartness, Providence and Lackey Dam.
- Library Sidewalk bids were opened on Thursday, July 25th Mattero Construction was the winning bidder at $38,800.00 this job will begin in the next month or so.
- Sewer Extension to the schools- Onsite Engineering will be present at the August 20th meeting along with Sewer Superintendent Don Obuchowski and Chris McClure from McClure Engineering. The revised project will be one project rather than phase 1 & 2. It will come from the Villas up through the center to the school complex. The current Waste water treatment plant is nearing its end of life; this could be a million-dollar cost should we need to replace.
- MRA donations two donations were presented, one to the food pantry for $600.00 and the second to the town for $960.00
- Fall Town Meeting schedule- The last day to submit articles is Thursday, August 22. The draft warrant will be presented to the BOS on Sept. 17th, the BOS will sign on Oct. 1st.
- Veterans Monument cleaning: Wilfred Trembley is the owner of a monument cleaning service and volunteered his services to clean monuments in town. We offer thanks to Mr. Tremblay for all his efforts.

Selectmen's Roundtable

Selectman Limanek- attended Waters farm tractor pull- it is held the last weekend of each month during the summer they hold tractor pulls as well as house tours. Jesse delivered food to the Mike Chizy Food Pantry from the monthly donations made to St. Marks Church (Jesse reads the additional items needed). Monday, August 5th Jesse sat on an awards board for a Sutton resident that will be attaining rank of Eagle Scout- John Warren. Also on Jesses schedule is on Wed. August 7th he will attend a Board & Committee seminar given by the Attorney General's office. On Thursday, rain or shine there will be a concert put on by Forever FAB on the common.

Vice Chair Mead thanks Jesse and his family for Christmas in July at the Sutton Sr. Center. Jesses daughter did an incredible job.

Chairman Hall also attended the Christmas in July, Hannah Limanek did a great job.

8:10pm

Selectman Limanek motions to adjourn, Vice Chair Mead seconds passes 5-0

8.20.19

David Hall, Chairman
Wendy M. Mead, Vice Chair
Jesse Limanek, Clerk
Jonathan Anderson
Jeffrey Bannon

James A. Smith, Town Manager

Sutton Town Hall
4 Uxbridge Road
Sutton, MA 01590
Telephone (508)865-8727
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Town of Sutton
Board of Selectmen
Meeting Minutes

Minutes Accepted and filed with the Town Clerk on 9/3/2019 by a vote of 5-0
7:00 p.m. – August 20, 2019
Sutton Town Hall, Meeting Room 1A

Members in Attendance:
Chairman David Hall, Vice-Chair Wendy Mead, Clerk Jesse Limanek & Selectmen Jonathan Anderson & Jeffrey Bannon
Town Manager James Smith & Deb Jacques, secretary

Pledge of Allegiance
Chairman Hall calls for a moment of silence for Daniel DeLima tragically killed last week in Sutton.

Public Forum: John Hebert 23 Singletary Ave- It was a very tragic event last Wednesday, Mr. Hebert commends the dispatchers, Police, Fire, the reconstruction team with CEMLEC. Over 100 items were tagged as evidence which helped to paint a very clear picture. This type of incident impacts a small town like Sutton, they did not stop until they had an arrest (72 hours). Thanks goes out to MA. & Conn. State police, the DA's office and the Towns of Millbury and Webster. Sutton is more than a dot in the Blackstone Valley, we are upper cut. The Sutton Police Dept. did a stand up job.

Selectman Limanek motions to accept as presented, August 6, 2019 meeting minutes, Selectman Anderson seconds passes 5-0

Update: Sewer Project-Onsite Engineering, Sewer Superintendent Don Obuchowski, Chris McClure and School Facility manager Roger Raymond and the 3 Sewer Commissioners- Town Manager Smith begins saying they went back to the drawing board after the meeting with the BOS in April. Jim states Ray Willis with Onsite Engineering is here to give an updated presentation from the April presentation. Jim says the goal of the project is to bring sewer to the school complex so rather than a 2 phase project they will propose a 1 phase project from the Villas to the school complex. The estimated cost for this project is 4.6 million, Town Manager Smith would go for 4.8 million to have contingency money in place. The average cost per year for resident's taxes for 20 years would be $84.00. The current sewer treatment plant at the school is nearing end of life, we are looking at over 1 million to repair. Chris McClure with McClure Engineering supplied an analysis of the water supply, he recommends digging a well to be used for flushing the toilets (non potable water supply). Ray Willis goes over the changes to the previous proposal. The pump station was relocated from Singletary ave to Boston Road, it will be gravity fed for Uxbridge and Boston Road, low pressure fed on Singletary and Cole Ave. and all parcels along the route will be offered tie in. Don Obuchowski states there will be 110 users after completion, available to hook in. Selectman Limanek is happy to see they expanded the project to include the school. Jesse asks Roger Raymond when the Sewer Treatment facility was put in, Roger replies 1999-2000 with a life span of 20-25 years. Jesse asks Town Manager Smith, the cost of a new wastewater treatment system is 1+ million dollars, Jim replies that is correct. Jesse questions, in addition to the $130,000. yearly maintenance fee what are the added costs, Roger replies this year we have put an additional $48,000. in to it for repairs. Jesse sums it up by saying a new system is 1million +, 20 years of maintenance fees of $130,000-140,000. per year then in 20 years it will need to be replaced again. The estimate of this project that will service the school in perpetuity makes sense. Vice Chair Mead asks for more information regarding the non-potable water supply. Selectman Anderson feels this presentation is a much better path to take. Jonathan asks Don how many of the residents able to tie in will, Don has not yet made up flyers or gone door to door. Jonathan says it is much cheaper to tie into sewer then to replace or repair a septic system. Selectman Bannon says we have a million-dollar problem at the school, if this project is approved it would free up $130,000. Yearly for the school budget. Jeff asked Don if it would cost the town more to pump sewer into Millbury, Don replies no this would not increase the flows that much through the IMA agreement. Jeff questioned Chris McClure on something in his letter, Chris states what he meant was to not use treated water for drinking to flush a toilet. Chairman Hall asks if we need all to tie in to make the flow work, Don replies no. Dave also asks why are we including Singletary and Cole Ave. Don replies there are several failed systems as it is all clay, there is no seepage. With the state criteria the systems in this area would not meet state standards. Don says this is a win win situation. The BOS thank all here tonight for the presentation.

Cemetery restoration presentation: present is Brian Stevenson (Historical) Jim Renaud (Cemetery Commissioner) and Ross Weaver: Town Manager Smith states there will be a workshop on Aug. 25th 9am – 5pm at the center cemetery with professional gravestone conservators Betty and Carlo Mencucci, all are welcome to attend. Anticipated costs to start is $1500.00 for this project and will be paid for out of the cemetery perpetual account. Jim Renaud as one of the Cemetery Commissioners said that he and Jim Johnson agree this type of project is what the perpetual fund should be used on. Brian Stevenson mentions some of the landmarks that were renovated in town, the Eight lots school house & the General Rufus Putnam museum. Brian says every year the third grade class walks up from the school, it is important for the youth to remember where they are from. Brain and Ross attended a workshop held by the Mencucci's, they also met with them here at the cemetery and discussed the repair and resetting of stones. The Mencucci's do not charge but did ask for a donation be made to the Historical Society in their community. The whole cemetery needs to be assessed, this is Sutton history. Ross Weaver says the last known burial at the cemetery was in 1938, no definitive records have been found for this site but there is believed to be between 350-400 burial sites. Hopefully going forward, we can do other cemeteries. The Dudley Gendron has donated some money to use towards this project. They are hoping the community has a lot of individuals that would like to volunteer their time to assist, he is anticipating maybe a 2-year project. Ross also mentioned the possibility of having ground penetrating radar come in to the cemetery to see exactly what we have. The cost for this would be around $37,000. The newer cemeteries do not need this type of repair. Selectman Limanek says fantastic, Jesse has been following discussion on this project for a few months he fully endorses it. Vice Chair Mead says wonderful, this is long overdue, she agrees with using the perpetual care funds- Wendy thanks them for their efforts. Selectman Anderson says this is a really important project, it honors our ancestors, Jonathan fully endorses this but does stress volunteers need oversight so as not to damage stones. Selectman Bannon says thank you, this is a daunting project. Chairman Hall says for anyone that has not yet seen the Eight lots school house you really need to go in. It was a tremendous project, one of Suttons treasures.

Town Managers Update:

- Mattero Construction- the sidewalks at the ELC were completed, they did install drainage to alleviate the heaving that had taken place. Mattero will now focus on the Library sidewalk repair.
- New Treasurer/Collector- Lisa Lynch is the new Treasurer/Collector she is coming from Sherborn and has 17 years' experience as an assistant collector and 4 years as an assistant treasurer. Her start date is Sept. 4th.
- New Sewer/Accounting clerk- Darlene Thebearge has been hired and will start on August 26th.
- Fresenius Kidney care dialysis center- open house scheduled for Sept. 10 from 5:3 pm – 7:30pm the BOS are invited
- Affordable housing plan presentation to take place on August 29th @ 6:30 in the Wally Johnson meeting room. This will be given by Planning Director Jen Hager
- Eastern Equine Encephalitis in Grafton: We were made aware last Friday by the state dept. of Public Health that there is a second case of Human EEE confirmed. This case is in So. Grafton. We have information posted on the Town web site/cable channels and may also be issuing a code red call. Currently we are at high level, Grafton is one step higher at critical level.

Selectmen's Roundtable

Selectman Limanek BVT back in session – school buses are on the road, be mindful and slow down. Wed. 8/21 Jesse will be sitting in on another Eagle Scout Review Board. Two weeks ago Jesse attended a Waters Farm meeting, Farm days will be held in October. Thank you to the Sutton Police Dept and their professionalism in the recent event. Thank you also to the Sutton Fire Dept for their professionalism and dedication. Jesse reads the list of needed items for the food pantry.

Vice Chair Mead offers her thank you to the Sutton Police for their round the clock work attending to last week's issue and having a resolution.

Selectman Anderson offers his thanks to the Sutton Police for their diligence and quick turnaround. He says he appreciates their efforts.

Selectman Bannon offers his thanks and appreciation for the hard work, they worked tirelessly with a quick resolution.

Chairman Hall says the cooperation between all depts. involved along with the DA's office was tremendous work, the technology used to assist was incredible. Dave announces he will not be at the Sept 17th meeting

9:20 PM Selectman Limanek motions to adjourn, Vice Chair Mead seconds passes 5-0 there are any issues with the conservative Snow and Ice budget not being spent- Jim replies no. Chairperson Hall says just because a road is at the top of the list for work, other factors may push it back. Roads have life spans also.

3 Year reappointment Finance Director/Town Accountant: present is Tim Harrison, Town Manager Smith requests this appointment, Jim does this separate from the other appointments as Tim is important to the operations and works closely with the Treasurer/Collectors office, the Assessor's office involving all financials for the town. Tim Harrison addresses the Board, he thanks the Board and Jim Smith for their continued faith in his financial abilities. He is the 1st Finance Director for the Town. Tim goes on to say he enjoys Tuesday and Friday discussions he has with Jim; they make a good team. The select Board all offers kind words to Tim and thank Tim and Jim for the conservative budgeting over the years as well as the 5 year forecast that is reviewed each year with the budget presentation. All of Tim's work show in the clean audits as well as the great bond rating. Select person Limanek motions to approve the 3-year reappointment of Tim Harrison as the Finance Director/Town Accountant for the Town of Sutton effective July 1, 2020 through June 30, 2023 Select person Anderson seconds passes 4-0

Updated Stabilization Fund Policy: Town Manager Smith reviews with the Select Board that the changes made are to clarify how this fund can be used after the 8% goal is met as well requesting up to $50,000. at Fall Town Meetings and the credit rating change from AA Stable to AA +. After brief discussion, Select person Anderson motions to approve the updated Stabilization Fund Policy, Select person Bannon seconds passes 4-0

Town Manager update:

- Sewer Project: the sewer project is tentatively an agenda item at the March 24th meeting. We plan on having On-site and McClure there. The whole team will also be at the Finance Committee public hearing.
- Special Education Stabilization Fund Policy- This will be presented in the near future to review and revise the policy.
- Green Communities Grant: we will not be able to apply for a Green Communities grant this year due to an oversight with a new form. We will go forward for the next year when time. We have been able to reduce our energy consumption by 35% by funding various projects through the Green Community.
- Coronavirus Update- conference calls have been going on with MA Dept of Public Health. Cheryl Rawinski is the lead for the town. Advisories for residents are on social media. The Board will be kept updated on this.
- Early Voting/Presidential primary- Feb 24th – Feb 28th was early voting- 336 voted early.
- BeeHive building- currently redirecting water from well to the center store/DEP to test then the current well decommissioned and the building demolished.
- Brush Fire between the exit 6 & 7- 30 acres involved. Thank you to the many towns that came in for Mutual aid

Announcements/Roundtable:

Select person Limanek thanks the Sutton Lions Club for the fish fry held every Friday during Lent at St Marks, thankyou also to St Marks and the parishioners for the recent Food donations to the Mike Chizy Food Pantry. March is March for Meals, Jesse will report back next meeting. Needs for the Sutton Food Pantry are read.

Select person Bannon reminds residents Finance Committee meetings begin to discuss next years budget, these meetings offer a lot of information.

8:58 pm Select person Limanek motions to adjourn the meeting, Select person Anderson seconds passes 4-0

12.15.2007

ARTICLE 4 **SPONSOR: Board of Selectmen**
AUTHORITY: Elected Body

To see if the Town will vote to borrow or transfer from available funds a sum of money and appropriate the same to the Sewer Enterprise Fund for the purpose of reimbursing the Fund for monies spent to update the Comprehensive Wastewater Management Plan (CWMP), or act or do anything in relation thereto.

ARTICLE 5 **SPONSOR: Planning Board**
AUTHORITY: Multiple Member Body

To see if the Town will vote to amend Section III.B.3. Table #2 Footnote #12 of the Zoning Bylaw by adding the following (additions are in bold):

12. Any principal use in a non residential district shall be at least one hundred (100) feet from any residential zoning district boundary as indicated on the Sutton Zoning Map. This buffer shall remain in its undisturbed state or may be upgraded. The area of said buffer may be counted toward the open space requirements on a lot. **For the purposes of applying this requirement, if 60% or more of a lot is zoned Business Highway (B-2) or Industrial (I), the entire lot shall be considered as located within B-2 or I.**

ARTICLE 6 **SPONSOR: Planning Board**
AUTHORITY: Multiple Member Body

To see if the Town will vote to amend Section IV.S.f. of the Zoning Bylaw as follows (additions are in bold and deletions are struckthrough):

f. Any additions containing the apartment, in whole or in part, shall not increase the square footage of the original structure by more than ~~700~~ **1,200** square feet, nor shall space in an existing structure converted to an accessory apartment exceed ~~700~~**1,200** square feet. **The 1,200 square feet is the total floor area of the accessory apartment with no area excluded other than unfinished basement space.**

ARTICLE 7 **SPONSOR: Planning Board**
AUTHORITY: Multiple Member Body

To see if the Town will vote to amend the Zoning Bylaw Section III.B.3. Table 3 to increase the maximum building height in the Industrial (I) and Business Highway (B-2) Districts from 30 to 35'.

ARTICLE 8 **SPONSOR: Planning Board**
AUTHORITY: Multiple Member Body

To see if the Town will vote to amend the Zoning Bylaw by eliminating the definition of Parking Space in Section I. B. – Definitions.

10.15.18

Stabilization Fund. The Town's policy for the Special Education Tuition Stabilization Fund provides for a maximum of $350,000 and this transfer will accomplish that full funding.

ARTICLE 6 **AUTHORITY: Elected Board**
SPONSOR: Board of Selectmen

To see if the Town will vote to authorize the Board of Selectmen to enter into a lease or other agreement with a proposer for the sale and removal of gravel and/or other materials on and from the Town-owned property located off Providence Road, known as the Town Gravel Pit, which property contains 8.91 acres, more or less, and is a portion of the premises described in a deed recorded with the Worcester South Registry of Deeds in Book 5016, Page 115, and any easements appurtenant thereto, on such terms and conditions and for such consideration as the Board deems appropriate, and further to raise and appropriate, transfer from available funds or borrow the sum of $15,000.00 for purposes of retaining an appraiser to value said property, or act or do anything in relation thereto.

The Finance and Warrant Advisory Committee voted 7-0 to recommend passage of this Article which permits the Board of Selectmen to negotiate the terms of a lease or other agreement for the sale and removal of material from the Town Gravel Pit resulting in increased revenues for the Town. In connection with this, the Article also authorizes the Board to retain an appraiser to value the property.

ARTICLE 7 **AUTHORITY: Elected Board**
SPONSOR: Board of Selectmen

To see if the Town will vote to authorize the Board of Selectmen to acquire by purchase, gift, and/or eminent domain, for general municipal purposes, including, without limitation, for utility purposes, an easement in, on, under, and over a parcel of land located at 16 Reservoir Avenue, which land and easement are approximately shown on the sketch plan on file with the Town Clerk's Office and are portions of the property described in a deed recorded with the Worcester South District Registry of Deeds in Book 26931, Page 199, and to raise and appropriate, transfer from available funds, and/or borrow a sum of money for the purpose of acquiring said easement and costs related thereto, or act or do anything in relation thereto.

The Finance and Warrant Advisory Committee voted 7-0 to recommend the passage of this Article. Passage of the Article will permit the Board of Selectmen to negotiate for an easement at 16 Reservoir Avenue to provide fiber and electrical service to the communications tower on the Manchaug water tower.

ARTICLE 8 **AUTHORITY: Multi Member Board**
SPONSOR: Sewer Commissioners

To see if the Town will vote to raise and appropriate or transfer from available funds, or borrow a sum of money for designer services and owners' project manager services relative to the construction of a sewer extension project from the Pleasant Valley Villas at Boston Road to the center of Town, including all incidental or related costs, or act or do anything in relation thereto.

The Finance and Warrant Advisory Committee voted 7-0 to recommend the passage of this Article. This Article, which is to be funded by sewer connection fees, is the initial step in the design and construction expense estimate for a potential sewer extension project from the Pleasant Valley Villas to the center of Town.

ARTICLE 9 **AUTHORITY: Elected Board**
SPONSOR: Board of Selectmen

To see if the Town will vote to amend the Zoning Bylaw and the Zoning Map as follows, or act or do anything in relation thereto.

1) Delete Section V.F. Solar Photovoltaic Overlay District in its entirety;
2) Delete the Solar Photovoltaic Overlay District from the Zoning Map; and
3) Amend Zoning Bylaw Section III.A.4. Table 1 – Table of Use Regulations by deleting Footnote 1 and all reference thereto from the table.

The Finance and Warrant Advisory Committee voted 7-0 to recommend the passage of this Article. The Committee agrees with the Planning Board recommendation to eliminate the current Solar Photovoltaic Overlay District. The Committee concurs with the recommendation of the Planning Board relative to this Article.

Planning Board voted to recommend that Town Meeting approve this article. 5-0-0. Commentary: The Board has recommended this article as a matter of housekeeping. The current Solar Photovoltaic Overlay District contains one parcel which has been found to be unable to house a large ground mounted system and therefore this area should be eliminated. Removing this parcel effectively eliminates this particular Overlay District.

ARTICLE 10 **AUTHORITY: Multi Member Board**
SPONSOR: Planning Board

To see if the Town will vote to amend the Zoning Bylaw Section VI.O. Large Scale Solar Photovoltaic by adding the following paragraph to the end of Section VI.O.3.3., AND to amend the Zoning Bylaw Section III.A.4. Table 1 – Table of Use Regulations by inserting the underlined reference number to Section H.4. and the underlined text to the Footnotes following the Table of Use Regulations as follows; or act or do anything in relation thereto.

Add to the end of section VI.O.3.3:

LGSPI within the R-1, R-2, and V Districts, if otherwise permitted, shall also require a Special Permit from the Planning Board for use in accordance with the provisions of Section VII.A.2.

AND; Changes to Table of Use Regulations:

Warrant - 10.21.19

ARTICLE 6

AUTHORITY: Elected Board
SPONSOR: Board of Selectmen

To see if the Town will vote to raise and appropriate, transfer from available funds or borrow a sum of money for engineering services for the Woodbury Pond Dam, 99 Boston Rd., Map 11 Parcel 35 to evaluate alternatives for maintenance and/or repair, including all incidental or related costs, or act or do anything in relation thereto.

The Finance and Warrant Advisory Committee voted 6-0 to recommend passage of this article, this will pay for the engineering and State required permits.

ARTICLE 7

AUTHORITY: Multi Member Board
SPONSOR: Sewer Commissioners

To see if the Town will vote to raise and appropriate, transfer from available funds or borrow a sum of money for designer services and owners' project manager services relative to the construction of a sewer extension project from the Pleasant Valley Villas at Boston Road to the School complex at Putnam Hill Road., including all incidental or related costs, or act or do anything in relation thereto.

The Finance and Warrant Advisory Committee voted 6-0 to recommend passage of this article, with the funds to research the sewer extension project coming out of the current connection fees.

ARTICLE 8

AUTHORITY: Multi Member Board
SPONSOR: Conservation Commission

To see if the Town will vote to amend the Sutton General Bylaws, Bylaw #12. Wetlands Protection, by deleting Section 12.6 – Fees in its entirety and replacing it with the following or act to do anything in relation thereto.

Section 12-6. Fees
At the time of an application, the applicant shall pay the following fees, as listed below. Town, County, State and Federal projects are exempt from the bylaw filing fee. The Commission may waive, decrease, or allow phased payment of the filing fee for non-exempt persons, parties, or entities at its discretion. The Commission may not waive filing fees required under G.L. c. 131, § 40, the Wetlands Protection Act ("WPA") as described below.

All required fees must be received at the time of application and before the initiation of consulting services in the case of supplemental consulting services required by the Commission during project review. Failure by the applicant to pay the required fees at the time of application or within ten (10) business days of a supplemental request shall be cause for the Commission to declare the application administratively incomplete and deny the permit without prejudice, unless an appeal has been filed in accordance with 310 CMR 10.03(7).

Legal Notice Fee
In accordance with the Conservation Commission Rules & Regulations, every applicant shall pay the cost of the legal hearing notice in a separate check payable to the newspaper in which the legal ad is published. It is the applicant's responsibility to pay the Legal Notice Fee in accordance with the

Town of Sutton
Sewer Commission Meeting

2/12/2020

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Donald Obuchowski

The meeting was opened at 2:00 P.M. by Neal Crites. All members present.
The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from January 8, 2020. Larry made a motion. Neal 2nd all in favor approved 3-0. No Public Forum.

The next order of business on Agenda: (1) Abatements. Customers billed with incorrect readings. Duplicate billing. All reviewed and approved.

The next order of business: review of Budget- Annual Report – no changes.

Beta I&I Study completed and submitted to DEP. Camera work to be completed within 5-7 years. To check integrity of our system though out Sutton.

We have received invoice from Millbury for Fiscal 2019. Adjustments have been made and credited to 2019 invoice. Commissioners will discuss Millbury's billing after receiving second quarter invoice of this Fiscal 2020.

Well application with DEP approved by state and supported by BOH. For the Sewer Extension study.

No Correspondence.
Old Business: Blackstone St. repairs being handled by Town Manager.
New Business: Regarding Wedgewood all parties in agreement. Moving forward in the spring 2020.

Discussion on proposed Car Wash at Galaxy Pass would require a water meter to be installed and monitored. This is based upon drilling a well for usage. Neal motioned to support well meter. Larry second. All in favor 3-0.

Next Sewer Commissioners meeting March 11, 2020.

Neal motion to adjourn. Carl agreed. Meeting ended at 2:38 p.m.

Neal Crites	Larry Wiersma	Carl Licopoli
[signature]	[signature]	Carl A. Licopoli

Town of Sutton
Sewer Commission Meeting
11/13/2019

Members Present: Neal Crites
Carl Licopoli
Donald Obuchowski

The meeting was opened at 2:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from September 10, 2019. Neal made a motion. Motion passed 2-0.

The next order of business on Agenda: (1) Abatement. Customer was double billed. Neal signed, Carl Signed, approved.

The next order of business: A letter to the Board of Selectman's stating on November 1st Police were called from JG Foods sewage bubbly toward Black Stone River. Don arrived on the scene and pumps were shut off within 20-25 minutes. After numerous attempts of seeking outside contractors the Town of Millbury was called in. They responded with four Highway guys and a representative from the Millbury Sewer Department. Mass DOT representative was called by Don to respond to the scene approx. 3:30p.m.-7:00 a.m. A hole was uncovered on the discharge pipe. Took birm out. Paving not done yet. DOT to address issue.

Special thanks to Town of Millbury. The assistance was outstanding. Neal Crites recommends to send a letter of appreciation.

Cost coming out of maintenance program-separate account. Road repair looking to be reimbursed. Estimated cost to be determined.

Update on I and I completed last month. Waiting for report from BETA Engineering.

Next on Sewer Project: pamphlet was made to inform residents, taxpayers regarding census. Approx 110 users could tie in. Connection fee of $5,000 would be considered.
Main goal get Sutton School and Town Hall hooked up to sewer. Town Hall's failed system and Sutton Schools costly upgrade.

Moving forward a new car purchased for Sewer Department.
No new correspondence.
Old Business: Wedgewood Farm Armsby Rd zoning approved. Project moving forward.

Galaxy Pass Car Wash zoning proposed recycled water to be used no impact to the Sewer System.

The next order of business: New Business. No new business

- The next meeting will be on January 8, 2020.

Neal motioned to adjourn. Carl seconded the motion then Don. Larry Wiersma absent.
The meeting adjourned at 2:40P.M.

Neal Crites	Carl Licopoli	Larry Wiersma
[signature]	Carl Licopoli	[signature]

Town of Sutton
Sewer Commission Meeting

July 9, 2019

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 2:00 P. M. by Neal Crites

The first order of business was the approval of minutes from the Work Shop meeting from March 20, 2019. Larry made a motion. Motion passed 3-0.

The next order of business was Onsite Engineering update from David Ross and Ray Willis. The feedback from the selectman's meeting was to configure any resident and future growth to be able to connect into the system. Onsite has always install latera(stubs) for future growth. Any changes to the specification of the sewer manhole and pipe sizes should increase the cost of Phase 1. Phase 2, will benefit from the location of the sewer manhole at the center of Boston Road and Singletary Avenue...

A discussion on Phase 2. Sutton School Sewer connection would save the school budget a considerable amount of money as they currently maintain a system that is antiquated and costly to maintain. It was agreed to set up another meeting with Onsite Engineering with the commissioners to prepare a presentation for the Board of Selectman for both Phase1 and phase 2.
There was a brief discussion on incentives to be offered on connecting to the sewer system. This will be studied at a future meeting.

The next order of Business. Millbury's quarterly invoice for Jan. 1st thru March 31st. Don has discussed his finding with Millbury. Don agreed to pay the invoice and expecting to see an adjustment on the next quarters invoice.

Commissioners ask Don if he has gotten his new vehicle. Not yet.

Wedgewood cancelled our meeting to attend the BOS meeting this evening. Subject was their request to the Town to take over the new pump station at their location as well as the pump station owned by Pleasant Valley Villas. Don plans to attend this meeting to explain some of the benefits on serves income as well as connection fees from the planned 93 units.

Old Business: Update on Video Camera by Beta Engineering. Don is meeting with them at the location Wednesday, July 10, 2019

Larry present a new MassDep CMR bulletin on Outdoor Grease Traps. The permit will be handled by the Building Department and inspected by the Plumbing Inspector. Since the waste will affect our sewer connections at development sites. Eg. Galaxy Mall, Sutton Square, Industrial Parks, it was recommended this be placed in the Sewer Commission Book.

Annual re-organization: Due to the many projects in town, Larry made the motion to keep everything the same Motion passed 3-0

We took this time to wish Amanda the best in her new positon.

Carl as Clerk will take the minutes at future meetings.

Neal moved to Adjourn, Larry seconded the motion. The meeting adjourned at 10:50 AM.

Neal Crites	Larry Wiersma	Carl Licopoli

Town of Sutton
Sewer Commission Meeting
April 10, 2019

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 2:00 P.M. by Neal Crites.

The first order of business is approval of minutes. The first was from March 13th and the second was from March 20th. Both were approved 3-0.

The next order of business: I & I study:

- One half of the study will be done in the budget (FY19) and the other half will be done on the next budget (FY20)
- GIS mapping and cameraing has to be done by December. This is to find the manholes and the depth of each manhole.
- Neal made a motion to approve the request to take the money out of the current budget to pay for the GIS mapping. Motion passed 3-0.

The next order of business: New Business:

- The next meeting will be the Board of Selectman's meeting on April 16, 2019.
- The next monthly meeting will the May Town Meeting on Monday May 13, 2019.

Carl moved to adjourn. Larry seconded the motion. The meeting adjourned at 2:40P.M.

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Neal Crites	**Larry Wiersma**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
March 20, 2019

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Ray Willis
Donald Obuchowski
Amanda Kral

The meeting was opened at 2:00 P.M. by Neal Crites.

The Sutton Sewer Commissioners had an open discussion with Onsite Engineering's Vice President Ray Willis regarding the sewer expansion to the Center of Sutton.

Mr. Willis went over all 3 options on the opinion of probable construction cost.

Neal made a motion that option 3 is the most feasible and cost effective option and the commissioners would like to recommend this option to the Board of Selectman. Motion passed 3-0.

A brief discussion was made regarding phase 2 and bringing the sewer from the center of town to the Sutton school system. Carl met with Roger Raymond from the Sutton Schools regarding their wells and leach fields.

Donald will be meeting with Beta Engineering tomorrow morning regarding the I & I study. According to Beta they want a location and depth of the existing manholes. Donald will give an update at the next Commissioners meeting.

The next sewer commissioners meeting will be held on April 10, 2019 at 2:00P.M.
Onsite engineering will be meeting with the Board of Selectman on April 16, 2019 at 7:00P.M.

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Neal Crites	**Larry Wiersma**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
March 13, 2019

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 2:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from February 13, 2019. Larry made a motion, Motion passed 3-0.

The next order of business is open forum. Daniel Chase from 80 Dodge Hill Road and Mark Vayo from 76 Dodge Hill Road came to discuss tying into sewer and an easement that goes from Dodge Hill Road to Pine Ridge. Mr. Chase would like to tie into sewer using Mr. Vayo's manhole in his backyard. The Commissioners agreed that as long as parties have agreed and the easement is copied with the registry of deeds they are all in favor with letting Mr. Chase tie into sewer.

The next order of business: Onsite Engineering:

- Onsite gave their presentation on opinion of probable construction cost.
- Onsite will be meeting with Board of Selectman on April 16, 2019.
- The Commissioners would like to meet with them before the Selectman's meeting.

The next order of business: Warrant Articles:

- Neal made a motion to inspect and camera the approximate 2,000 feet of line for the I & I study for $10,000. Motion passed 3-0.
- Neal made a motion to approve the capital approved plan to be sponsored as an article taken from the enterprise fund for a new sewer vehicle. Motion passed 2-1.

The next order of business: New Business.

- The next monthly meeting will be on April 10, 2019 at 2:00P.M.
- Onsite will be meeting with the Board of Selectman on April 16, 2019 at 7:00P.M.

Carl moved to adjourn. Larry seconded the motion. The meeting adjourned at 3:48P.M.

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Neal Crites	**Larry Wiersma**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting

February 13, 2019

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 2:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from January 9, 2019. Larry made a motion, Motion passed 3-0.

The next order of business: Onsite Engineering:

- Onsite finished the test borings.
- There was no rock found.
- The Town Manager would like for them to come before the Board of Selectman.
- The commissioners would like for Onsite to come to a public hearing. The hearing will be at the next monthly commissioners meeting on March 13, 2019 at 7:00P.M.

The next order of business: Annual Report:

- Commissioners discussed 3 changes they would like to make to the annual report.
- Neal made a motion to approve the annual report with the 3 changes discussed. Larry seconded the motion. Motion passed 3-0.

The next order of business: Old Business:

- A town resident and the commissioners had brief discussion on sewer liens and how the process works.

The next order of business: New Business.

- The commissioners would like to make an accurate spreadsheet on all the pump stations in town.
- The next meeting will be on March 13, 2019 at 7:00P.M.

Carl moved to adjourn. Larry seconded the motion. The meeting adjourned at 2:40P.M.

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Neal Crites	**Larry Wiersma**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
January 9, 2019

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 2:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from December 12, 2018. Larry made a motion, Motion passed 3-0.

The next order of business: Onsite Engineering:

- Onsite will be doing the test borings at the end of January.
- The next step is conservation.

The next order of business: Budget:

- The budget has increased by $18,880.00 based on 32 new connections.
- The budget has been submitted to the Town Manager.
- Town Manager was very pleased with the proposed capital plan for the new town vehicle and future PLC upgrade.
- The Capital plans will be coming out of the enterprise fund.
- Neal made a motion to pass the Budget. Motion passed 3-0.

A Sutton Resident required about sewer liens and how they are processed and the impact it has on the budget. There was a brief discussion with the sewer commissioners regarding this topic.

The next order of business: Old Business:

- Carl submitted a spreadsheet of surrounding town's on municipal sewer.

The next order of business: New Business.

- The next meeting will be on February 13, 2019.

Carl moved to adjourn. Larry seconded the motion. The meeting adjourned at 2:45P.M.

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Neal Crites	**Larry Wiersma**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting

September 27, 2018

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 1:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from September 6, 2018. Larry made a motion, Motion passed 3-0.

The next order of business: Extension of Sewer:

- The Sewer Commissioners held a workshop on September 19, 2018 to obtain details on amounts and intentions of the two lowest bidders, Gratz Engineering and Onsite Engineering.
- Neal Crites made a motion to approve the fund amount as $100,000. Motion passed 3-0.
- This expansion is the complete design of connecting the Town Hall to the sewer system and the design of the pump station to go out to bid for construction.
- The Commissioners were very impressed with Onsite Engineering.
- Neal made a motion pending Town Meeting vote that the project will go to Onsite Engineering. Motion passed 3-0.

The next order of business: Correspondence:

- Sewer Demands for RT.2 have been sent out.

The next order of business: Old Business.

- Leland Hill is all done with developing.
- There will be a sit down with John Burns regarding camera work that has been done.

The next order of business: New Business.

- The next meeting will be Fall Town Meeting will be on October 15, 2018.

Carl moved to adjourn. Larry seconded the motion. The meeting adjourned at 1:25P.M.

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Neal Crites	**Larry Wiersma**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
June 13, 2018

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 4:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from April 11, 2018. Larry made a motion, Motion passed 3-0.

The next order of business: Abatements:

- The Commissioners signed two abatements that were due to the dwellings being brand new services and were unoccupied.

The next order of business: Depot Street Generator:

- The Sutton Sewer Department has ordered the generator and is waiting for delivery at this time.
- The next step is coordinating the crane, operator and the removal of the old generator.
- This is the last generator to be replaced. This generator was installed in 1972.

The next order of business: WPI Update:

- Donald met with the Town Planner, Town Administrator and WPI last week.
- They are still discussing two potential locations for the pump station.
- WPI is meeting with the Board of Selectman on June 19th.

The next order of business: Old Business.

- The Sutton Sewer Commissioners are still contacting other towns regarding if they charge municipalities and schools in their town.
- All of the manholes in Manchaug got taken care of due to the new paved roadways.
- Neal made a motion to request an annual report of the enterprise fund and retained earnings report from the town account. Motion passed 3-0.

The next order of business: New Business.

- The DEP inspection was very successful. They were very overwhelmed by all the new upgrades.
- The next Sewer Commissioners meeting with be on July 11, 2018.

Carl moved to adjourn. Larry seconded the motion. The meeting adjourned at 4:25 P.M.

Neal Crites	**Larry Wiersma**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
January 10, 2018

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 2:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from December 14, 2017. Neal made a motion, Motion passed 3-0.

The next order of business: Annual Report:
- The FY17 annual report is from July 1, 2016 through June 30, 2017.
- Neal made a motion to approve the FY17 annual report as written. Carl seconded. Motion passed 3-0.

The next order of business: WPI Update:
- The Sutton Town Administrator signed the WPI contact on 1/8/2017.
- Internally the process has already started.
- The main goal is to bring sewer to the center of town.
- The commissioners asked to be notified when WPI will be presenting to the board of selectman.

The next order of business: Depot Street Generator:
- The Sutton Sewer Department met with eversource today.
- Additional costs will be
    1. The Crane
    2. The underground tanks
    3. Contractor
- We will have costs of each by the next meeting.

The next order of business: Budget:
- Neal made a motion to approve the revised FY19 Budget. Larry seconded. Motion passed 3-0.

The next order of business: Old Business.
- Brief discussion on increasing user rates.
- The board does not see a need for that at this time.

The next order of business: New Business.
- Next meeting will be on February 14, 2018 at 2:00P.M.
- The generator on Whitins Road is all under the insurance claim.

Carl moved to adjourn. Larry seconded the motion. The meeting adjourned at 2:42 P.M.

Neal Crites **Larry Wiersma** **Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
December 14, 2017

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli (absent)
Donald Obuchowski
Amanda Kral

The meeting was opened at 2:05 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from September 13 2017. Neal made a motion, Motion passed 2-0.

The next order of business: WPI Update:

- Students will be assessing and surveying the 2nd week of January.
- They are looking at 2 phases. Phase 1 will be bringing sewer up from Pleasant Valley Villas to the center of town and phase 2 will be bring sewer down from the center to the school

The next order of business: Generator:

- There was a whole in the generator at 165 Whitins pump station.
- An insurance claim was made and approved.
- The Town of Sutton will be responsible for the $1,000.00 deductible.
- The Town of Sutton will be responsible for the crane to get the old generator out and the new generator in.

The next order of business: Budget:

- The budget was presented to the Commissioners to review.

The next order of business: Sewer Billing Warrant:

- The Commissioners signed the Warrant for the RT. 1 Sewer billing.

The next order of business: Old Business.

- No discussion.

The next order of business: New Business.

- Next meeting will be on January 10, 2017.
- The Annual Town report will be reviewed for submittal at the next meeting.

Larry moved to adjourn. Neal seconded the motion. The meeting adjourned at 2:35 P.M.

Neal Crites   Larry Wiersma   Carl Licopoli

Town of Sutton
Sewer Commission Meeting
September 13, 2017

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 4:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from August 9, 2017. Larry made a motion, Motion passed 3-0.

The next order of business: Wal-Mart- (Northbridge):

- As of August 31, Northbridge has handed over their pump station to the Town of Sutton Sewer Department.
- There are 3 dwellings that are also interested in tying into the sewer system.

The next order of business: I & I Study:

- The I & I study has been completed.
- BETA Engineering will be filing their findings with the DEP.
- The next step will be fixing the findings of the I & I Study. The first will be the broken manhole covers.

The next order of business: Correspondence:

- Whitinsville Water District sent a letter regarding raising their rates in June 2018.

The next order of business: Old Business.

- The Town of Sutton Sewer Department is waiting to hear from WPI regarding bringing sewer to the center of town.
- The goal is to have a plan for the Annual Town Meeting.
- The FOG pamphlets and letter regarding sub pumps have been uploaded to our website and will be mailed in the next billing.

The next order of business: New Business.

- Next meeting will be the Fall Town Meeting on October 16, 2017.
- The article regarding the Dudley Gendron connection fee will be presented at the Fall Town Meeting.

Carl

Neal moved to adjourn. ~~Larry~~ seconded the motion. The meeting adjourned at 4:18P.M.

LW

Neal Crites	Larry Wiersma	Carl Licopoli

Town of Sutton
Sewer Commission Meeting
July 12, 2017

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 4:05 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from April 12, 2017. Larry made a motion, Motion passed 3-0.

The next order of business: Re-organization:

- Larry made a motion to leave the titles of the commissioners the way they are. Carl seconded the motion. Motion passed 3-0.

The next order of business: Wal-Mart- (Northbridge):

- Donald met with the representative of Wal-Mart, the engineers and the DEP director of Northbridge today.
- At this time, Northbridge has not handed the pump station over to the Sutton Sewer Department.
- By Thursday the laterals will be closed and finished.

The next order of business: I & I Study:

- All data is saying that Manchaug has the highest flow.
- Beta Engineering hired a company to camera the area to find out where the leaks are located and also found 2 manholes that need to be fixed.
- The Sutton Sewer Department will be sending out pamphlets with a reminder of rules regarding grease and baby wipes being put into the sewer system.

The next order of business: Town of Millbury:

- The latest quarterly invoice from the Town of Millbury had the adjustment made.
- Neal made a motion to table the discussion on the Town of Millbury billing until the time of a rate increase is discussed. Carl seconded the motion. Motion passed 3-0.

The next order of business: Old Business.

- The Sutton Sewer Commissioners will be sponsoring an article to void the Dudley Gendron Post's connection fee. Town council will be drawing up the article and it will be presented at the Fall Town meeting.
- The reason for the commissioners waiving this fee is due to the Dudley Gendron Post being a non-profit organization. This does not waive the bi-annual bill.

The next order of business: New Business.

- WPI came a month ago and did an evaluation on bringing sewer to the center of town and down the school system.

Town of Sutton
Sewer Commission Meeting
April 12, 2017

Members Present: Neal Crites
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 4:00 P.M. by Neal Crites.

The first order of business was the approval of minutes from the monthly Sewer Commissioner meeting from March 8, 2017. Larry made a motion, Motion passed 3-0.

The next order of business: Abatement for 135 Ariel Circle.
- Ford Sanborn requested an abatement at his home at 135 Ariel Circle.
- The owner stated there was a leak in his town home while he was on vacation and the water did not go through sewer.
- Mr. Sanborn did not contact the water district to let them know about the leak and did not request an abatement.

The next order of business: Wal-Mart- (Northbridge):
- The force main and construction has begun.
- They started at both ends (at Wal-Mart and Commerce Park)
- Installing a manhole at Commerce Park and isolating valves will be put in.

The next order of business: I & I Study:
- The first phase will cost $20,000.
- The second phase will cost $10,000 for camering.
- The article will be read on Town floor at the Annual Town meeting.

The next order of business: SCADA Program:
- The SCADA Program is completed and up and running.
- It will be 7-10 years before we will need to do it again.

The next order of business: Old Business.
- The Town of Millbury's quarterly bill that was sent to us.
- The board feels there are still many questions they have for the Town of Millbury.
- Larry made a motion to allow Neal, as a Sewer Commissioner, to address the issues and concerns the board has with the Town of Millbury billing with the Town Administrator and to move forward if need be. Carl seconded. 3-0.

The next order of business: New Business.
- Next meeting will be the Annual Town Meeting on Monday May 8, 2017.
- Neal made a motion to decline Mr. Sanborn's request for an abatement.

Neal moved to adjourn. Larry seconded the motion. The meeting adjourned at 5:05P.M.

Neal Crites	**Larry Wiersma**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
September 14, 2016

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Kral

The meeting was opened at 4:00 P.M. by Neal Crites.
The first order of business is approval of minutes from July, 13 2016. Carl Licopoli made a motion, Larry seconded. Motion passed 3-0.

The next order of business: Update on Wal-Mart (Northbridge).

- A meeting was held between Town of Northbridge, Town of Sutton and Wal-Mart over the construction aspect of this project.
- The IMA has been approved and signed.

The next order of business: Old Business.

- Another building is being built at Galaxy pass who will be tying into sewer.
- The I & I study is going to be taken in 2 phases. The first phase will be $10,000 and will done this fiscal year and the second phase will be $30,000 and that will be done next fiscal year.
- Neal wants a copy of each Millbury Sewer bill given to the commissioners as they come in each quarter.

The next order of business: New Business.

- Neal made a motion that the Annual Town Meeting will be considered our monthly meeting for the month of October. Carl seconded. Motion passed 3-0.
- The Annual Golf Tournament that raises money for the Food Pantry will be held on October 14, 2016.

Neal moved to adjourn. Carl seconded the motion. The meeting adjourned at 4:25P.M.

Larry Wiersma	**Neal Crites**	**Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
March 9, 2016

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Perreault

The meeting was opened at 4:00 P.M. by Neal Crites.
The first order of business is approval of minutes from February, 10 2016. Larry Wiersma made a motion, Carl seconded. Motion passed 3-0.

The next order of business: Discussion on abatement for 55 Partridge Hill Road
- The commissioners discussed the abatement for 55 Partridge Hill Road.
- Neal made a motion to respectfully deny the abatement. Motion passed 3-0.
- Second meters are not allowed with either Wilkinsonville Water District or Manchaug Water District. .

The next order of business: Abatement.
- An abatement was issued by Sewer Commissioners.

The next order of business: Update on Wal-Mart (Northbridge).
- The Sutton Town Administrator is working with the Town of Northbridge on the Inter-Municipal agreement.
- There will be a meeting held on March 10th to finalize the sewer design.

The next order of business: Carl's update on the Exploratory Committee.
- The Exploratory Committee met on March 3rd, 2016.
- Looking into having 2 phases for this process.
- Jen Hager will be working with Woodward and Curran for a comprehensive study looking into cost and flows.

The next order of business: New Business.
- Dudley Gendron Post is looking into tying in to the Sewer System.

The next order of business: Old Business.
- The next meeting will be held on Wednesday April 13, 2016 at 4:00PM.
- A workshop will be held with the Town of Millbury on April 13, 2016 at 3:00PM.

Neal moved to adjourn. Larry seconded the motion. The meeting adjourned at 4:20P.M.

Larry Wiersma	Neal Crites	Carl Licopoli

Town of Sutton
Sewer Commission Meeting
January 13, 2016

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Perreault

The meeting was opened at 4:00 P.M. by Neal Crites.
The first order of business is approval of minutes from January, 13 2016. Larry Wiersma made a motion, Carl seconded. Motion passed 3-0.

The next order of business: Update on Wal-Mart (Northbridge).

- The Sutton Town Administrator is working with the Town of Northbridge on the Inter-Municipal agreement.
- Design plans are being reviews by Graves Engineering.

The next order of business: Carl's update on the Exploratory Committee.

- The Exploratory Committee met on January 7th, 2016.
- The Committee is looking for various options.
- The next meeting they will digest all 3 wells and discuss with a consultant on pipes and cost.

The next order of business: Annual Report.

- The Sewer Commissioners voted to change the number of meetings from 3 to 4 and try and make the report one page.
- With those changes, the Sewer Commissioners voted to approve the Annual Town Report. Motion passed 3-0.

The next order of business: New Business.

- There are no new connection fees.

The next order of business: Old Business.

- The next meeting will be held on Wednesday February 10, 2016.
- The next meeting the Commissioners will discuss the Town of Millbury.
- Sewer Bills will now inform people about paying their bill online.
- The next meeting there will be a calendar of events for the Sewer Commissioners meetings to go over.
- Commissioners Rules will be gone over and a new draft will be ready for the next Commissioners meeting.

Neal moved to adjourn. Larry seconded the motion. The meeting adjourned at 5:04P.M.

Larry Wiersma	**Neal Crites**	Carl Licopoli **Carl Licopoli**

Town of Sutton
Sewer Commission Meeting
December 9, 2015

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Perreault

The meeting was opened at 4:00 P.M. by Neal Crites.
The first order of business is approval of minutes from 11-18-2015. Larry Wiersma made a motion, Carl seconded. Motion passed 3-0.

The next order of business: Update on Wal-Mart (Northbridge).

- The Town Administrator forwarded the Inter-Municipal agreement between Sutton and Northbridge.
- The next Sewer Commissioners meeting the commissioners will review the Inter-Municipal agreement.

The next order of business: Carl's update on the Exploratory Committee.

- The Exploratory Committee met on December 4th.
- The Committee is looking for various options.
- The next meeting they will meet with McClure about the water at Sutton Schools.

The next order of business: Annual Report.

- The next Sewer Commissioners meeting the annual report will be ready to revise and discuss and will be an agenda item.

The next order of business: Old Business.

- There are no new connection fees.

The next order of business: New Business.

- The next meeting will be help on Wednesday January 13, 2015.
- New Sewer Bills were sent out on 12/7.
- Sewer Bills will now inform people about paying their bill online.

Neal moved to adjourn. Carl seconded the motion. The meeting adjourned at 4:40 P.M.

Larry Wiersma	Neal Crites	Carl Licopoli

Town of Sutton
Sewer Commission Meeting
September 16, 2015

Members Present: **Neal Crites**
Larry Wiersma
Carl Licopoli
Donald Obuchowski
Amanda Perreault

The meeting was opened at 4:00 P.M. by Neal Crites.
The first order of business was to welcome Carl Licopoli to the Sewer Commissioner Board and to thank James Dwyer for his time served as Clerk of the Commission.
The next order of business is to approve the minutes of 03-11-2014. Larry Wiersma made a motion, seconded by Neal. Motion passed 3-0.

The next order of business: Re-organization.
Larry Wiersma made a motion to keep Neal as the Chairmen, Larry Wiersma as Vice Chairman and Carl Licopoli as Clerk. Motion passed 3-0.

The next order of business: Exploratory Committee.
The Town Administrator with the Board of Selectman recommended to establish an exploratory committee for the purpose to extend sewer from pleasant valley villas to the Sutton School. The present committee consists of Donald Obuchowski, Robert Recor, Ken Smith, Robert Largesse and Roger Raymond.
Neal made a motion to appoint Carl Licopoli to the Exploratory Committee. Motion Passed 3-0.

The next order of business: Project Updates:

- Blackstone Street- Generator has been installed and awaiting the electrical phase. The last phase will be digging out storage tanks.
- Market 32- Will be opening at the end of October.
- Leland Hill Estates- Last 14 Units are extending to the sewer and water.
- Pleasant Valley Villa's- Are in phase 3. Water and Sewer extension to 33 Units.
- Wal-Mart in Northbridge- In the design phase and will be considering tying into the Sutton Sewer System.

The next order of business: Old Business.

- Make a calendar for all upcoming events.
- Updated commissioners on bylaws and policy.
- Updating on the Website.

The next order of business: New Business.

- Next meeting will be held on October 21st at 4:00P.M.

Neal moved to adjourn. Carl seconded the motion. The meeting adjourned at 4:50 P.M.

Larry Wiersma	**Neal Crites**	**Carl Licopoli**

ATTACHMENT F: 2018 SEWER SYSTEM EVALUATION SURVEY

Town of Sutton, MA

Sewer System Evaluation Survey

September 2018
REVISED April 2019

INFILTRATION/INFLOW ANALYSIS

6 Blackstone Valley Place
Suite 101
Lincoln, Rhode Island 02865
401.333.2382
www.BETA-Inc.com

Sewer System Evaluation Survey
Town of Sutton, MA
Subtitle from Cover Sheet

INFILTRATION/INFLOW ANALYSIS

Prepared by: BETA GROUP, INC.
Prepared for: Town of Sutton Sewer Department

September 2018

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1.0 INTRODUCTION

This report is an Infiltration/Inflow analysis of the Town of Sutton sewer system, fulfilling the requirements of 314 CMR 12.04 (2)(c)(1). In 2017, BETA Group, Inc. was retained by the Town to review the sewer system to determine which areas exhibited excessive infiltration and develop a plan to remedy any issues discovered.

1.1 SUTTON SEWER SYSTEM

The Town of Sutton has two separate sewer systems – the Wilkinsonville System and the Manchaug system (see Figures 1 and 2). The Wilkinsonville system was constructed between 1978 and 1997, and contains approximately 57,000 linear feet (10.8 miles) of sewer and four town-owned pump stations (Blackstone St, Depot St, Wildflower, and Peachtree). The Wilkinsonville system is collected at the Blackstone St station, which discharges to the Town of Millbury for treatment. The Manchaug system was constructed in the 2000s, and contains approximately 22,000 linear feet (4.2 miles) of gravity sewer and three pump stations (Main St, Whitins #1, and Whitins #2). The Manchaug system discharges to the Sutton WWTF.

To facilitate the understanding of the collection system, it has been divided into seven separate sewersheds based on which pump station collects its flow. Table 1 provides an estimate of the length of sewer in each area.

TABLE 1 – PUMP STATIONS' SEWERS

Pump Station	Sewer Length	Sewer IDM[1]
Blackstone St	32,910	57.6
Depot St	9,245	14.0
Wildflower	6,500	9.8
Peachtree	8,300	12.6
Main St	6,375	10.2
Whitins #1	10,095	16.1
Whitins #2	5,200	9.2
Total:	78,625	129.5
[1] IDM = Inch Diameter Mile		

Flows at the Sutton WWTF do not vary widely based on either seasonal variations or rainfall. As such, it was not expected to find any extreme sources of infiltration or inflow.

FIGURE 1

Wilkinsonville Sewer System

Sutton, MA

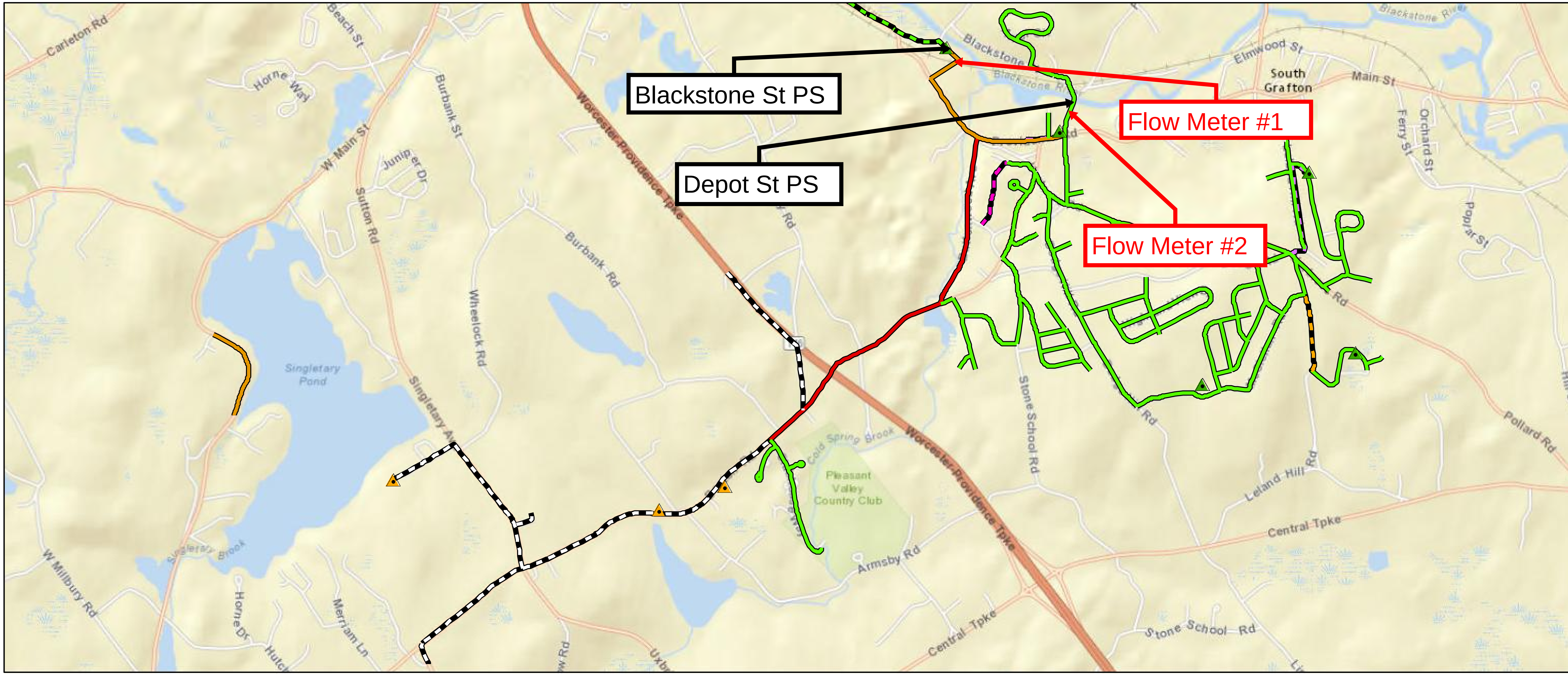
1 inch = 2000 Feet

0 2000 4000 6000

January 23, 2017

CAI Technologies

www.cai-tech.com



▲	PROPOSED PUMP STATION		8, FORCE
▲	Pump Station		8, GRAVITY
	0, Proposed		10, GRAVITY
	1.5, FORCE		12, GRAVITY
	3, FORCE		
	4, FORCE		

FIGURE 2

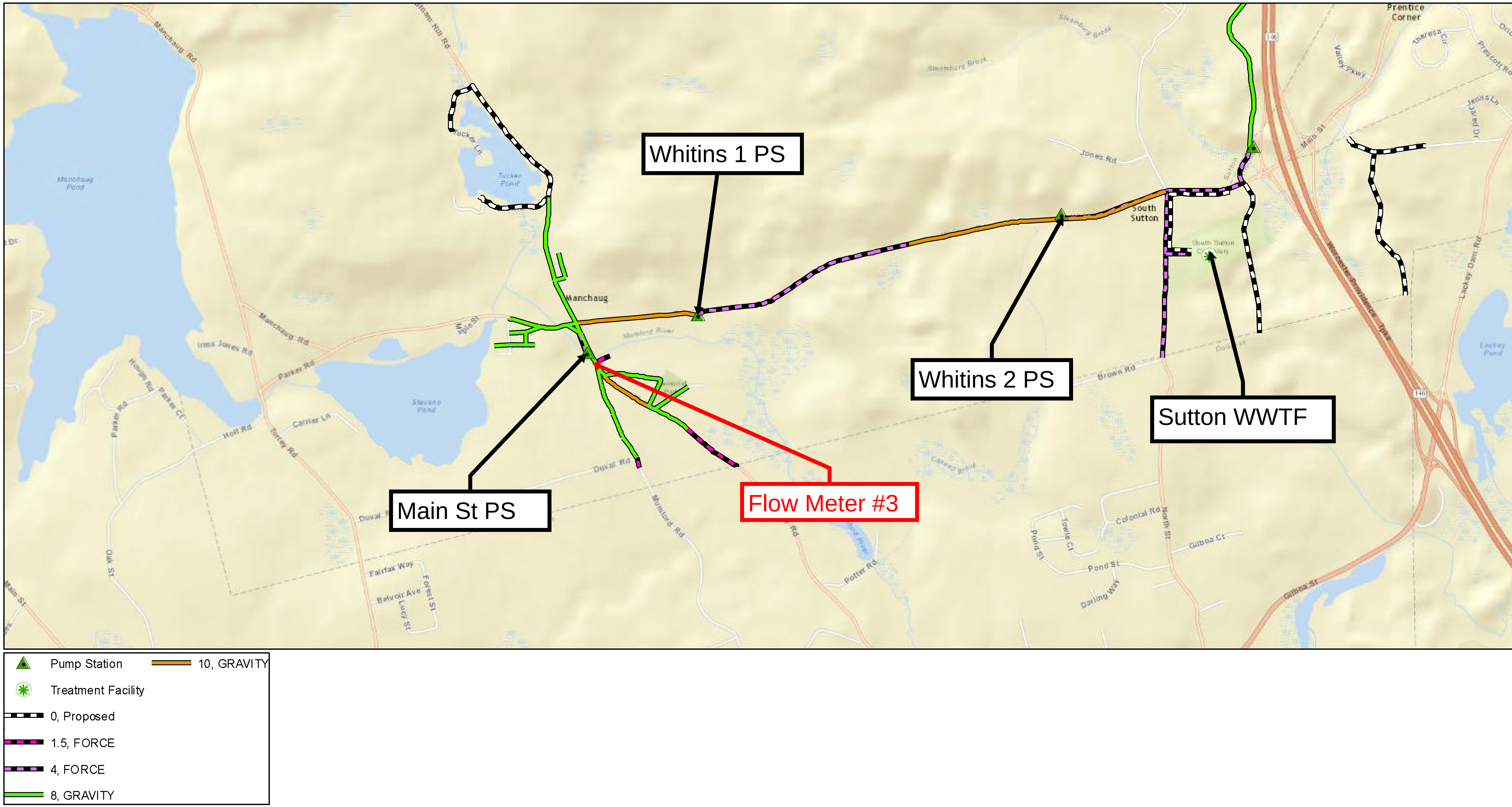
Manchaug/South Sutton Sewer System

Sutton, MA

1 inch = 1500 Feet

January 23, 2017

www.cai-tech.com



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

2.0 INFILTRATION/INFLOW ANALYSIS

2.1 PRELIMINARY ANALYSIS

To get a preliminary indication as to whether extraneous flows (I/I) were impacting the collection system, daily pump station flow records were evaluated for 2016 during the high groundwater and low groundwater seasons during both dry and wet weather periods. For purposes of this assessment, the difference between wet weather and dry weather flows during the same groundwater season represents the amount of inflow entering the system (typically from sump pumps or catch basins connected to the sewer system). Higher inflow rates would be expected in the high groundwater season as the impacts from rainfall induced infiltration would be greater with higher groundwater elevations. The difference in dry weather flows between seasons is representative of infiltration rates assuming that infiltration is at a minimum during the low groundwater season and increases with higher groundwater elevations.

Dry weather was defined as a period at least three days removed from any rainfall. For all “rain flow” calculations, rain events exceeding 0.5” were used, with the largest observed event being 0.92”. High groundwater season was estimated as March-June, and low groundwater season was estimated as July-October. Flows and run times in Tables 2 and 3 are averages.

Pump station flow or run time records as well as rainfall data for several representative periods were examined to see if any stations showed signs of excessive I/I. Flow meter information was available for the Blackstone St and Depot St stations; all other stations utilized run time data. Table 2 shows calculations for Blackstone St and Depot St. Table 3 shows calculations for the remaining stations.

TABLE 2 – PRELIMINARY I/I ANALYSIS FOR STATIONS WITH FLOW METERS

Pump Station	High GW Dry Flow	High GW Rain Flow	Low GW Dry Flow	Inflow	Infiltration	Station IDM	I/I per IDM
	(gpd)	(gpd)	(gpd)	(gpd)	(gpd)		
Blackstone St	19,999	22,650	15,633	2,651	4,366	62.9	112
Depot St	18,638	26,259	15,208	7,621	3,429	48.2	229

TABLE 3 – PRELIMINARY I/I ANALYSIS FOR STATIONS WITHOUT FLOW METERS

Pump Station	High GW Dry Run Time	High GW Rain Run Time	Low GW Dry Run Time	Inflow	Infiltration
	(hr/day)	(hr/day)	(hr/day)	(% rise)	(% rise)
Wildflower	0.97	0.83	0.80	-15%	22%
Peachtree	0.98	1.45	0.79	48%	25%
Main St	2.70	3.28	1.41	21%	91%
Whitins #1	4.49	5.45	2.97	21%	51%
Whitins #2	2.30	3.70	2.06	61%	12%

An infiltration rate of 4,000 gpd/IDM is considered excessive according to MassDEP's *Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys (May 2017).* As shown by Tables 2 and 3, neither of the subareas with flow meters exhibits this level of infiltration. In fact, only two subareas exhibited a marked increase in flow – Main St showed a significant rise in run times seasonally, and Whitins #2 showed some reaction to rainfall. A calculation based on the design flow rate of Main St's pumps (140 gpm) showed that the Main St station exhibits approximately 10,800 gpd of infiltration, or a calculated infiltration rate of approximately 1,000 gpm/IDM, well below the guidelines' definition of "excessive" I/I.

2.2 CCTV INVESTIGATION

Based on the preliminary analysis, the Town decided to proceed with CCTV inspection of the sewers tributary to the Main Street Pump Station. Complete CCTV records are attached to this report as Appendix A.

The investigation revealed two locations requiring excavated repairs, while the system in general is in good condition. The locations of recommended repairs are shown in Table 4 below.

TABLE 4 – RECOMMENDED REPAIRS

Street	At	Station	Repair
Main St	Canal St	2+50 (Main)	Dig & Replace drop inlet entering manhole from Canal St
Main St	Morse Rd	4+90 (Main)	Dig & Replace drop inlet entering manhole from Morse Rd

2.3 Flow Metering

As a follow up to the preliminary investigation, flow meters were installed to monitor flow from three subareas – Main Street, Blackstone Street and Depot Street. These subareas were selected because Blackstone Street and Depot Street are the largest subareas and contain the oldest sewers in the town, and Main St had shown some signs of infiltration during preliminary analysis.

Meters were installed and operated continuously for four months, from February 19, 2018 through May 18, 2018. Electronic depth and velocity meters were used to determine flow rates in the pipes. During the metering period, each meter was checked on a weekly basis to ensure that they were operating properly. Weekly calibration measurements were taken to check accuracy.

2.4 Rainfall Gauging

Flow metering was accompanied by rainfall gauging, which was done at the Blackstone Street Station. The rainfall gauge consisted of a recording tipping bucket gauge and a data logger. Rainfall was measured and recorded every 5 minutes during the flow monitoring period. Complete rainfall data is included in the metering reports attached to this report as Appendix B. During the metering period, there were two significant rainfall events, which for the purposes of this report are events of more than 1.0 inch of rain in a 24-hour period. These storms are shown in Table 5 below.

Table 5 – Significant Rainfall Events

Date	Total Rainfall (in)	Duration (hrs)
March 2, 2018	2.32	23
April 16, 2018	2.28	10

Based on the Precipitation/Frequency Chart from MassDEP's "Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys", the March 2nd storm correlates to a 1-year, 24-hour storm frequency, and the April 16th storm correlates approximately to a 1-year, 12-hour storm.

2.5 Determination of Infiltration Rates

The method used to determine infiltration rates and to identify the subareas that warrant further study is based on procedures outlined in MADEP's publication entitled, "Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys".

To determine infiltration rates, the flow metering data was examined to identify periods of dry weather; typically defined as 3 to 5 days after a rain event. During these periods, nighttime minimum flows were analyzed to estimate minimum and maximum infiltration rates. It was assumed that minimum flows were essentially 100% infiltration.

Peak infiltration typically occurs during high groundwater conditions in the early spring, after snow melt and/or soil thaw. When groundwater levels are high, sewer pipes are essentially submerged, resulting in larger quantities of water entering the pipe through cracks and leaks. For the purposes of this study, peak infiltration was quantified by taking the average minimum nighttime flows over several periods during high groundwater/dry weather conditions. The periods studied were 3/19/18–3/21/18, 4/22/18-4/24/18, and 5/10/18-5/11/18. These days were selected because there was significant rainfall earlier in the preceding weeks to raise the groundwater table, but at least three days had passed without rainfall.

To determine whether the sewer system within a subarea is contributing excessive infiltration flow, the estimated peak infiltration rate was then divided by the corresponding inch diameter miles for that subarea, to arrive at a gallon per day per inch diameter mile (gpd/idm) estimate. Per MassDEP guidelines, peak infiltration rates greater than 4,000 gpd/idm are considered excessive infiltration and further investigation is generally warranted. Peak infiltration rates based on this method are shown below in Table 6.

TABLE 6 – PEAK INFILTRATION RATES

Subarea	Peak Infiltration (gpd)	Subarea IDM	Infiltration Rate (gpd/IDM)
Blackstone	70,100	62.9	1,110
Depot St	625	48.2	13
Main St	13,400	10.23	1,310

The data shown in Table 6 indicates that none of the subareas is exhibiting signs of excessive infiltration. No further investigation is required in these areas.

2.6 DETERMINATION OF INFLOW RATES

The method used to determine inflow rates and to identify subareas that warrant further study is based on procedures outlined in MassDEP's publication entitled, "Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Surveys".

To determine inflow rates, rainfall gauging data was used to identify significant storm events (see Table 5). Flow metering data gathered during the storm event was then analyzed graphically and compared to dry weather flows to determine what areas showed evidence of significant inflow.

Analysis of flows during and surrounding storm events can also help to determine the presence of rainfall derived infiltration (RDI). Rainfall derived infiltration is examined along with inflow since it occurs at the same time – when it rains. Looking at dry weather and wet weather data together can be used to help determine whether increased flows during storm events are due to rainfall derived infiltration or direct inflow.

2.7 STORM EVENTS

The flow metering period was fortunate to capture two significant storm events, each similar in total rainfall but different in duration. As described above, the storm events of March 2nd and April 16th both correlate approximately to a 1-year event. The details of each storm are shown below in Tables 7 and 8

TABLE 7 – MARCH 2ND STORM DETAILS

Storm Start:	3/2/18, 1:25AM
Storm End:	3/2/18, 11:05PM
Storm Duration (hrs):	22
Total Rainfall (in.):	2.32
Average Intensity (in/hr):	0.11
Peak Intensity (in/hr):	0.26

TABLE 8 – APRIL 16TH STORM DETAILS

Storm Start:	4/16/18, 8:30AM
Storm End:	4/16/18, 4:25PM
Storm Duration (hrs):	8
Total Rainfall (in.):	2.28
Average Intensity (in/hr):	0.29
Peak Intensity (in/hr):	0.63

2.8 Inflow From Storm Events

Flows for each meter area were analyzed to determine inflow amounts from each storm. Figures 3-8 show the reaction of the three study areas to the two storms. Inflow from the storms is calculated as the area between the wet weather hydrograph, and a dry weather hydrograph from a period of similar groundwater depth. In these cases, the day before the storm was used in both cases for the dry weather hydrograph.

2.8.1 Blackstone Street Inflow

Inflow for the Blackstone Street study area is calculated from an examination of the hydrographs for the two storms, shown in Figures 3 and 4. The Blackstone Street area showed a noticeable, consistent but relatively minor inflow reaction to the storms, yielding a total inflow volume of approximately 100,000 gallons in each case. For the size of the Blackstone Street area, this is a fairly minor amount of inflow, and does not warrant significant additional effort.

2.8.2 Depot Street Inflow

Inflow for the Depot Street study area is calculated from an examination of the hydrographs for the two storms, shown in Figures 5 and 6. The Depot Street study area showed virtually no inflow response to either storm, and does not warrant any further investigation effort.

2.8.3 Main Street Inflow

Inflow for the Main Street study area is calculated from an examination of the hydrographs for the two storms, shown in Figures 7 and 8. The Main Street study area had a minor inflow reaction to the March 2nd storm, but virtually no reaction to the April 16th storm. The delayed nature of the reaction to the March 2nd storm, along with the small total amount of inflow, indicates that this is likely to be a case of rainfall derived infiltration rather than true inflow. Repairing the two defects located by the CCTV inspection after the preliminary investigation will likely eliminate most of this flow. Otherwise, no additional work is recommended.

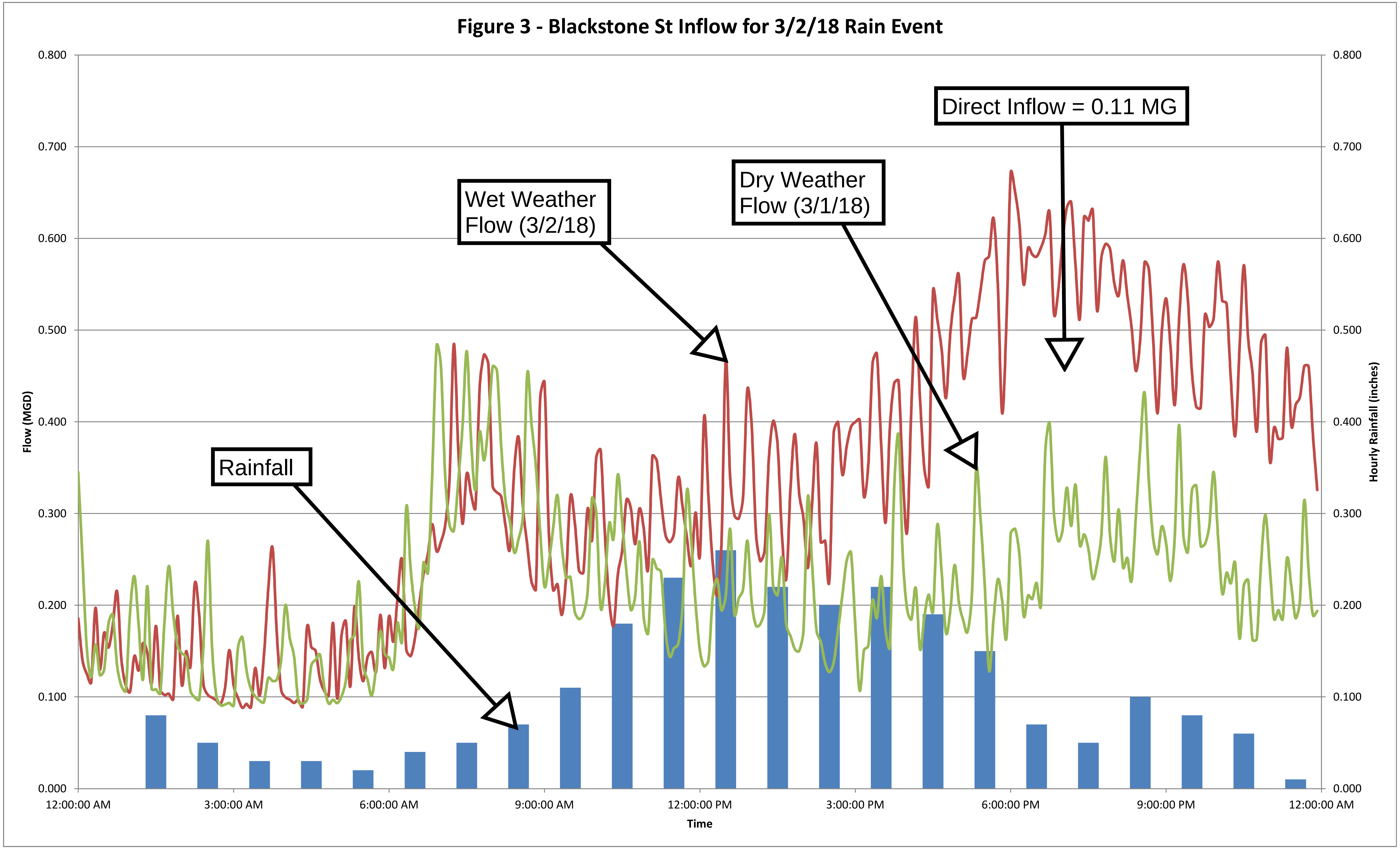
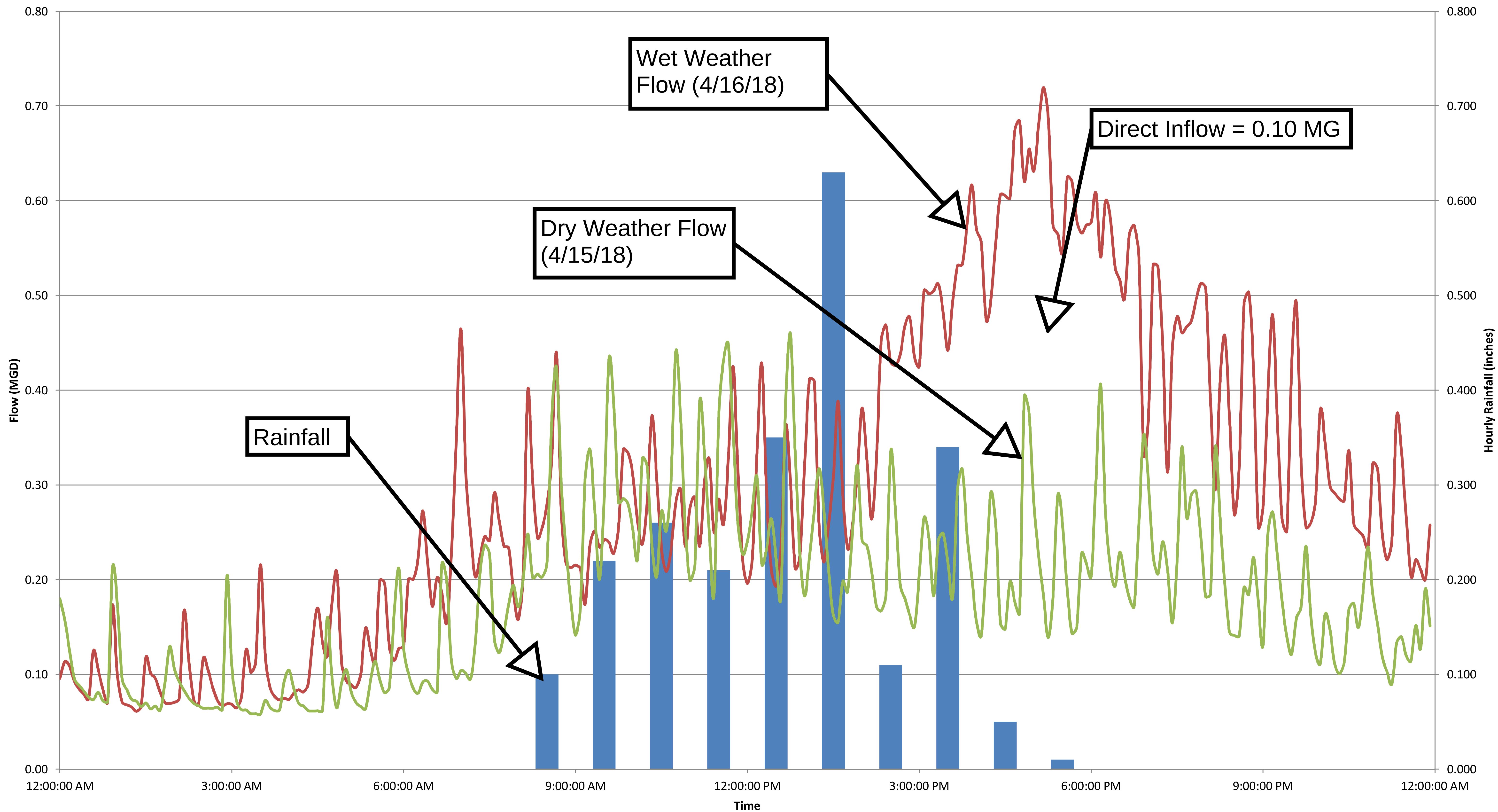


Figure 3 - Blackstone St Inflow for 3/2/18 Rain Event
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
Flow (MGD)
Hourly Rainfall (inches)
Direct Inflow = 0.11 MG
Wet Weather Flow (3/2/18)
Dry Weather Flow (3/1/18)
Rainfall
12:00:00 AM
3:00:00 AM
6:00:00 AM
9:00:00 AM
12:00:00 PM
3:00:00 PM
6:00:00 PM
9:00:00 PM
12:00:00 AM
Time

Figure 4 - Blackstone St Inflow for 4/16/18 Rain Event



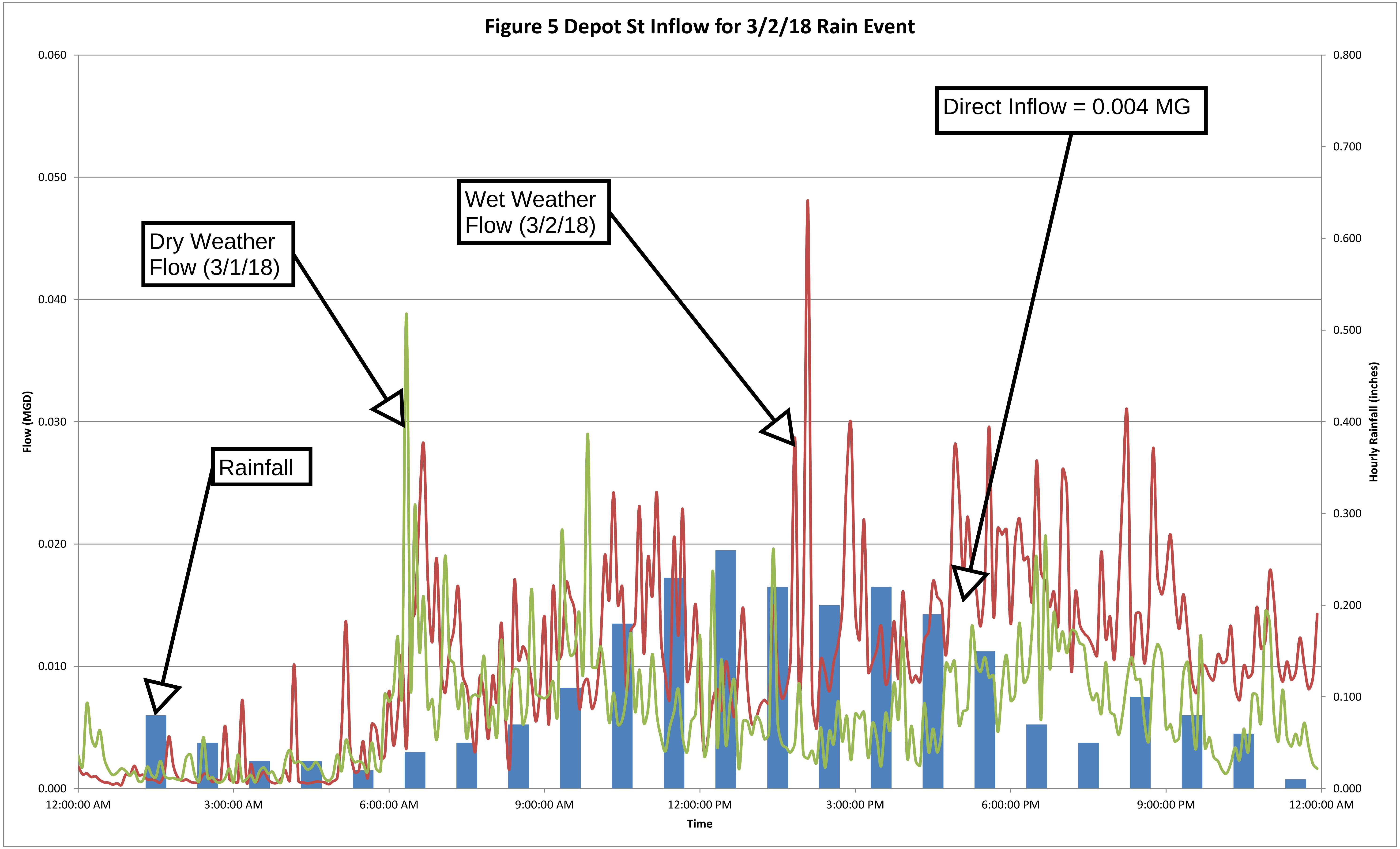
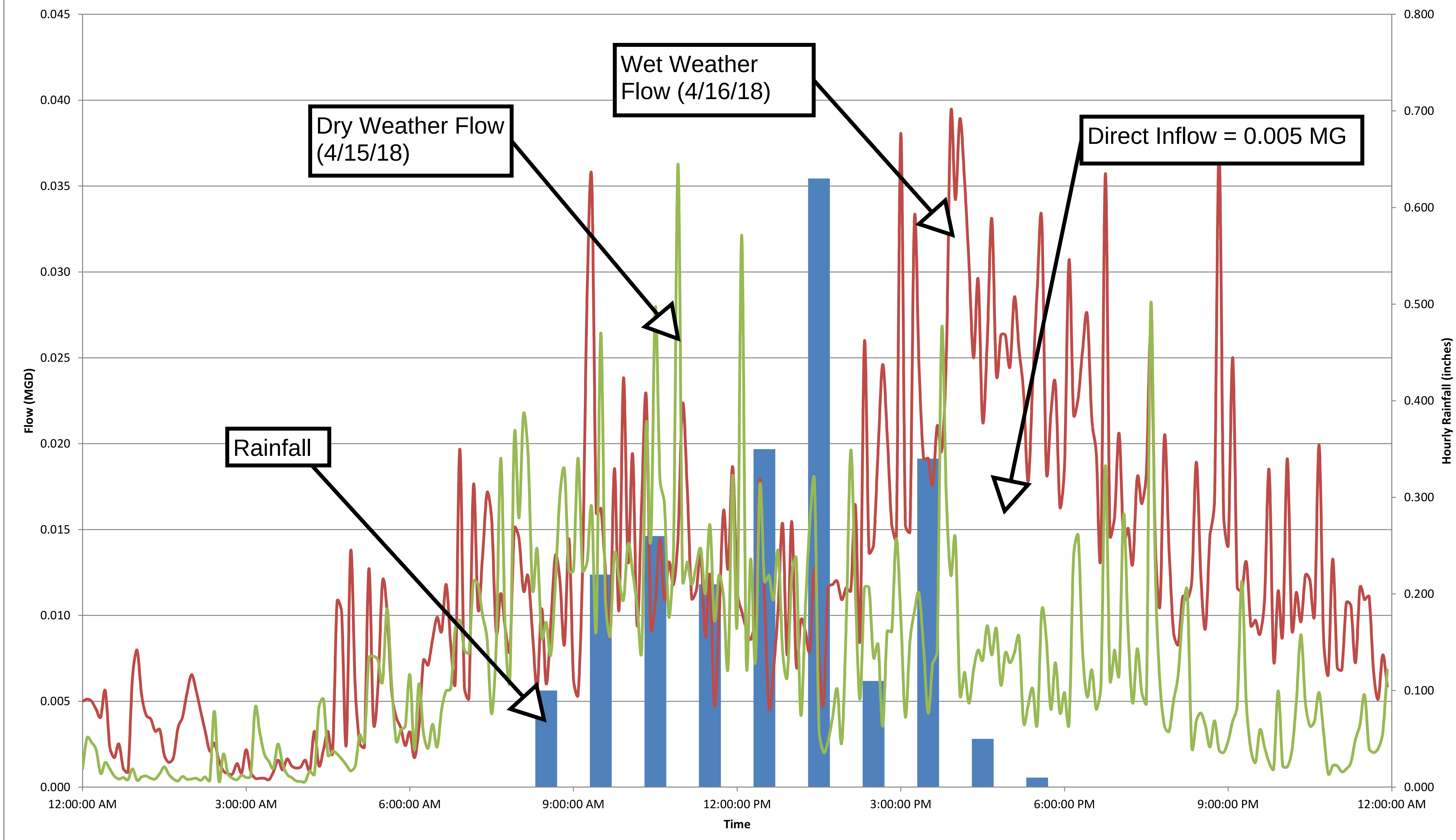


Figure 5 Depot St Inflow for 3/2/18 Rain Event
Direct Inflow = 0.004 MG
Wet Weather Flow (3/2/18)
Dry Weather Flow (3/1/18)
Rainfall
Flow (MGD)
Hourly Rainfall (inches)
Time
0.000
0.010
0.020
0.030
0.040
0.050
0.060
0.000
0.100
0.200
0.300
0.400
0.500
0.600
0.700
0.800
12:00:00 AM
3:00:00 AM
6:00:00 AM
9:00:00 AM
12:00:00 PM
3:00:00 PM
6:00:00 PM
9:00:00 PM
12:00:00 AM

Figure 6 Depot St Inflow for 4/16/18 Rain Event



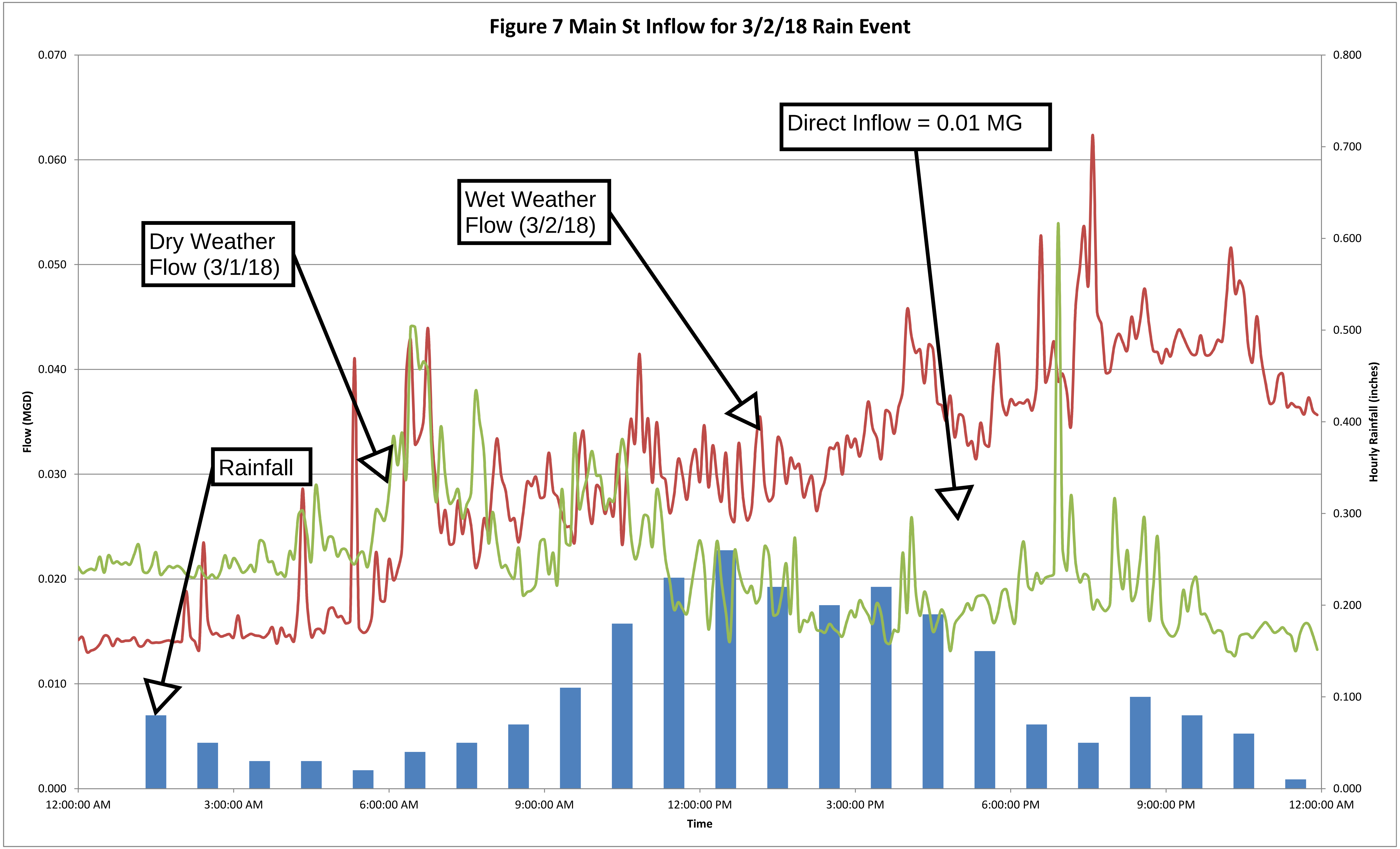
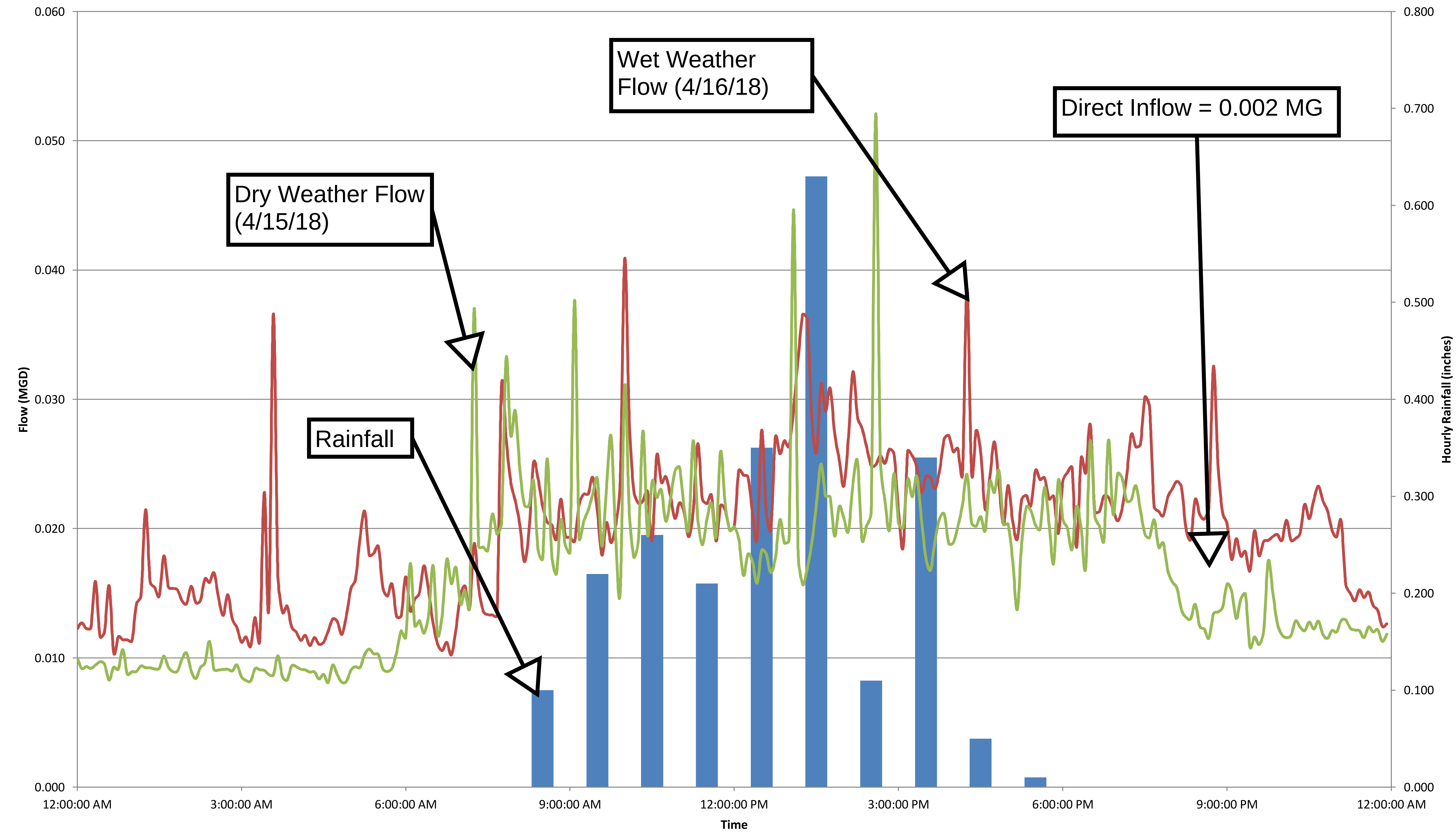


Figure 7 Main St Inflow for 3/2/18 Rain Event
Flow (MGD)
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
Hourly Rainfall (inches)
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
12:00:00 AM
3:00:00 AM
6:00:00 AM
9:00:00 AM
12:00:00 PM
3:00:00 PM
6:00:00 PM
9:00:00 PM
12:00:00 AM
Time
Direct Inflow = 0.01 MG
Wet Weather Flow (3/2/18)
Dry Weather Flow (3/1/18)
Rainfall

Figure 8 Main St Inflow for 4/16/18 Rain Event



3.0 Conclusions and Planning

3.1 Assessment of Infiltration and Inflow

Based on the preliminary and follow-up investigation work, it does not appear that the Sutton wastewater collection system currently has a significant problem with either infiltration or inflow. While inflow is unlikely to increase significantly over time, infiltration is an issue that must be prevented long term through monitoring, investigation, and maintenance. Compared to many systems in Massachusetts, even the oldest sections of the Sutton system are relatively young, and have not yet exceeded their design life. Proper maintenance will be important to ensuring the long term viability and reliability of the system.

3.2 Risk Assessment For a 5-Year Storm

Massachusetts Division of Water Pollution Control Standards 314 CMR 12.04 requires all sewer system authorities to develop a plan for long-term I/I control which at a minimum must specifically assess the risk of sewer system overflows from a 5-year, 24-hour duration storm event. MassDEP has defined the 5-year, 24-hour duration storm as an event with a total rainfall depth of 4.61 inches, a peak intensity of 0.73 in/hr and an average intensity of 0.19 in/hr. The flow metering performed for this analysis captured two storms which approximately met the criteria for a 1-year storm, but did not capture anything approaching a 5-year storm.

Since the Town does not have a calibrated sewer system model to project flows and system response, including resultant hydraulic grade lines, system surcharging and SSOs cannot be predicted. A review of historical rainfall events equal to and/or in excess of the 5-year, 24-hour duration storm defined above and reports of associated system response can also be used as a basis for risk assessment of SSOs from the collection system. However, the Town of Sutton has not experienced an event of this magnitude or greater in recent history. The closest in magnitude to a 5-year storm event within the past 10 years is March 13-15, and March 29-30, 2010. The March 13-15 storm had a total rainfall depth of 3.83", and the March 29-30 storm had a total rainfall depth of 4.10". These rainfall totals were recorded at the Worcester airport. Both storms can be classified between a 2-year and a 5-year return frequency, 24-hour duration storm event. Based on MassDEP SSO/Bypass Notification reporting records on file as well as firsthand accounts from Sutton personnel, neither of the above storm events led to system surcharging that resulted in SSOs or basement backups within the collection system. Furthermore, the Town has reportedly never experienced SSOs as a result of wet-weather events. This provides verification that the Town's wastewater collection system has sufficient capacity to convey elevated wet-weather flows during moderate to significant rainfall events and therefore is a low risk for system surcharging and resultant SSOs.

3.3 Future SSES Work (Section Updated 2019)

The I/I analysis has identified several needs for future investigation and rehabilitation work. These include:

- GIS mapping of the sewer systems,
- Investigation to identify sources of inflow and infiltration in the Blackstone St pump station area (smoke testing and CCTV inspection)
- Pump Station inspections
- Repair of defects found during CCTV inspection during the I/I analysis

A description of each of these tasks is included below.

3.3.1 Mapping

The Town is currently in the process of mapping its wastewater collection system. As part of the mapping program, the system is being divided into subareas (by pumping station), and each individual manhole is being given a unique identification number. It is anticipated that this mapping effort will be complete by the end of 2019.

3.3.2 Smoke Testing

The Blackstone St pump station area exhibited a small but measurable inflow response to rain events. The Town has identified the portion of the sewer tributary to this pump station which is most likely to have direct inflow sources. Smoke testing will be done in this area in spring/summer 2019 to attempt to pinpoint sources of direct inflow.

3.3.3 CCTV Inspection

The Town has approximately 79,000 lf (14.9 miles)of gravity sewer pipe, much of which has never been inspected since its installation. The Town will begin an annual inspection program to inspect the tributary sewers to one pump station per year (excepting Blackstone St and Depot St, which will take 2 years each), so that every pipe in the town is inspected once every 8 years. As the largest area, and the area experiencing the most infiltration, the Blackstone St PS area will be inspected first.

The schedule of CCTV inspections is shown in Table 9.

Table 9

CCTV Inspection Schedule

Year	Pump Station	Approx. Sewer Length
2019	Blackstone St (1)	10,970
2020	Blackstone St (2)	10,970
2021	Blackstone St (3)	10,970
2022	Depot St	9,245
2023	Wildflower	6,500
2024	Peachtree	8,300
2025	Main St	6,375
2026	Whitins #1	10,095
2027	Whitins #2	5,200

3.3.4 Pump Station Inspections

The Town will immediately begin a program of inspecting all of its pump stations, so that every station is thoroughly inspected once every 2 years. The inspection schedule is as follows:

Table 10

Pump Station Inspection Schedule

Year	Pump Station
2019	Blackstone St
2019	Depot St
2019	Wildflower
2019	Peachtree
2020	Main St
2020	Whitins #1
2020	Whitins #2

3.3.5 Repairs

Two locations were identified for immediate repair during the I/I Analysis. These two locations are identified in Table 4. These manholes are scheduled to be repaired in summer 2019.

The Town of Sutton has a relatively young collection system. As such, major repairs to the system are not anticipated to be necessary in the near future. However, should defects requiring repairs be identified during CCTV or pump station inspections, they will be repaired in a timely manner.

APPENDIX A – MAIN ST PS AREA CCTV REPORTS

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Canal Street	Area:		Video I.D.	2017-07-10_103153
Location Details:	Main Highway			Pipe I.D.	2+50(Main St) to Canal St

Starting Manhole:	2+50(Main St)	Invert: 218"		Ending Manhole:	End (Canal St.)	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	25.5 ft	Survey Length:	25.5 ft		
Date: 07-10-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Upstream	Notes:					

0.0 ft Access Point, Manhole 2+50

0.0 ft Infiltration, Running

0.0 ft Pipe Deformed

18.9 ft Infiltration, Running

22.7 ft Offset Joint

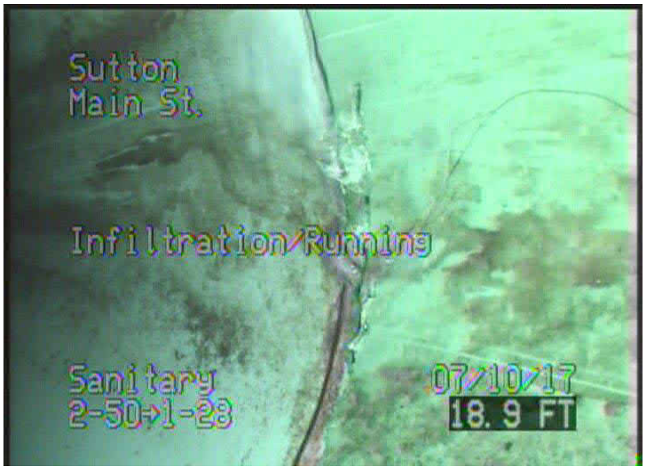
25.5 ft Connection to forced main
Inspection Complete

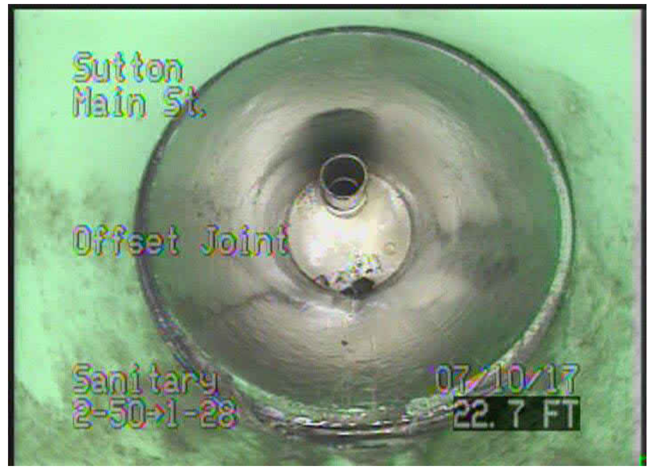
Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Page 2, Additional Photos

Owner:	Town of Sutton, Massachusetts	Street:	Canal Street	Date:	07-10-2017
Starting Manhole:	2+50(Main St)	Pipe I.D.	2+50(Main St) to end	Ending Manhole:	End (Canal St.)





Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Darling Lane	Area:		Video I.D.	2017-07-11_114915
Location Details:	Light Highway			Pipe I.D.	2+90 - Main St. 15+10

Starting Manhole:	2+90	Invert: 157"		Ending Manhole:	Main St. 15+10	Invert: 176"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	283.6 ft	Survey Length:	283.6 ft		
Date:	07-11-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

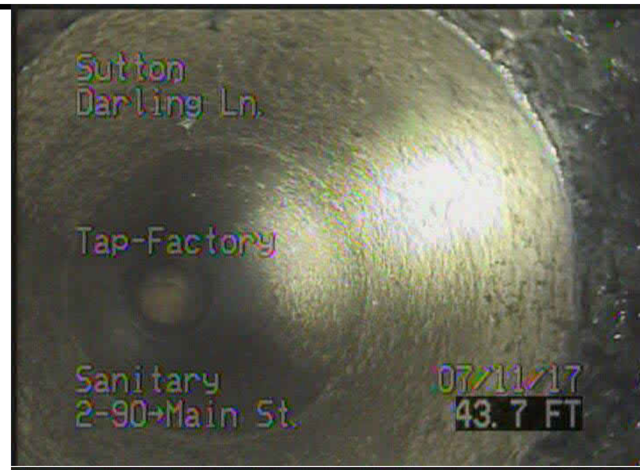
0.0 ft Access Point, Manhole 2+90

43.7 ft Tap, Factory (12:00)

159.7 ft Tap, Factory (12:00)

173.1 ft Tap, Factory, Active (12:00)

283.6 ft Access Point, Manhole 15+10 (Main St.)
Inspection Complete



Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Darling Lane	Area:		Video I.D.	2017-07-11_110352
Location Details:	Light Highway			Pipe I.D.	5+30 - 2+90

Starting Manhole:	5+30	Invert:		Ending Manhole:	2+90	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	248.2 ft	Survey Length:	248.2 ft		
Date:	07-11-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 5+30

73.9 ft Tap, Factory (12:00)

138.0 ft Tap, Factory (12:00)

248.2 ft Access Point, Manhole 2+90
Inspection Complete

Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

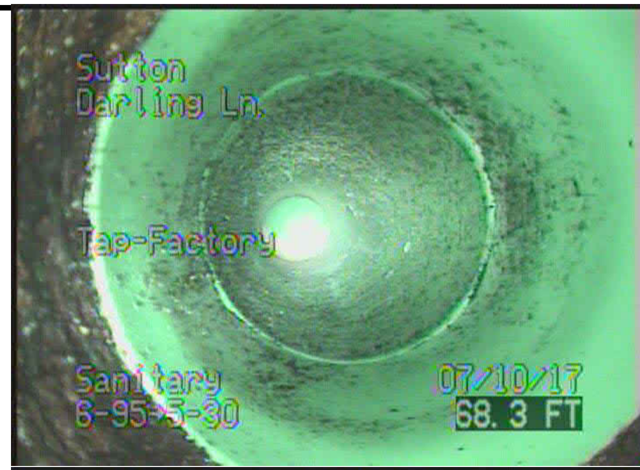
Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Darling Lane	Area:		Video I.D.	2017-07-10_162452
Location Details:	Light Highway			Pipe I.D.	6+95 - 5+30

Starting Manhole:	6+95	Invert: 148"		Ending Manhole:	5+30	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	140.4 ft	Survey Length:	140.4 ft		
Date:	07-10-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 6+95

68.3 ft Tap, Factory (12:00)

140.4 ft Access Point, Manhole 5+30
Inspection Complete



Watershed Maintenance Corporation
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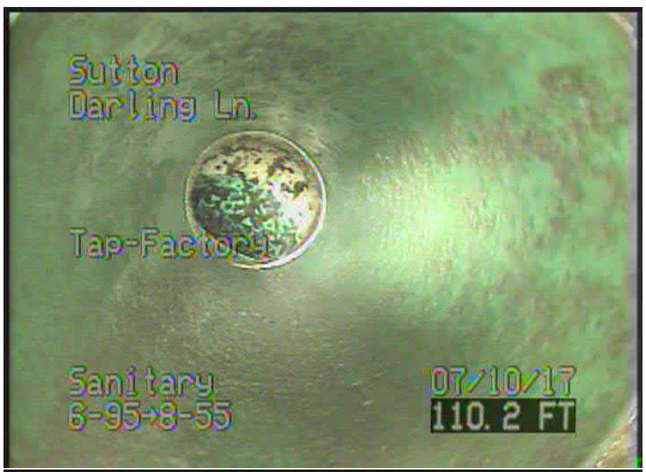
Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Darling Lane	Area:		Video I.D.	2017-07-10_160448
Location Details:	Light Highway			Pipe I.D.	8+55 - 6+95

Starting Manhole:	6+95	Invert: 148"		Ending Manhole:	8+55	Invert: 117"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	160.2 ft	Survey Length:	165.0 ft		
Date: 07-10-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Upstream	Notes:					

0.0 ft	Access Point, Manhole 6+95
31.7 ft	Tap, Factory (3:00)
110.2 ft	Tap, Factory (12:00)
156.2 ft	Tap, Factory (3:00)
160.2 ft	Access Point, Manhole 8+55 Inspection Complete
165.0 ft	Cap



Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Darling Lane	Area:		Video I.D.	2017-07-11_120900
Location Details:	Light Highway			Pipe I.D.	Easement

Starting Manhole:	2+90(Darling St)	Invert: 157"		Ending Manhole:	Buried	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	185.8 ft	Survey Length:	187.0 ft		
Date:	07-11-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Upstream	Notes:					

0.0 ft Access Point, Manhole 2+90

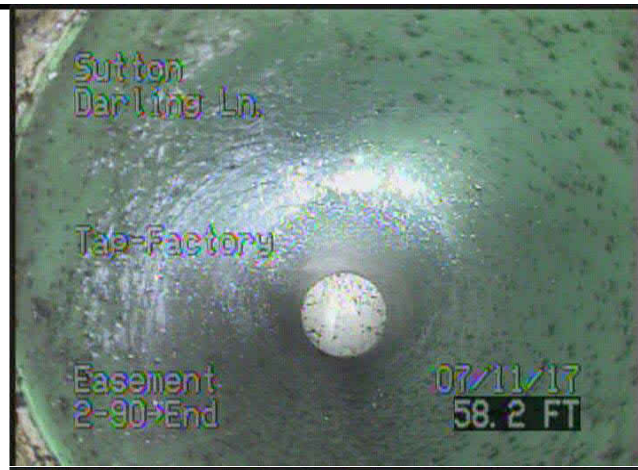
58.2 ft Tap, Factory (1:00)

162.5 ft Tap, Factory (9:00)

176.0 ft Tap, Factory (9:00)

185.8 ft Access Point, Manhole

187.0 ft Cap
Inspection Complete



Watershed Maintenance Corporation
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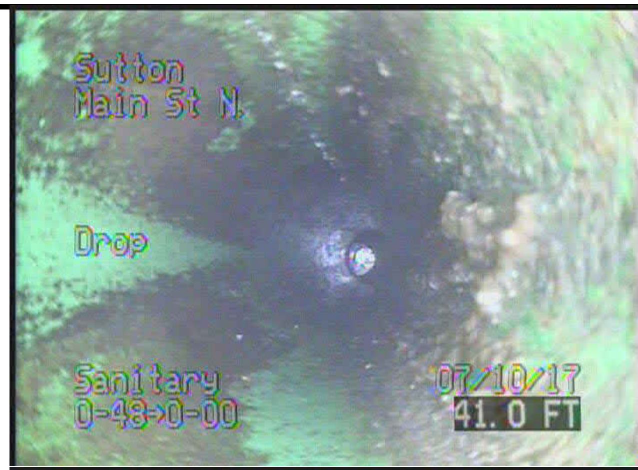
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	City of Taunton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street North	Area:		Video I.D.	2017-07-10_124132
Location Details:	Main Highway			Pipe I.D.	0+48 - 0+00

Starting Manhole:	0+48	Invert: 99"		Ending Manhole:	0+00	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	42.9 ft	Survey Length:	42.9 ft		
Date:	07-10-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 0+48
41.0 ft	Drop
42.9 ft	Access Point, Manhole 0+00, Pump Station Inspection Complete



Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	City of Taunton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street North	Area:		Video I.D.	2017-07-10_120846
Location Details:	Main Highway			Pipe I.D.	1+70 - 0+48

Starting Manhole:	1+70	Invert:		Ending Manhole:	0+48	Invert:	99"
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	117.2 ft	Survey Length:	117.2 ft		
Date:	07-10-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 1+70

3.4 ft Tap, Factory (3:00)

117.2 ft Access Point, Manhole 0+48
Inspection Complete

Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	City of Taunton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street North	Area:		Video I.D.	2017-07-10_115812
Location Details:	Main Highway			Pipe I.D.	3+19 - 1+70

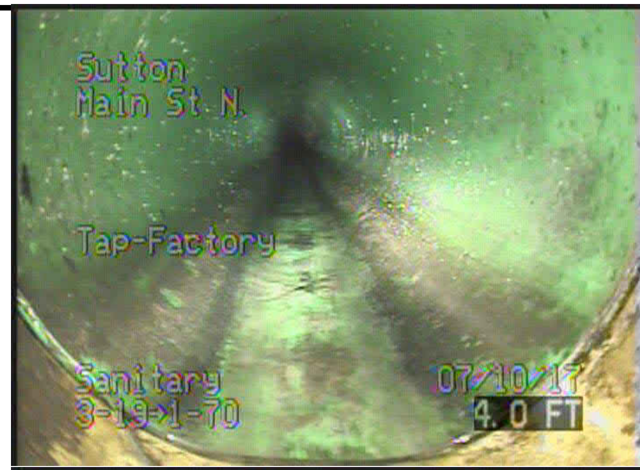
Starting Manhole:	3+19	Invert: 98"		Ending Manhole:	1+70	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	143.0 ft	Survey Length:	143.0 ft		
Date: 07-10-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 3+19

4.0 ft Tap, Factory (9:00)

43.7 ft Tap, Factory (3:00)

143.0 ft Access Point, Manhole 1+70
Inspection Complete



Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-11_133608
Location Details:	Main Highway			Pipe I.D.	1+28 - 0+00

Starting Manhole:	1+28	Invert: 193"		Ending Manhole:	0+00	Invert:	
Utility Type:	Sanitary Sewer	Size:	10 inch	Shape:	Circular	Material:	Ductile Iron
Joint Length:	13 ft	Pipe Length:	124.5 ft	Survey Length:	124.5 ft		
Date:	07-11-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 1+28

124.5 ft Access Point, Manhole 0+00, Pump Station
Inspection Complete

Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-10_094711
Location Details:	Main Highway			Pipe I.D.	2+50 - 1+28

Starting Manhole:	2+50	Invert: 218"		Ending Manhole:	1+28	Invert: 193"	
Utility Type:	Sanitary Sewer	Size:	10 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	108.3 ft	Survey Length:	108.3 ft		
Date:	07-10-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 2+50

108.3 ft Access Point, Manhole 1+28
Inspection Complete

Watershed Maintenance Corporation
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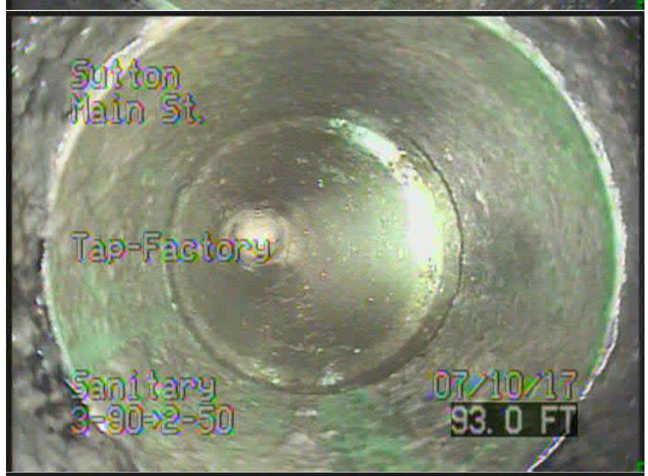
Bridgewater, MA 02324

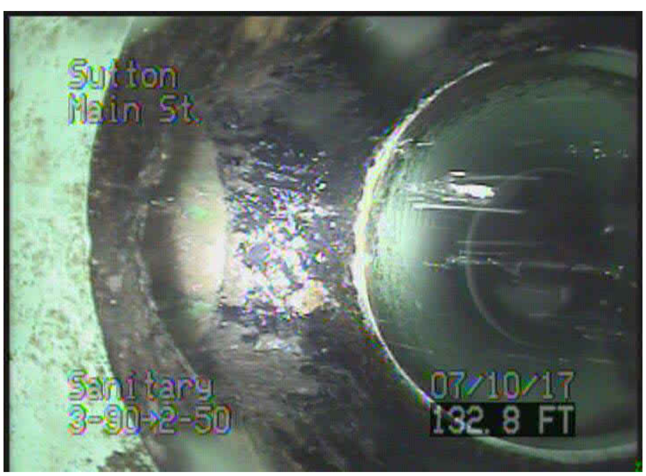
Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-10_091010
Location Details:	Main Highway			Pipe I.D.	3+90 - 2+50

Starting Manhole:	3+90	Invert:		Ending Manhole:	2+50	Invert:	218"
Utility Type:	Sanitary Sewer	Size:	10 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	142.0 ft	Survey Length:	142.0 ft		
Date:	07-10-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 3+90
38.4 ft	Tap, Factory (12:00)
93.0 ft	Tap, Factory (12:00)
132.8 ft	Tap, Factory, Active (12:00)
142.0 ft	Access Point, Manhole 2+50 Inspection Complete





Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

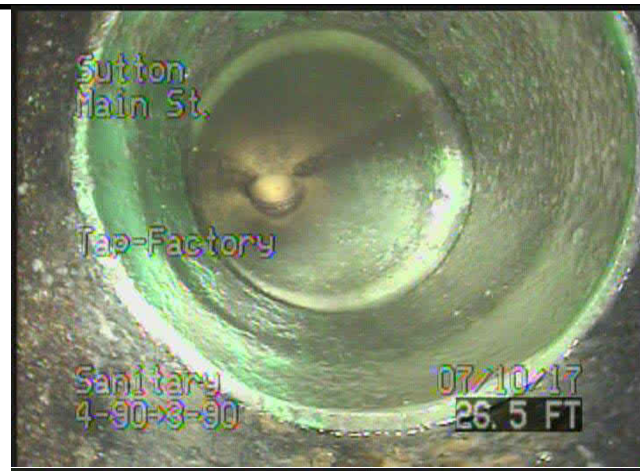
Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-10_090206
Location Details:	Main Highway			Pipe I.D.	4+90 - 3+90

Starting Manhole:	4+90	Invert: 207"		Ending Manhole:	3+90	Invert:	
Utility Type:	Sanitary Sewer	Size:	10 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	94.6 ft	Survey Length:	94.6 ft		
Date: 07-10-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 4+90

26.5 ft Tap, Factory (12:00)

94.6 ft Access Point, Manhole 3+90
Inspection Complete



Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-07_101439
Location Details:	Main Highway			Pipe I.D.	7+00 - 4+90

Starting Manhole:	7+00	Invert: 211"		Ending Manhole:	4+90	Invert: 207"	
Utility Type:	Sanitary Sewer	Size:	10 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	211.6 ft	Survey Length:	211.6 ft		
Date:	07-07-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 7+00
67.7 ft	Water Level, Sag Begins
88.7 ft	Tap, Factory, Active (12:00)
94.1 ft	Water Level, Sag Ends
211.6 ft	Access Point, Manhole 4+90 Inspection Complete

Watershed Maintenance Corporation
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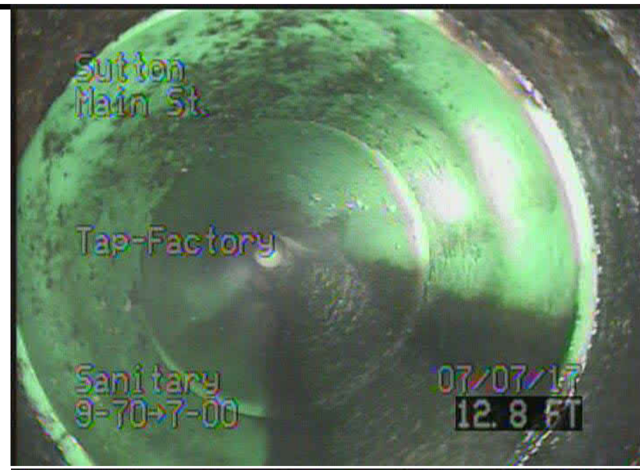
Bridgewater, MA 02324

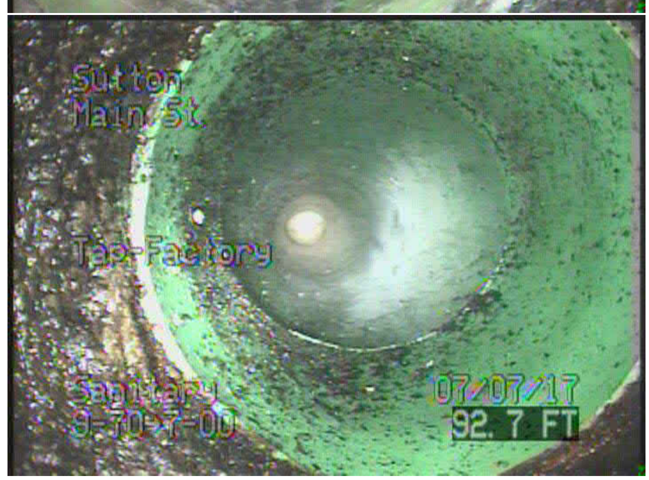
Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-07_083436
Location Details:	Main Highway			Pipe I.D.	9+70 - 7+00

Starting Manhole:	9+70	Invert:		Ending Manhole:	7+00	Invert:	211"
Utility Type:	Sanitary Sewer	Size:	10 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	254.7 ft	Survey Length:	254.7 ft		
Date:	07-07-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 9+70
12.8 ft	Tap, Factory (12:00)
79.7 ft	Tap, Factory (12:00)
92.7 ft	Tap, Factory (12:00)
172.7 ft	Tap, Factory (12:00)
186.7 ft	Tap, Factory, Active (12:00)
250.2 ft	Tap, Factory (12:00)
254.7 ft	Access Point, Manhole 7+00 Inspection Complete



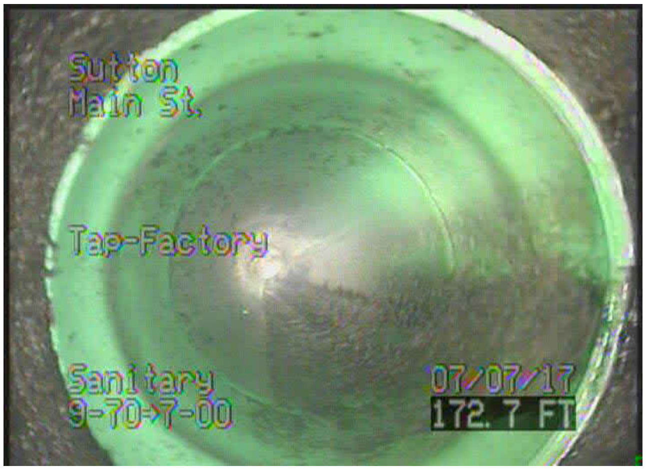


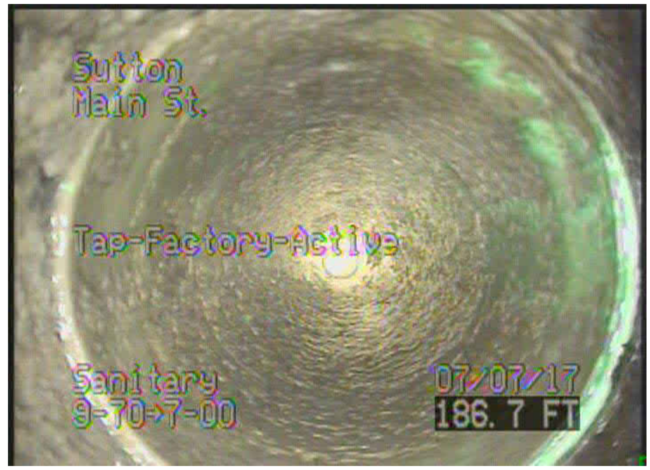
Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

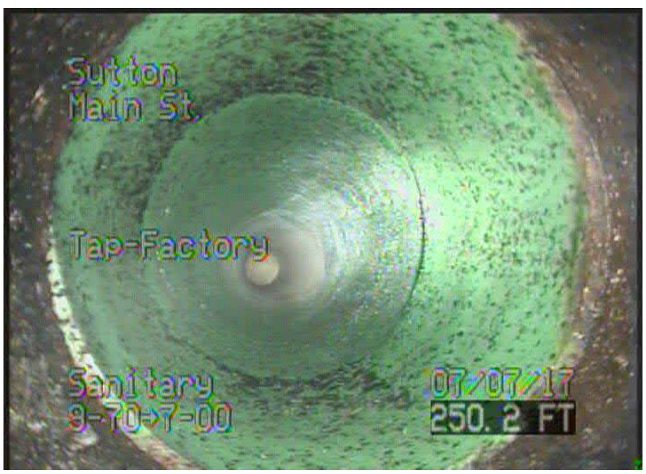
Pipeline Inspection Report

Page 2, Additional Photos

Owner:	Town of Sutton, Massachusetts	Street:	Main St.	Date:	07-07-2017
Starting Manhole:	9+70	Pipe I.D.	9+70 - 7+00	Ending Manhole:	7+00







Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-07_081320
Location Details:	Main Highway			Pipe I.D.	12+10 - 9+70

Starting Manhole:	12+10	Invert:		Ending Manhole:	9+70	Invert:	
Utility Type:	Sanitary Sewer	Size:	10 inch	Shape:	Circular	Material:	Ductile Iron
Joint Length:	18 ft	Pipe Length:	218.7 ft			Survey Length:	218.7 ft
Date:	07-07-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 12+10

218.7 ft Access Point, Manhole 9+70
Inspection Complete

Watershed Maintenance Corporation
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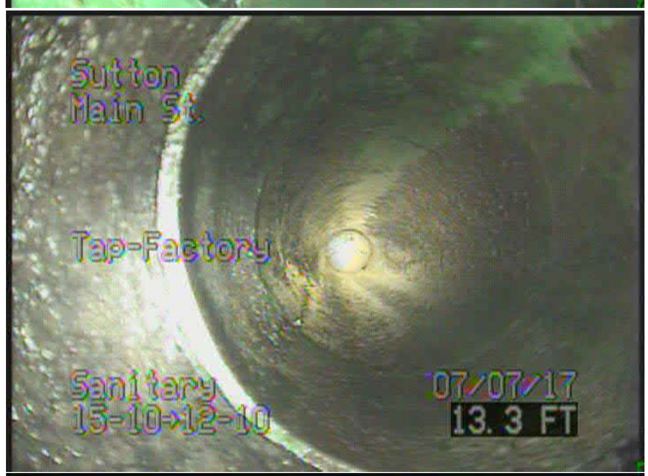
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-07_074943
Location Details:	Main Highway			Pipe I.D.	15+10 - 12+10

Starting Manhole:	15+10	Invert: 176"		Ending Manhole:	12+10	Invert:	
Utility Type:	Sanitary Sewer	Size:	10 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	307.9 ft	Survey Length:	307.9 ft		
Date: 07-07-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 15+10
13.3 ft	Tap, factory, Active (12:00)
71.2 ft	Water Level, Sag Begins
95.0 ft	Water Level, Sag Ends
104.4 ft	Tap, Factory, Active (12:00)
132.3 ft	Tap, Factory (12:00)
197.9 ft	Tap, Factory, Active (12:00)
250.8 ft	Tap, Factory (12:00)
264.7 ft	Tap, Factory (12:00)
257.6 ft	Water Level, Sag Begins
264.7 ft	Tap, Factory (12:00)
280.2 ft	Water Level, Sag Ends
302.4 ft	Tap, Factory, Active (12:00)
307.9 ft	Access Point, Manhole 12+10 Inspection Complete



Watershed Maintenance Corporation
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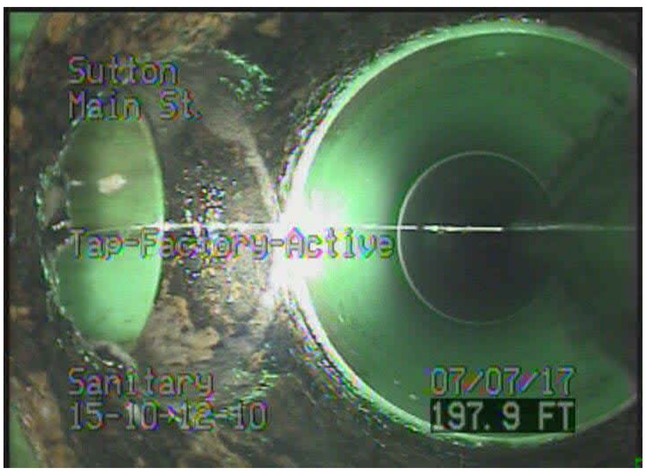
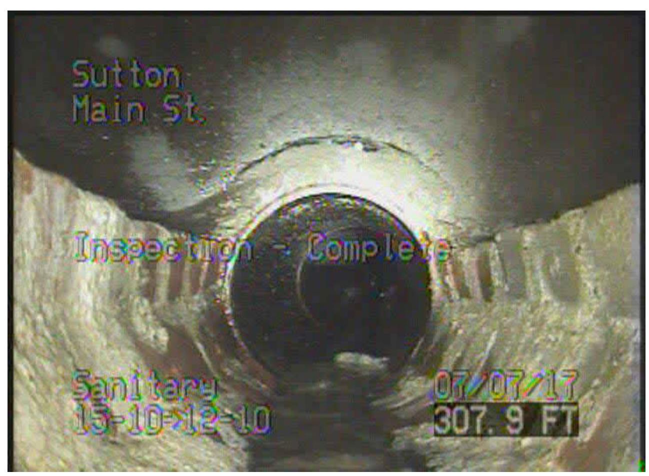
Bridgewater, MA 02324

Pipeline Inspection Report

Page 2, Additional Photos

Owner:	Town of Sutton, Massachusetts	Street:	Main Street	Date:	07-07-2017
Starting Manhole:	15+10	Pipe I.D.	15+10 - 12+10	Ending Manhole:	12+10





Watershed Maintenance Corporation
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Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-06_092912
Location Details:	Main Highway			Pipe I.D.	17+30 - 15+10

Starting Manhole:	17+30	Invert:		Ending Manhole:	15+10	Invert:	176"
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	223.2 ft	Survey Length:	223.2 ft		
Date:	07-06-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 17+30
10.4 ft	Tap, Factory, Active (12:00)
36.5 ft	Water Level, Sag Begins
49.0 ft	Water Level, Sag Ends
54.0 ft	Tap, Factory, Active (12:00)
63.0 ft	Water Level, Sag Begins
73.6 ft	Water Level, Sag Ends
98.5 ft	Tap, Factory, Active (12:00)
223.2 ft	Access Point, Manhole 15+10 Inspection Complete

Watershed Maintenance Corporation
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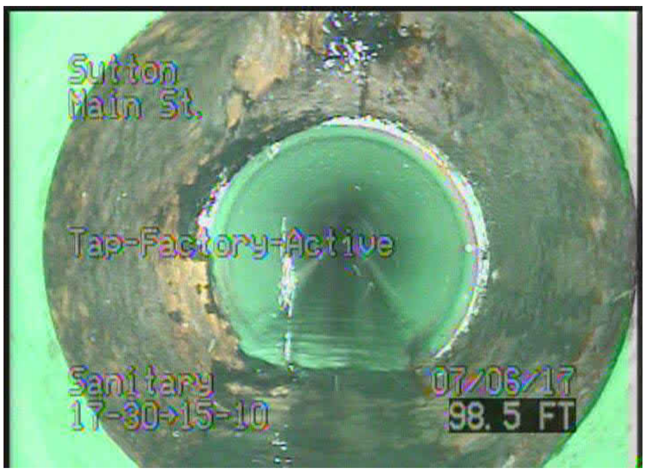
Bridgewater, MA 02324

Pipeline Inspection Report

Page 2, Additional Photos

Owner:	Town of Sutton, Massachusetts	Street:	Main St.	Date:	07-06-2017
Starting Manhole:	17+30	Pipe I.D.	17+30 - 15+10	Ending Manhole:	15+10



Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-06_091127
Location Details:	Main Highway			Pipe I.D.	19+50 - 17+30

Starting Manhole:	19+50	Invert:		Ending Manhole:	17+30	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	210.6 ft	Survey Length:	210.6 ft		
Date:	07-06-2017	Time:		Flow Control:	None	Pre-cleaning:	Jettiing
Survey Direction:	Downstream	Notes:					

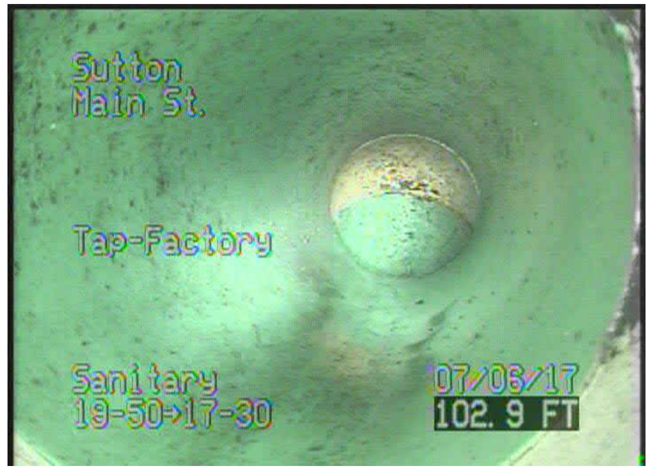
0.0 ft	Access Point, Manhole 19+50
10.4 ft	Tap, Factory (10:00)
21.2 ft	Tap, Factory (3:00)
44.1 ft	Tap, Factory (10:00)
96.4 ft	Water Level, Sag Begins
102.9 ft	Tap, Factory (1:00)
104.7 ft	Water Level, Sag Ends
138.1 ft	Tap, Factory (12:00)
150.0 ft	Water Level, Sag Begins
158.2 ft	Water Level, Sag Ends
177.7 ft	Tap, Factory (12:00)
210.6 ft	Access Point, Manhole 17+30 Inspection Complete

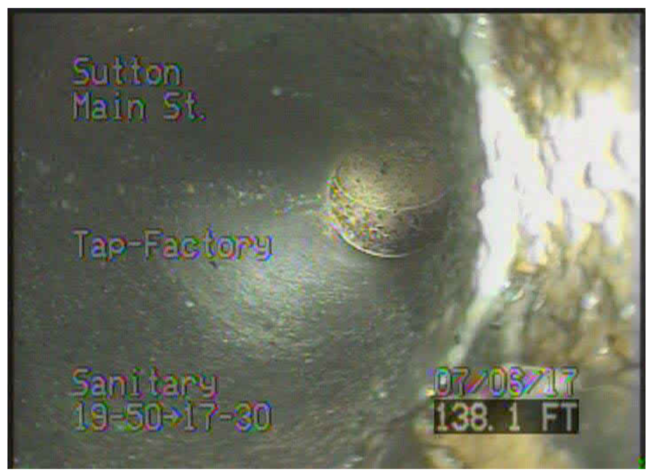
Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Page 2, Additional Photos

Owner:	Town of Sutton, Massachusetts	Street:	Main Street	Date:	07-06-2017
Starting Manhole:	19+50	Pipe I.D.	19+50 - 17+30	Ending Manhole:	17+30





Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Main Street	Area:		Video I.D.	2017-07-06_085834
Location Details:	Main Highway			Pipe I.D.	21+40 - 19+50

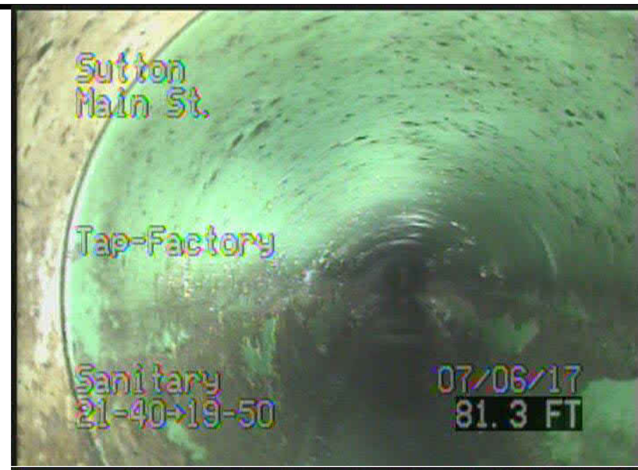
Starting Manhole:	21+40	Invert: 85"		Ending Manhole:	19+50	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	186.6 ft	Survey Length:	186.6 ft		
Date: 07-06-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 21+40

81.3 ft Tap, Factory (9:00)

88.0 ft Tap, Factory (3:00)

186.6 ft Access Point, Manhole 19+50
Inspection Complete



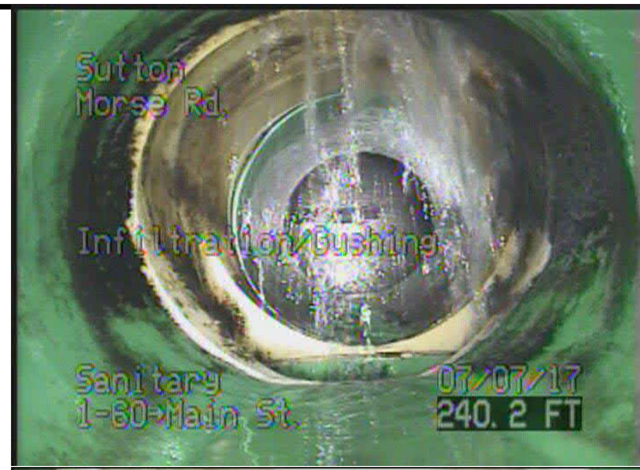
Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

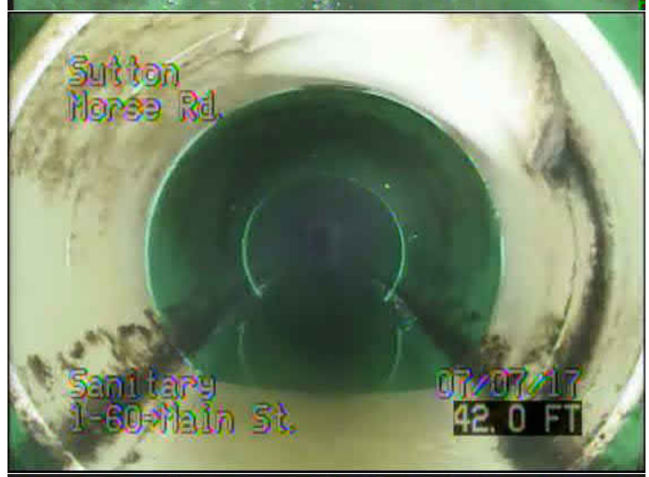
Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Morse Road	Area:		Video I.D.	2017-07-07_112419
Location Details:	Light Highway			Pipe I.D.	1+60 - Main St. 4+90

Starting Manhole:	1+60	Invert:		Ending Manhole:	Main St. 4+90	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	242.8 ft	Survey Length:	242.8 ft		
Date: 07-07-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 1+60 Sag Continues from previous section, Started 11 ft Upstream of This Manhole
3.1 ft	Water Level, Sag Ends
42.0 ft	Water Level, Sag Begins
43.0 ft	Tap, Factory (1:00)
57.2 ft	Water Level, Sag Ends
100.3 ft	Tap, Factory (1:00)
108.5 ft	Water Level, Sag Begins
109.5 ft	Tap, Factory (3:00)
113.1 ft	Tap, Factory (11:00)
116.7 ft	Water Level, Sag Ends
233.1 ft	Pipe Deformed
240.8 ft	Infiltration Gushing At Joint
241.2 ft	Tap, Factory (6:00)
242.8 ft	Access Point, Manhole 4+90 (Main St.) Inspection Complete





Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Page 2, Additional Photos

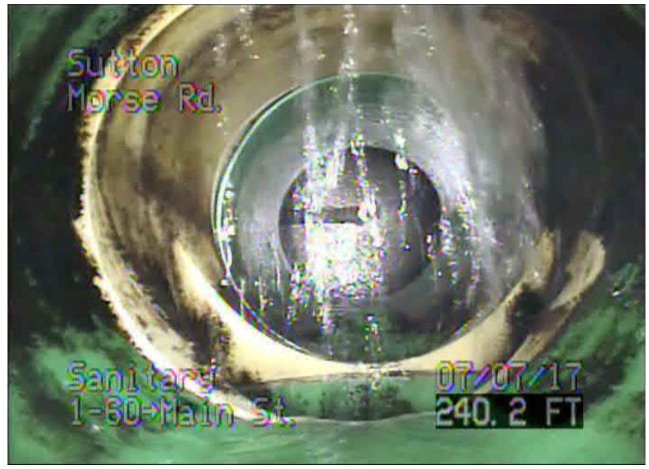
Owner:	Town of Sutton, Massachusetts	Street:	Morse Road	Date:	07-07-2017
Starting Manhole:	1+60	Pipe I.D.	1+60 - Main St. 4+90	Ending Manhole:	Main St. 4+90

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Page 3, Additional Photos

Owner:	Town of Sutton, Massachusetts	Street:	Morse Road	Date:	07-07-2017
Starting Manhole:	1+60	Pipe I.D.	1+60 - Main St. 4+90	Ending Manhole:	Main St. 4+90



Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Morse Road	Area:		Video I.D.	2017-07-07_111001
Location Details:	Light Highway			Pipe I.D.	3+45 - 1+60

Starting Manhole:	3+45	Invert: 139"		Ending Manhole:	1+60	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	70.0 ft	Survey Length:	70.0 ft		
Date:	07-07-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 3+45

38.3 ft Tap, Factory (11:00)

59.0 ft Water Level, Sag Begins
Continues Through Manhole
Ends 3ft Down Next Pipe

70.0 ft Access Point, Manhole 1+60
Inspection Complete

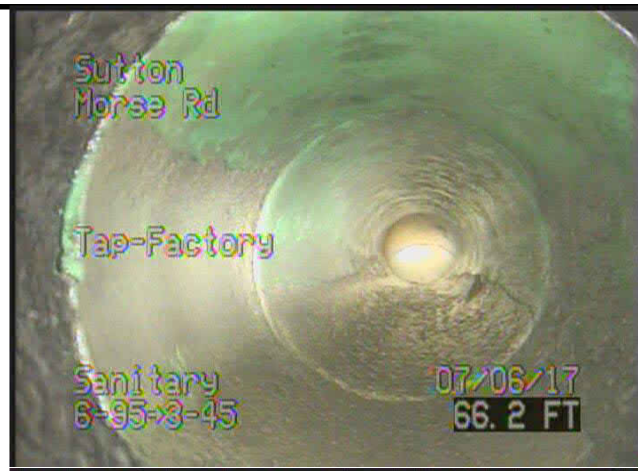
Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Morse Road	Area:		Video I.D.	2017-07-06_133448
Location Details:	Light Highway			Pipe I.D.	6+95 - 3+45

Starting Manhole:	6+95	Invert:		Ending Manhole:	3+45	Invert:	139"
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	318.3 ft	Survey Length:	318.3 ft		
Date:	07-06-2017	Time:		Flow Control:	None	Pre-cleaning:	None
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 6+95
66.2 ft	Tap, Factory (12:00)
222.5 ft	Tap, Factory (12:00)
285.6 ft	Tap, Factory (12:00)
318.3 ft	Access Point, Manhole 3+45 Inspection Complete



Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Morse Road	Area:		Video I.D.	2017-07-06_123647
Location Details:	Light Highway			Pipe I.D.	9+20 - 6+95

Starting Manhole:	9+20	Invert: 103"		Ending Manhole:	6+95	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	270.2 ft	Survey Length:	270.2 ft		
Date:	07-06-2017	Time:		Flow Control:	None	Pre-cleaning:	None
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 9+20

2.0 ft Tap, Factory (3:00)

39.2 ft Tap, Factory (9:00)

169.5 ft Tap, Factory (3:00)

235.0 ft Tap, Factory (9:00)

270.2 ft Access Point, Manhole 6+95
Inspection Complete

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-07_140817
Location Details:	Light Highway			Pipe I.D.	0+50 - Main St. 3+90

Starting Manhole:	0+50	Invert:		Ending Manhole:	Main St. 3+90	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	39.3 ft	Survey Length:	39.3 ft		
Date:	07-07-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 0+50

15.3 ft Tap, Factory (10:00)

37.6 ft Drop

39.3 ft Access Point, Manhole 3+90 (Main St.)
Inspection Complete

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-07_134729
Location Details:	Light Highway			Pipe I.D.	1+50 - 0+50

Starting Manhole:	1+50	Invert: 131"		Ending Manhole:	0+50	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	102 ft	Survey Length:	102 ft		
Date:	07-07-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 1+50

34.5 ft Tap, Factory (1:00)

86.1 ft Tap, Factory (11:00)

102.0 ft Access Point, Manhole 0+50
Inspection Complete

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-07_132313
Location Details:	Light Highway			Pipe I.D.	2+95 - 1+50

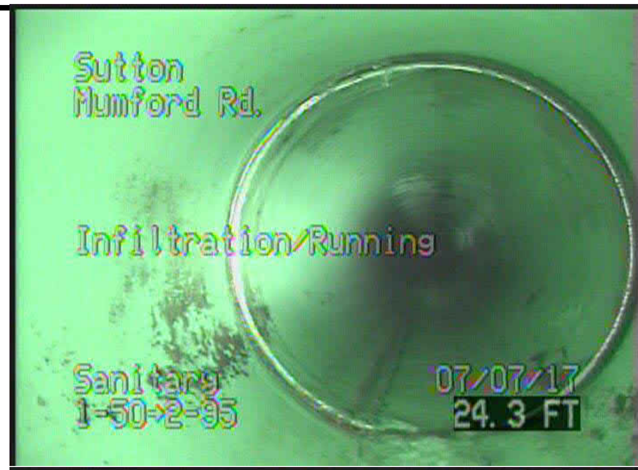
Starting Manhole:	1+50	Invert: 131"		Ending Manhole:	2+95	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	140.1 ft	Survey Length:	140.1 ft		
Date:	07-07-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Upstream	Notes:					

0.0 ft Access Point, Manhole 1+50

24.3 ft Infiltration, Running

116.2 ft Tap, Factory (2:00)

140.1 ft Access Point, Manhole 2+95



Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-11_100830
Location Details:	Light Highway			Pipe I.D.	4+15 - 2+95

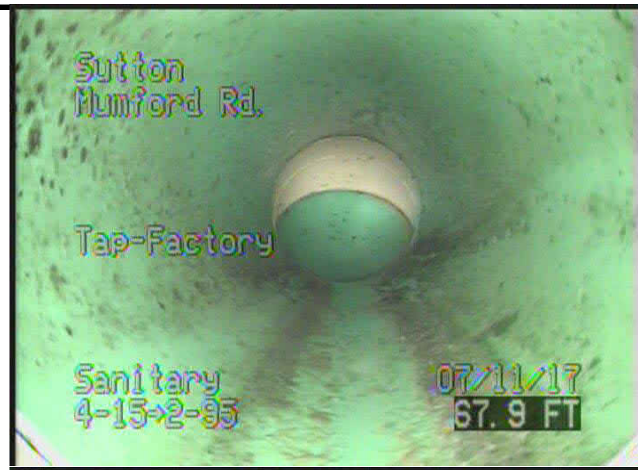
Starting Manhole:	4+15	Invert: 127"		Ending Manhole:	2+95	Invert: 131"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	113.8 ft	Survey Length:	113.8 ft		
Date:	07-11-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 4+15

69.7 ft Tap, Factory (11:00)

110.3 ft Tap, Factory (1:00)

113.8 ft Access Point, Manhole 2+95
Inspection Complete



Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-11_093448
Location Details:	Light Highway			Pipe I.D.	5+80 - 4+15

Starting Manhole:	5+80	Invert: 104"		Ending Manhole:	4+15	Invert: 127"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	160.0 ft	Survey Length:	160.0 ft		
Date:	07-11-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 5+80
45.3 ft	Tap, Factory (11:00)
85.8 ft	Tap, Factory (3:00)
156.9 ft	Tap, Factory (9:00)
159.1 ft	Drop
160.0 ft	Access Point, Manhole 4+15 Inspection Complete

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-11_091704
Location Details:	Light Highway			Pipe I.D.	7+40 - 5+80

Starting Manhole:	7+40	Invert: 124"		Ending Manhole:	5+80	Invert: 104"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	149.7 ft	Survey Length:	149.7 ft		
Date:	07-11-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

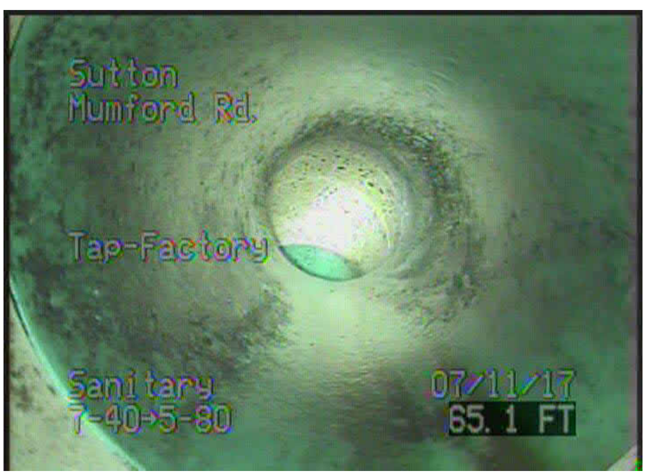
0.0 ft Access Point, Manhole 7+40

6.0 ft Tap, Factory, Active (11:00)

18.9 ft Tap, Factory (3:00)

65.1 ft Tap, Factory (11:00)

149.7 ft Access Point, Manhole 5+80
Inspection Complete



Watershed Maintenance Corporation

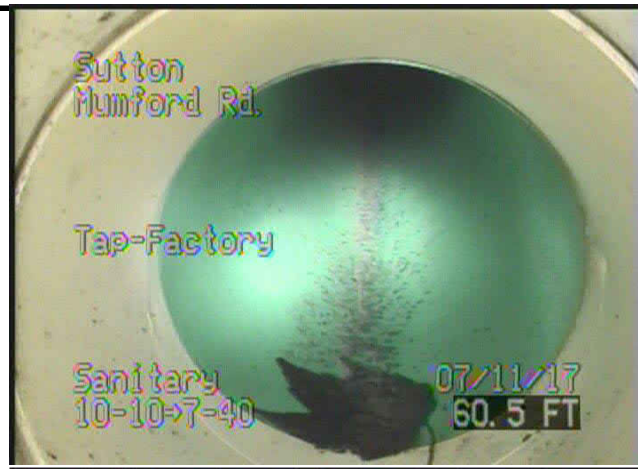
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-11_082305
Location Details:	Light Highway			Pipe I.D.	10+10 - 7+40

Starting Manhole:	10+10	Invert: 122"		Ending Manhole:	7+40	Invert: 124"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	267.0 ft	Survey Length:	267.0 ft		
Date: 07-11-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 10+10
60.5 ft	Tap, Factory (3:00)
158.3 ft	Crack, Longitudinal
159.2 ft	Tap, Factory (9:00)
221.6 ft	Tap, Factory (3:00)
266.0 ft	Drop
267.0 ft	Access Point, Manhole 7+40 Inspection Complete



Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Page 2, Additional Photos

Owner:	Town of Sutton, Massachusetts	Street:	Mumford Road	Date:	07-11-2017
Starting Manhole:	10+10	Pipe I.D.	10+10 - 7+40	Ending Manhole:	7+40

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-11_075702
Location Details:	Light Highway			Pipe I.D.	12+00 - 10+10

Starting Manhole:	12+00	Invert: 125"		Ending Manhole:	10+10	Invert: 122"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	185.2 ft	Survey Length:	185.2 ft		
Date:	07-11-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 12+00

25.1 ft Tap, Factory (11:00)

64.3 ft Tap, Factory (1:00)

64.3 ft Light Roots In Tap

107.7 ft Tap, Factory (3:00)

185.2 ft Access Point, Manhole 10+10
Inspection Complete

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-10_142306
Location Details:	Light Highway			Pipe I.D.	14+95 - 12+00

Starting Manhole:	14+95	Invert: 107"		Ending Manhole:	12+00	Invert: 125"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	288.5 ft	Survey Length:	288.5 ft		
Date: 07-10-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Downstream	Notes:					

0.0 ft Access Point, Manhole 14+95

210.4 ft Tap, Factory (1:00)

245.5 ft Tap, Factory (3:00)

288.5 ft Access Point, Manhole 12+00
Inspection Complete

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-10_141342
Location Details:	Light Highway			Pipe I.D.	15+75 - 14+95

Starting Manhole:	15+75	Invert: 119"		Ending Manhole:	14+95	Invert: 107"	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:	13 ft	Pipe Length:	72.9 ft	Survey Length:	72.9 ft		
Date:	07-10-2017	Time:		Flow Control:	None	Pre-cleaning:	Jetting
Survey Direction:	Downstream	Notes:					

0.0 ft	Access Point, Manhole 15+75
5.2 ft	Tap, Factory (1:00)
72.9 ft	Access Point, Manhole 14+95 Inspection Complete

Watershed Maintenance Corporation
P.O. Box 34
Bridgewater, MA 02324

Pipeline Inspection Report

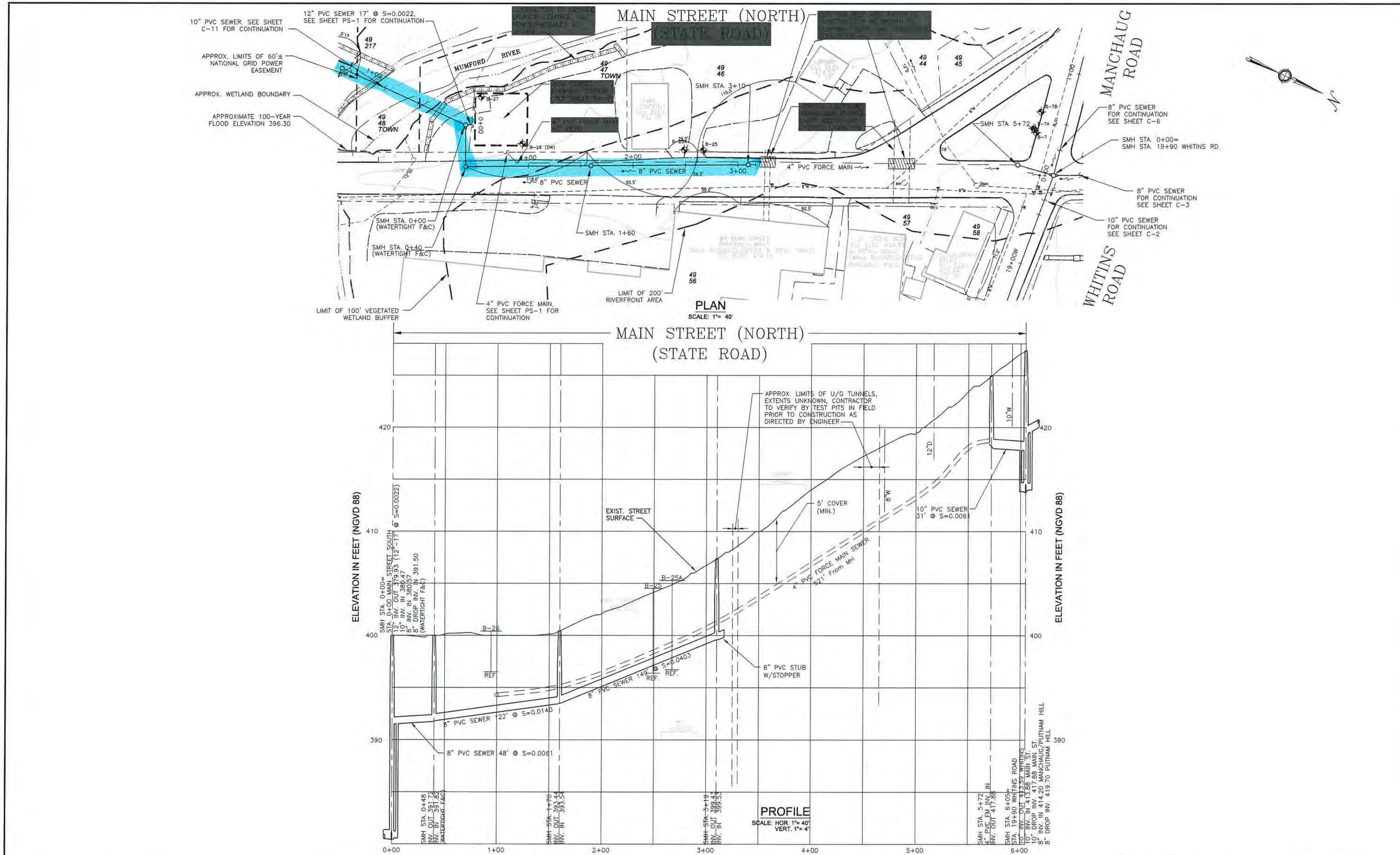
Owner:	Town of Sutton, Massachusetts	Client:	BETA Group Inc.	Inspector:	Don Allsopp
Street/No.	Mumford Road	Area:		Video I.D.	2017-07-10_135808
Location Details:	Light Highway			Pipe I.D.	15+75 - Cap

Starting Manhole:	15+75	Invert: 119"		Ending Manhole:	Cap	Invert:	
Utility Type:	Sanitary Sewer	Size:	8 inch	Shape:	Circular	Material:	PVC
Joint Length:		Pipe Length:	6.0 ft	Survey Length:	6.0 ft		
Date: 07-10-2017	Time:	Flow Control:	None	Pre-cleaning:	Jetting		
Survey Direction:	Upstream	Notes:					

0.0 ft Access Point, Manhole 15+75

3.4 ft Tap, Factory (1:00)

6.0 ft Cap
Inspection Complete



NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTIONS
REVISIONS				

SCALE: 1" = 40'
GRAPHIC SCALE: 40 0 40
SCALE IN FEET
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

DRAWN BY PAS
DEPT. CHECK MA
PROJ. CHECK JF

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER DATE

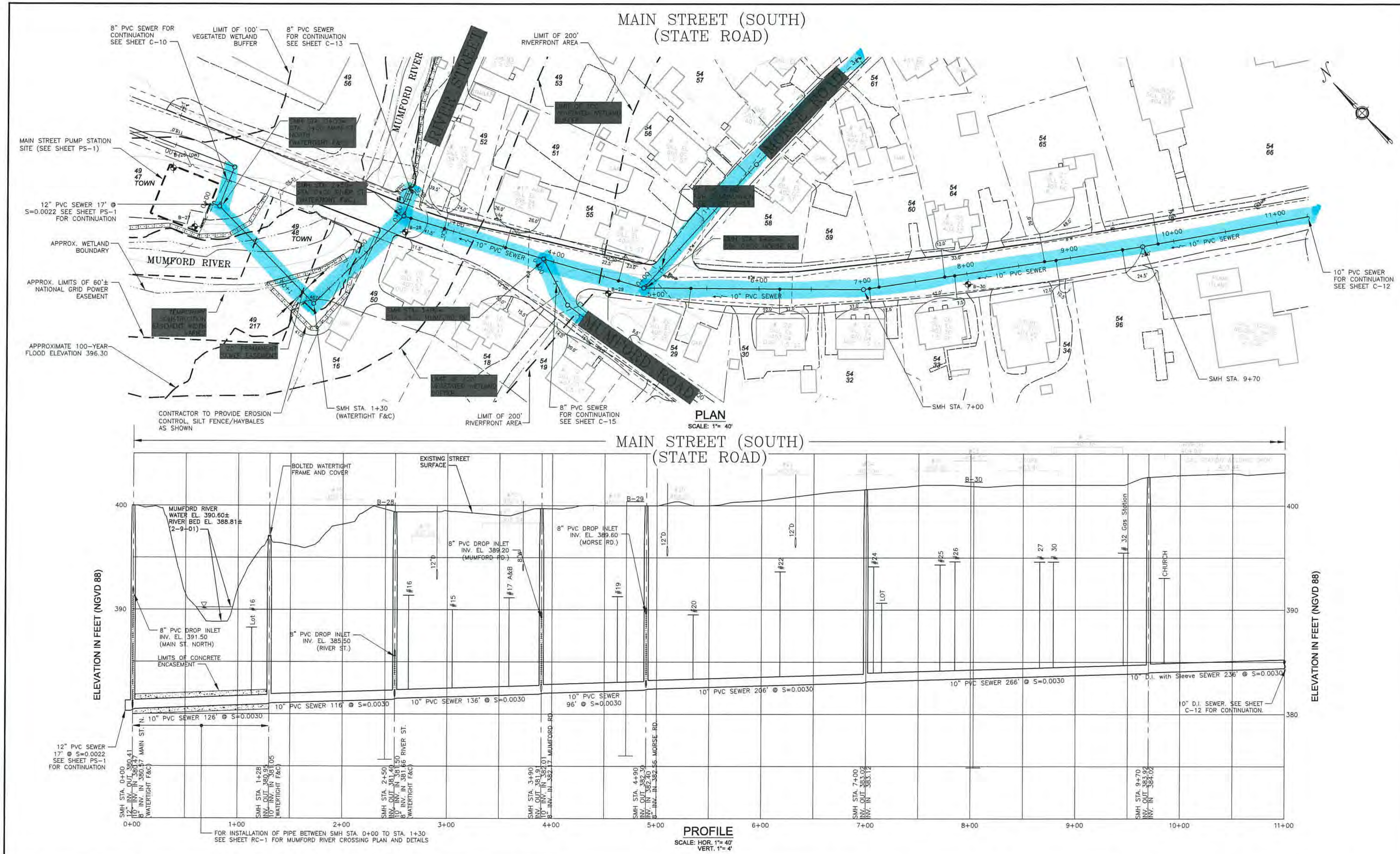
BETA Group, Inc.
Engineers Scientists Planners

TOWN OF SUTTON, MASSACHUSETTS
SANITARY SEWERS, PUMPING STATIONS, AND APPURTENANT WORK FOR SOUTH SUTTON/MANCHAUG

MAIN STREET (NORTH)
STA. 0+00 TO 6+05

CONTRACT NO.: 02-1
JOB NO.: 2714
DATE ISSUED: December, 2004
FILENAME: C-10

SHEET NO. C-10



NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTIONS

REVISIONS

SCALE: 1" = 40'
GRAPHIC SCALE: 40 0 40 SCALE IN FEET
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

DRAWN BY PAS
DEPT. CHECK MA
PROJ. CHECK JF

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER DATE

BETA Group, Inc.
Engineers Scientists Planners

TOWN OF SUTTON, MASSACHUSETTS
SANITARY SEWERS, PUMPING STATIONS, AND APPURTENANT WORK FOR SOUTH SUTTON/MANCHAUG

MAIN STREET (SOUTH)
STA. 0+00 TO 11+00

CONTRACT NO.: 02-1
JOB NO.: 2714
DATE ISSUED: December, 2004
FILENAME: C-11
SHEET NO. C-11

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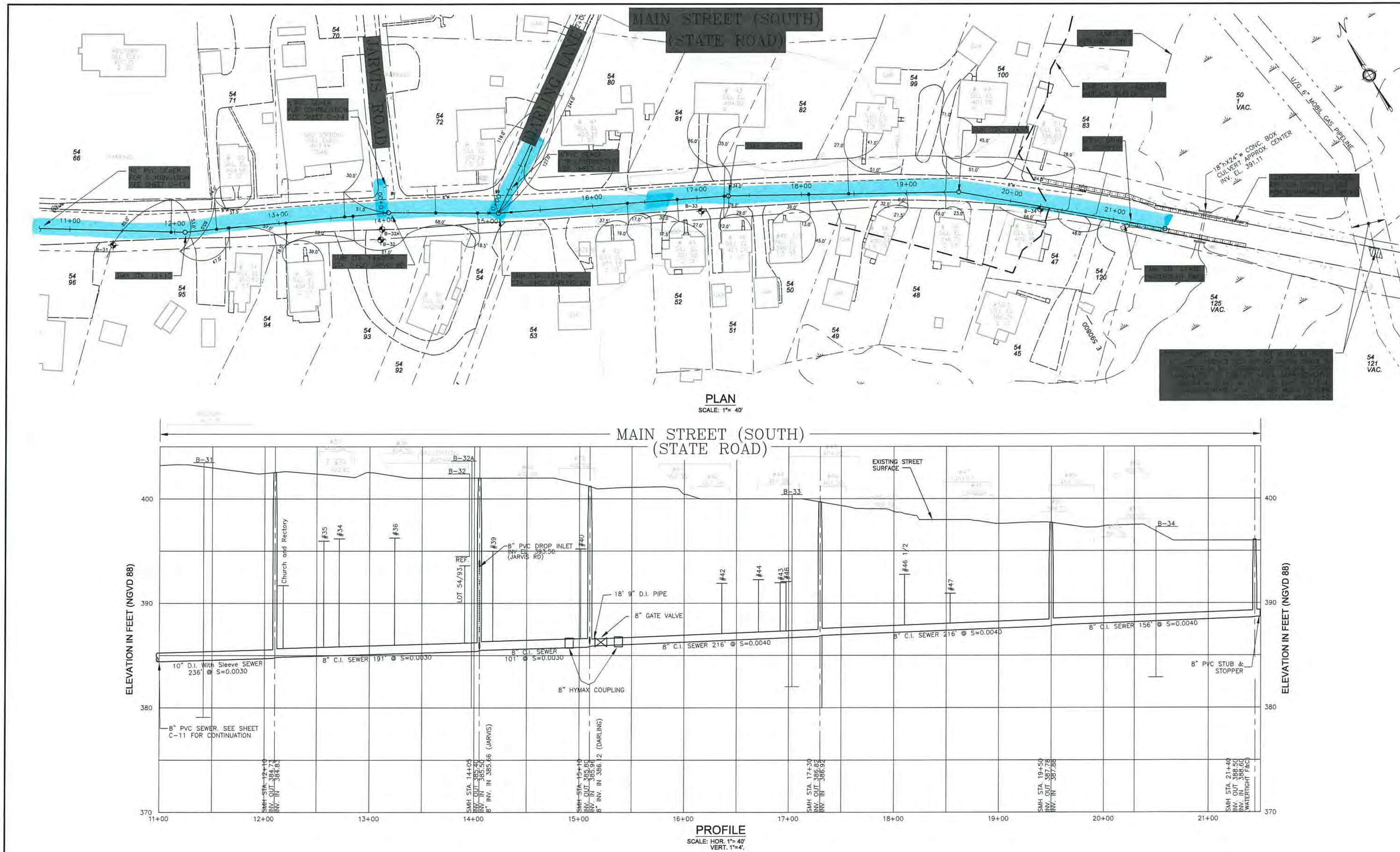

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REVISIONS				

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SCALE IN FEET
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

DRAWN BY: PAS
DEPT. CHECK: MA
PROJ. CHECK: JF

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER DATE

BETA Group, Inc.
Engineers Scientists Planners

TOWN OF SUTTON, MASSACHUSETTS
SANITARY SEWERS, PUMPING STATIONS, AND APPURTENANT WORK FOR SOUTH SUTTON/MANCHAUG

MAIN STREET (SOUTH)
STA. 11+00 TO 21+10

CONTRACT NO.: 02-1
JOB NO.: 2714
DATE ISSUED: December, 2004
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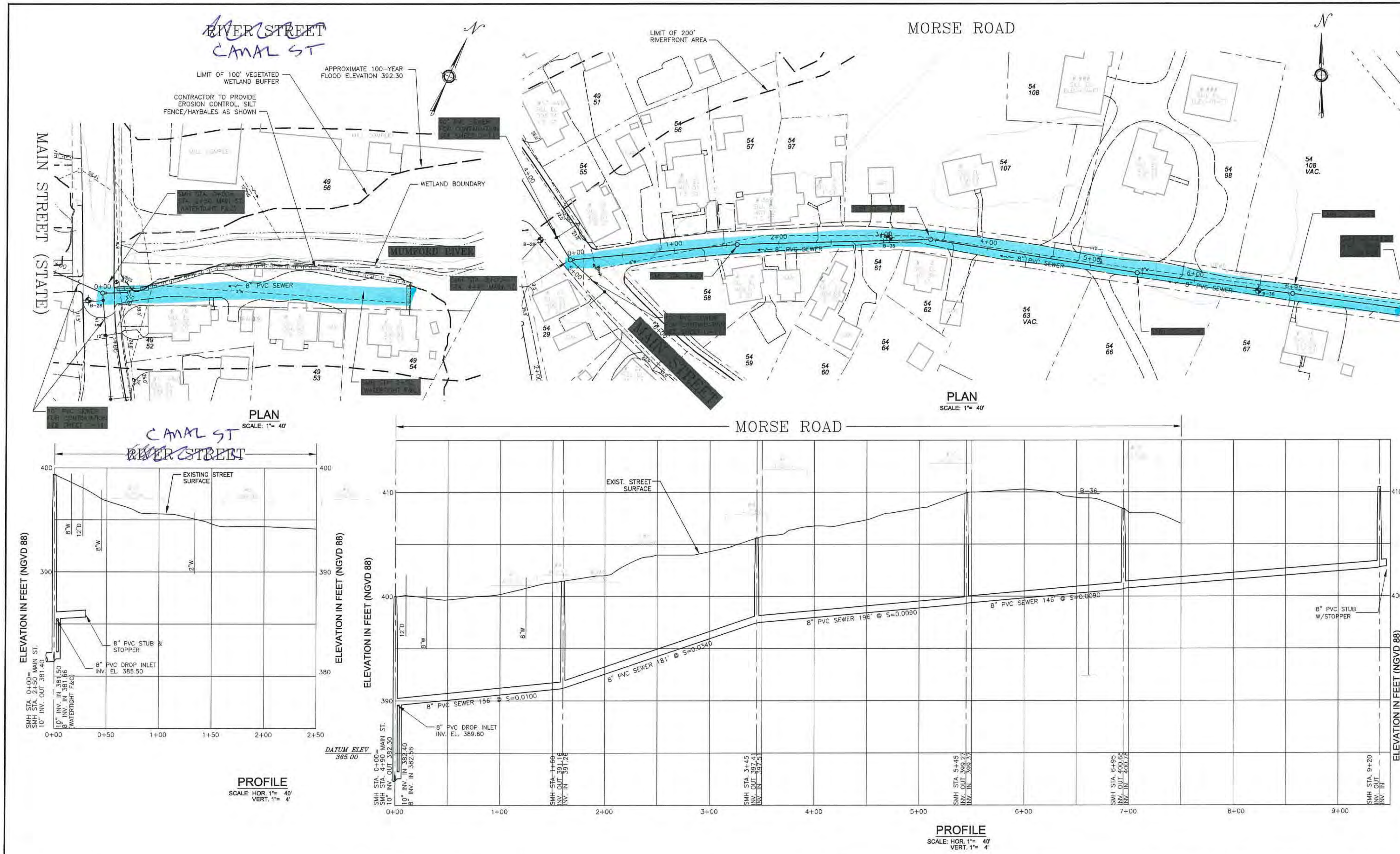
SHEET NO. C-12



NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTIONS

REVISIONS

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UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

DRAWN BY: PAS
DEPT. CHECK: MA
PROJ. CHECK: JF

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER DATE

BETA Group, Inc.
Engineers Scientists Planners

TOWN OF SUTTON, MASSACHUSETTS
SANITARY SEWERS, PUMPING STATIONS, AND APPURTENANT WORK FOR SOUTH SUTTON/MANCHAUG

RIVER STREET STA. 0+00 TO 2+50
MORSE ROAD STA. 0+00 TO 6+95

CONTRACT NO.: 02-1
JOB NO.: 2714
DATE ISSUED: December, 2004
FILENAME: C-13

SHEET NO. C-13

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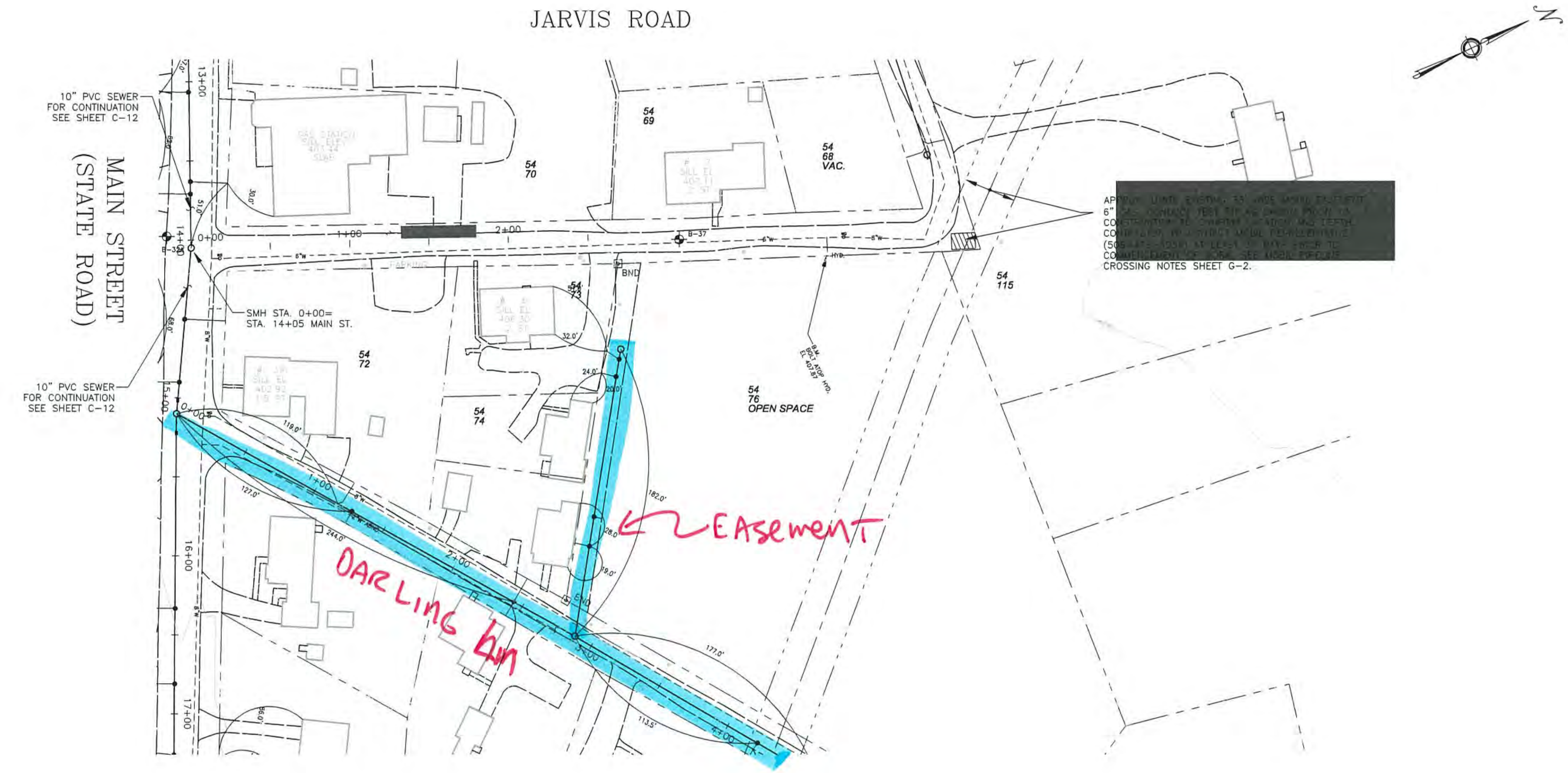

PLAN

SCALE: HOR. 1"= 40'

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTIONS

REVISIONS

SCALE: 1" = 40'

GRAPHIC SCALE: 40 0 40 SCALE IN FEET

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

DRAWN BY PAS

DEPT. CHECK MA

PROJ. CHECK JF

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER DATE

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TOWN OF SUTTON, MASSACHUSETTS
SANITARY SEWERS, PUMPING STATIONS, AND APPURTENANT WORK FOR SOUTH SUTTON/MANCHAUG

JARVIS ROAD
STA. 0+00 TO 2+80

CONTRACT NO.: 02-1
JOB NO.: 2714
DATE ISSUED: December, 2004
FILENAME: C-14

SHEET NO. C-14

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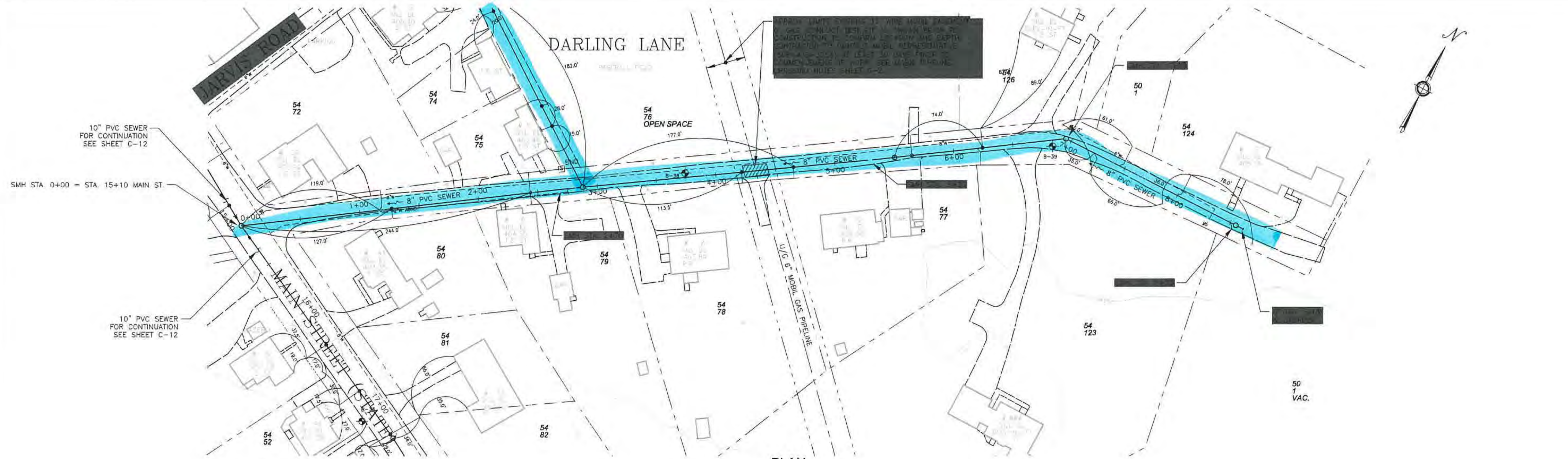

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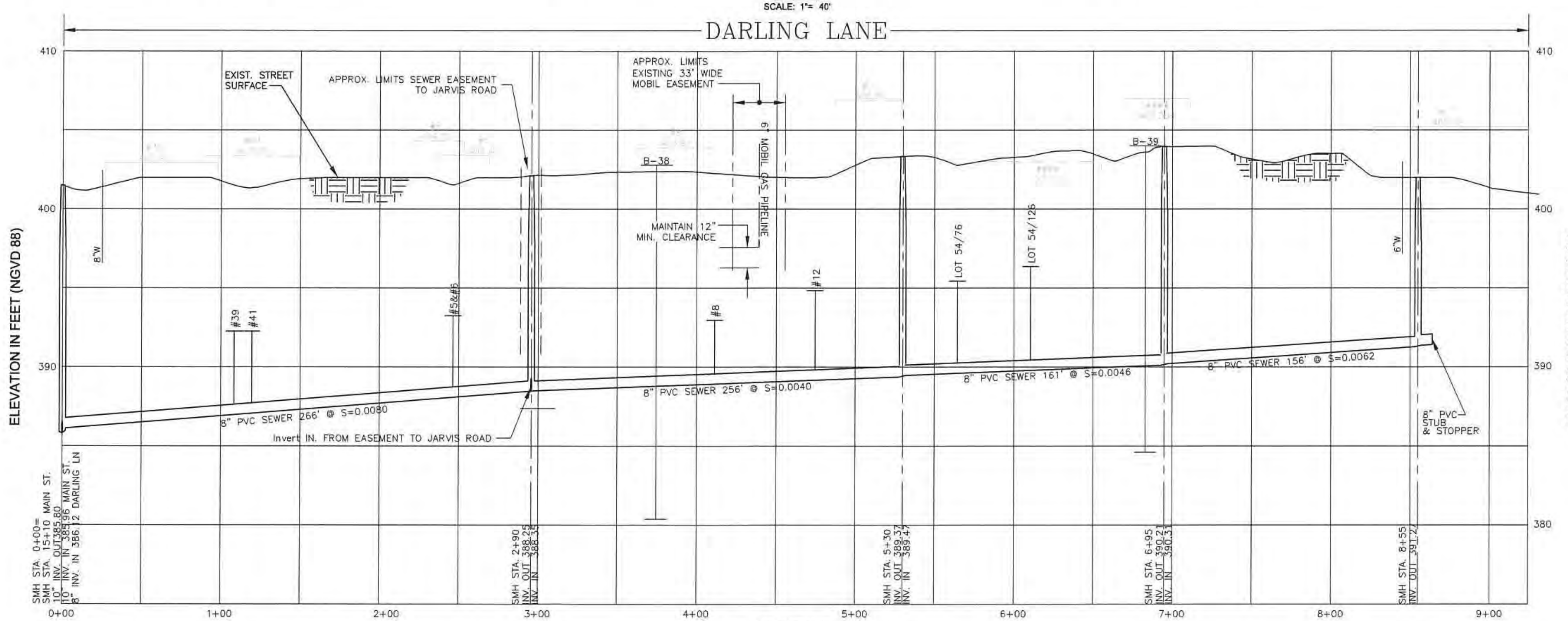

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NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTIONS

REVISIONS

SCALE: 1" = 40'
GRAPHIC SCALE: 40 0 40
SCALE IN FEET
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

DRAWN BY: PAS
DEPT. CHECK: MA
PROJ. CHECK: JF

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER DATE

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TOWN OF SUTTON, MASSACHUSETTS
SANITARY SEWERS, PUMPING STATIONS, AND APPURTENANT WORK FOR SOUTH SUTTON/MANCHAUG

DARLING LANE
STA. 0+00 TO 8+55

CONTRACT NO.: 02-1
JOB NO.: 2714
DATE ISSUED: December, 2004
FILENAME: C-15
SHEET NO. C-15

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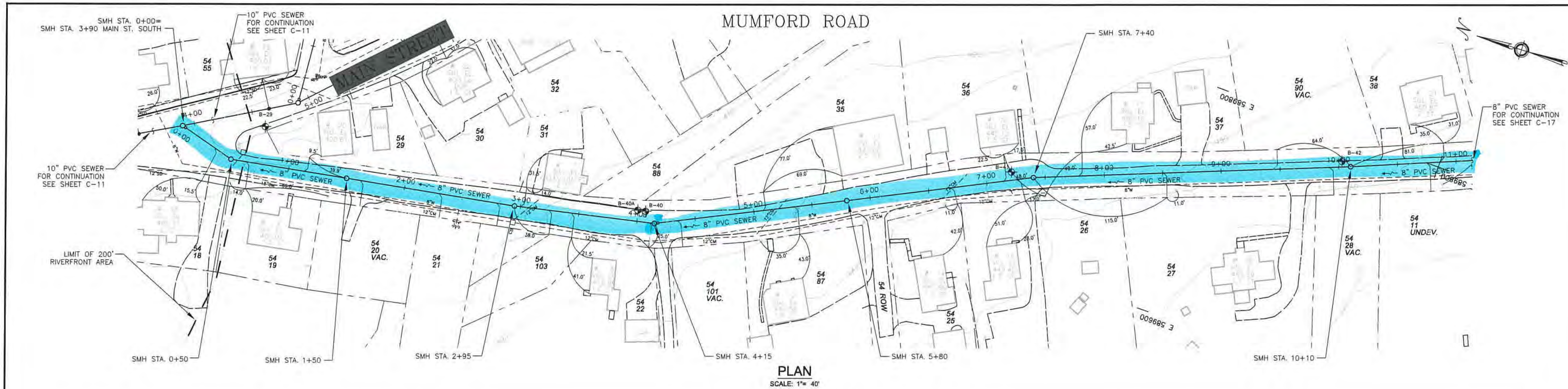

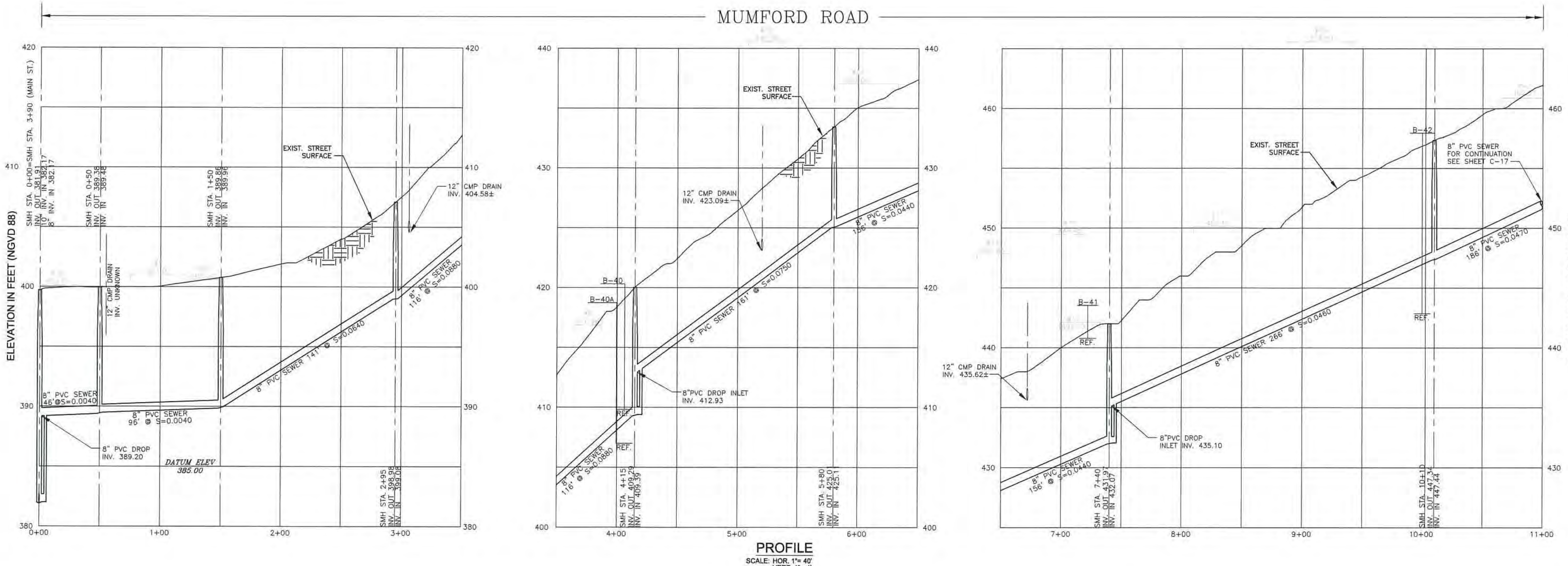

NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTIONS

REVISIONS

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GRAPHIC SCALE: 40 0 40 SCALE IN FEET

UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

DRAWN BY: PAS

DEPT. CHECK: MA

PROJ. CHECK: JF

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER DATE

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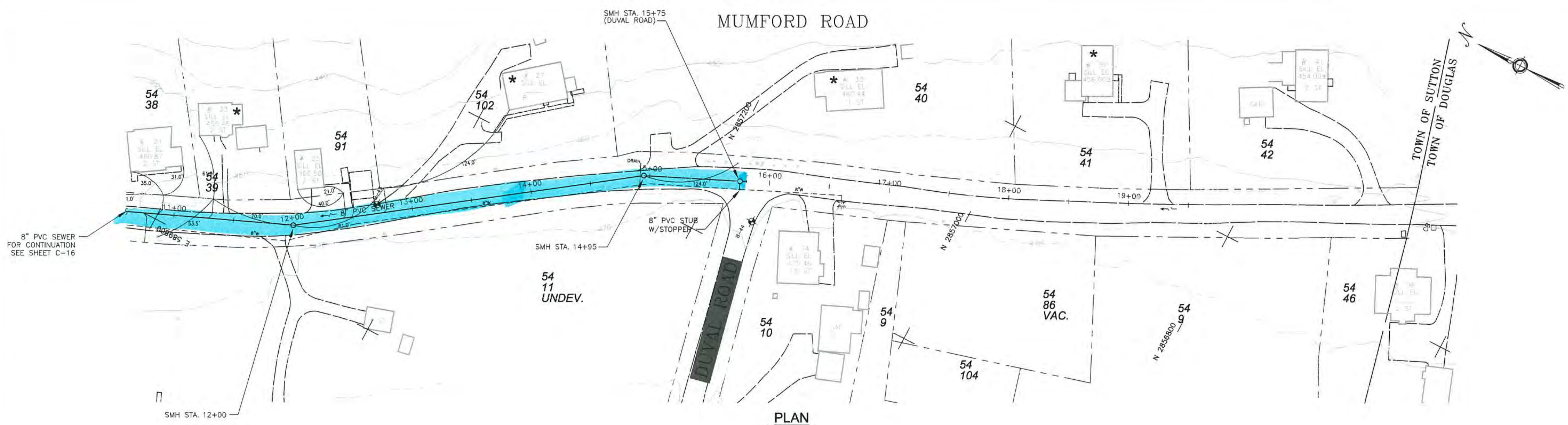
SANITARY SEWERS, PUMPING STATIONS, AND APPURTENANT WORK FOR SOUTH SUTTON/MANCHAUG

MUMFORD ROAD
STA. 0+00 TO 11+00

CONTRACT NO.: 02-1
JOB NO.: 2714
DATE ISSUED: December, 2004
FILENAME: C-16

SHEET NO. C-16



PLAN
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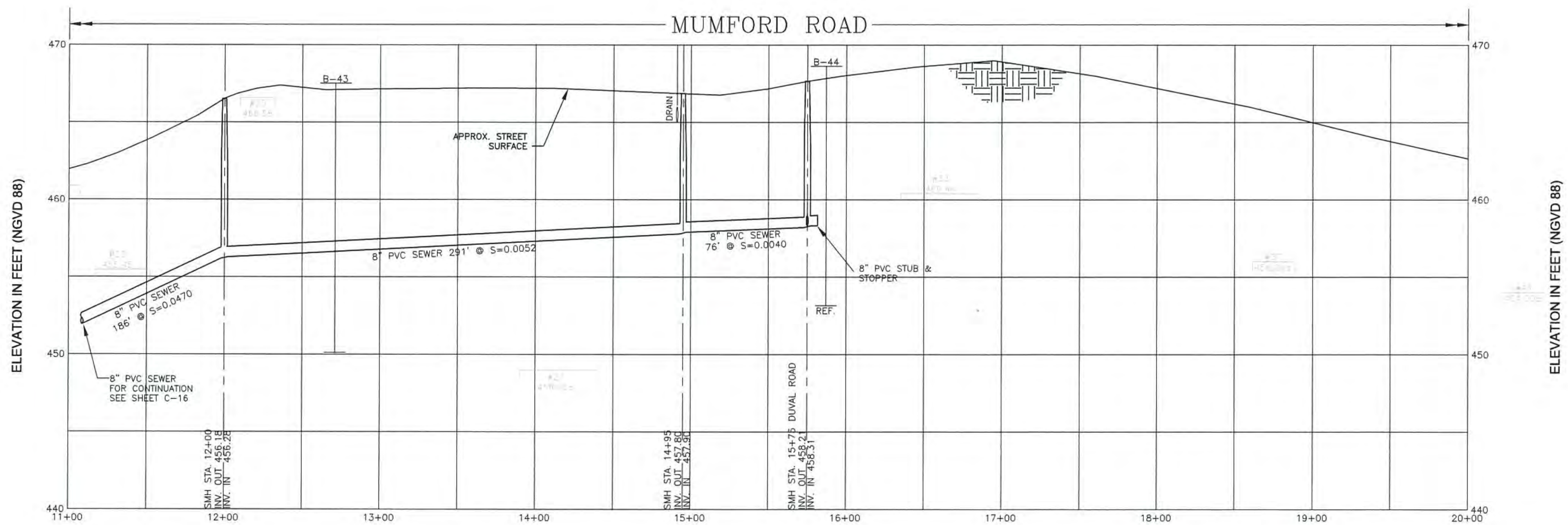

PROFILE
SCALE: HOR. 1"= 40'
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NUMBER	DATE	MADE BY	CHECKED BY	DESCRIPTIONS
REVISIONS				

SCALE: 1" = 40'
GRAPHIC SCALE: 40 0 40 SCALE IN FEET
UNLESS OTHERWISE NOTED OR CHANGED BY REPRODUCTION

DRAWN BY PAS
DEPT. CHECK MA
PROJ. CHECK JF

RECORD DRAWING

REGISTERED PROFESSIONAL ENGINEER DATE

BETA Group, Inc.
Engineers Scientists Planners

TOWN OF SUTTON, MASSACHUSETTS
SANITARY SEWERS, PUMPING STATIONS, AND APPURTENANT WORK FOR SOUTH SUTTON/MANCHAUG

MUMFORD ROAD
STA. 11+00 TO 18+45

CONTRACT NO.: 02-1
JOB NO.: 2714
DATE ISSUED: December, 2004
FILENAME: C-17
SHEET NO. C-17

APPENDIX B – FLOW METERING REPORTS

Summary Flow Report

Site:
1
Blackstone Street Pump Station Sutton, MA 10" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
2/19/2018 (Mon)	0.113	0.393	0.110	0.15	0.04	0.01
2/20/2018 (Tue)	0.087	0.454	0.227	0.01	0.01	0.01
2/21/2018 (Wed)	0.092	0.475	0.228	0.01	0.01	0.01
2/22/2018 (Thu)	0.095	0.467	0.222	0.03	0.03	0.01
2/23/2018 (Fri)	**0.087**	0.430	0.220	0.36	0.10	**0.03**
2/24/2018 (Sat)	0.088	0.482	0.242	0.01	0.01	0.01
2/25/2018 (Sun)	0.087	**0.552**	**0.274**	**0.57**	**0.11**	0.02
2/26/2018 (Mon)	0.108	0.477	0.249	0.01	0.01	0.01
2/27/2018 (Tue)	0.097	0.491	0.240	0.00	0.00	0.00
2/28/2018 (Wed)	0.093	0.545	0.233	0.00	0.00	0.00
		Total for period	2.244	1.15		
		Min:	0.087			
		Avg:	0.224			
		Max:	0.552			

Summary Flow Report

Site:
2
10 Depot Street Sutton, MA 8" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
2/19/2018 (Mon)	0.002	0.035	0.005	0.15	0.04	0.01
2/20/2018 (Tue)	0.001	0.034	**0.009**	0.01	0.01	0.01
2/21/2018 (Wed)	0.001	0.034	0.007	0.01	0.01	0.01
2/22/2018 (Thu)	0.001	**0.114**	0.007	0.03	0.03	0.01
2/23/2018 (Fri)	0.000	0.034	0.007	0.36	0.10	**0.03**
2/24/2018 (Sat)	**0.000**	0.055	0.007	0.01	0.01	0.01
2/25/2018 (Sun)	0.000	0.039	0.008	**0.57**	**0.11**	0.02
2/26/2018 (Mon)	0.001	0.027	0.007	0.01	0.01	0.01
2/27/2018 (Tue)	0.000	0.028	0.006	0.00	0.00	0.00
2/28/2018 (Wed)	0.000	0.029	0.007	0.00	0.00	0.00
		Total for period	0.071	1.15		
		Min:	0.000			
		Avg:	0.007			
		Max:	0.114			

Summary Flow Report

Site:
3
16 Main Street | Sutton, MA | 10" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
2/19/2018 (Mon)	0.019	0.048	0.014	0.15	0.04	0.01
2/20/2018 (Tue)	**0.009**	0.056	0.024	0.01	0.01	0.01
2/21/2018 (Wed)	0.012	0.050	0.020	0.01	0.01	0.01
2/22/2018 (Thu)	0.011	0.037	0.017	0.03	0.03	0.01
2/23/2018 (Fri)	0.009	0.039	0.018	0.36	0.10	**0.03**
2/24/2018 (Sat)	0.013	**0.067**	0.024	0.01	0.01	0.01
2/25/2018 (Sun)	0.014	0.049	0.026	**0.57**	**0.11**	0.02
2/26/2018 (Mon)	0.018	0.061	0.027	0.01	0.01	0.01
2/27/2018 (Tue)	0.019	0.053	**0.027**	0.00	0.00	0.00
2/28/2018 (Wed)	0.018	0.043	0.026	0.00	0.00	0.00
		Total for period	0.222	1.15		
		Min:	0.009			
		Avg:	0.022			
		Max:	0.067			

Summary Flow Report

Site:
1
Blackstone Street Pump Station Sutton, MA 10" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
3/1/2018 (Thu)	0.091	0.482	0.221	0.00	0.00	0.00
3/2/2018 (Fri)	0.088	**0.671**	0.332	**2.32**	0.25	0.03
3/3/2018 (Sat)	0.170	0.611	**0.369**	0.01	0.01	0.01
3/4/2018 (Sun)	0.122	0.543	0.319	0.00	0.00	0.00
3/5/2018 (Mon)	0.117	0.535	0.266	0.07	0.07	0.01
3/6/2018 (Tue)	0.108	0.522	0.244	0.00	0.00	0.00
3/7/2018 (Wed)	0.098	0.481	0.244	0.07	0.03	0.01
3/8/2018 (Thu)	0.092	0.432	0.223	0.54	0.13	0.02
3/9/2018 (Fri)	0.087	0.418	0.224	0.16	0.06	0.02
3/10/2018 (Sat)	0.084	0.531	0.231	0.17	0.04	0.01
3/11/2018 (Sun)	0.080	0.484	0.249	0.05	0.04	0.01
3/12/2018 (Mon)	0.078	0.480	0.211	0.00	0.00	0.00
3/13/2018 (Tue)	0.084	0.460	0.218	0.00	0.00	0.00
3/14/2018 (Wed)	0.076	0.514	0.210	0.43	**0.27**	**0.05**
3/15/2018 (Thu)	0.079	0.410	0.205	0.17	0.06	0.01
3/16/2018 (Fri)	0.078	0.457	0.203	0.00	0.00	0.00
3/17/2018 (Sat)	0.073	0.545	0.215	0.00	0.00	0.00
3/18/2018 (Sun)	0.069	0.481	0.223	0.00	0.00	0.00
3/19/2018 (Mon)	0.066	0.442	0.192	0.00	0.00	0.00
3/20/2018 (Tue)	0.067	0.411	0.189	0.00	0.00	0.00
3/21/2018 (Wed)	**0.062**	0.489	0.188	0.00	0.00	0.00
3/22/2018 (Thu)	0.066	0.412	0.190	0.14	0.14	0.03
3/23/2018 (Fri)	0.063	0.414	0.190	0.00	0.00	0.00
3/24/2018 (Sat)	0.063	0.480	0.203	0.00	0.00	0.00
3/25/2018 (Sun)	0.067	0.481	0.215	0.01	0.01	0.01
3/26/2018 (Mon)	0.068	0.463	0.195	0.00	0.00	0.00
3/27/2018 (Tue)	0.063	0.451	0.189	0.00	0.00	0.00
3/28/2018 (Wed)	0.063	0.426	0.192	0.01	0.01	0.01
3/29/2018 (Thu)	0.067	0.463	0.191	0.01	0.01	0.01
3/30/2018 (Fri)	0.071	0.382	0.206	0.06	0.03	0.01
3/31/2018 (Sat)	0.073	0.502	0.224	0.00	0.00	0.00
		Total for period	6.972	4.22		
		Min:	0.062			
		Avg:	0.225			
		Max:	0.671			

Summary Flow Report

Site:
2
10 Depot Street   Sutton, MA   8" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
3/1/2018 (Thu)	0.001	0.039	0.006	0.00	0.00	0.00
3/2/2018 (Fri)	0.000	0.114	0.011	**2.32**	0.25	0.03
3/3/2018 (Sat)	0.003	0.035	**0.012**	0.01	0.01	0.01
3/4/2018 (Sun)	0.002	0.111	0.010	0.00	0.00	0.00
3/5/2018 (Mon)	0.001	0.033	0.008	0.07	0.07	0.01
3/6/2018 (Tue)	0.001	0.032	0.007	0.00	0.00	0.00
3/7/2018 (Wed)	0.001	0.035	0.008	0.07	0.03	0.01
3/8/2018 (Thu)	0.001	0.037	0.009	0.54	0.13	0.02
3/9/2018 (Fri)	0.001	0.035	0.007	0.16	0.06	0.02
3/10/2018 (Sat)	0.001	0.044	0.008	0.17	0.04	0.01
3/11/2018 (Sun)	0.001	0.042	0.008	0.05	0.04	0.01
3/12/2018 (Mon)	0.001	0.032	0.007	0.00	0.00	0.00
3/13/2018 (Tue)	0.001	0.034	0.008	0.00	0.00	0.00
3/14/2018 (Wed)	0.001	0.030	0.007	0.43	**0.27**	**0.05**
3/15/2018 (Thu)	0.000	0.107	0.008	0.17	0.06	0.01
3/16/2018 (Fri)	0.001	**0.126**	0.007	0.00	0.00	0.00
3/17/2018 (Sat)	0.001	0.037	0.008	0.00	0.00	0.00
3/18/2018 (Sun)	0.001	0.050	0.009	0.00	0.00	0.00
3/19/2018 (Mon)	0.001	0.026	0.007	0.00	0.00	0.00
3/20/2018 (Tue)	0.001	0.052	0.006	0.00	0.00	0.00
3/21/2018 (Wed)	0.000	0.034	0.007	0.00	0.00	0.00
3/22/2018 (Thu)	0.000	0.077	0.007	0.14	0.14	0.03
3/23/2018 (Fri)	0.001	0.029	0.006	0.00	0.00	0.00
3/24/2018 (Sat)	0.001	0.087	0.009	0.00	0.00	0.00
3/25/2018 (Sun)	0.001	0.039	0.008	0.01	0.01	0.01
3/26/2018 (Mon)	0.001	0.031	0.007	0.00	0.00	0.00
3/27/2018 (Tue)	0.000	0.030	0.007	0.00	0.00	0.00
3/28/2018 (Wed)	0.000	0.024	0.006	0.01	0.01	0.01
3/29/2018 (Thu)	0.000	0.028	0.006	0.01	0.01	0.01
3/30/2018 (Fri)	0.000	0.039	0.007	0.06	0.03	0.01
3/31/2018 (Sat)	**0.000**	0.062	0.007	0.00	0.00	0.00
		Total for period	0.236	4.22		
		Min:	0.000			
		Avg:	0.008			
		Max:	0.126			

Summary Flow Report

Site:
3
16 Main Street Sutton, MA 10" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
3/1/2018 (Thu)	0.013	0.054	0.021	0.00	0.00	0.00
3/2/2018 (Fri)	0.013	0.062	0.030	**2.32**	0.25	0.03
3/3/2018 (Sat)	0.022	0.055	**0.033**	0.01	0.01	0.01
3/4/2018 (Sun)	0.021	0.063	0.031	0.00	0.00	0.00
3/5/2018 (Mon)	0.019	0.058	0.028	0.07	0.07	0.01
3/6/2018 (Tue)	0.017	0.052	0.026	0.00	0.00	0.00
3/7/2018 (Wed)	0.016	0.051	0.024	0.07	0.03	0.01
3/8/2018 (Thu)	0.015	0.051	0.020	0.54	0.13	0.02
3/9/2018 (Fri)	0.014	**0.071**	0.024	0.16	0.06	0.02
3/10/2018 (Sat)	0.014	0.062	0.026	0.17	0.04	0.01
3/11/2018 (Sun)	0.019	0.062	0.027	0.05	0.04	0.01
3/12/2018 (Mon)	0.018	0.052	0.026	0.00	0.00	0.00
3/13/2018 (Tue)	0.018	0.043	0.024	0.00	0.00	0.00
3/14/2018 (Wed)	0.016	0.069	0.029	0.43	**0.27**	**0.05**
3/15/2018 (Thu)	0.018	0.062	0.029	0.17	0.06	0.01
3/16/2018 (Fri)	0.017	0.056	0.026	0.00	0.00	0.00
3/17/2018 (Sat)	0.015	0.051	0.026	0.00	0.00	0.00
3/18/2018 (Sun)	0.013	0.044	0.025	0.00	0.00	0.00
3/19/2018 (Mon)	0.018	0.054	0.026	0.00	0.00	0.00
3/20/2018 (Tue)	0.013	0.037	0.023	0.00	0.00	0.00
3/21/2018 (Wed)	0.011	0.056	0.023	0.00	0.00	0.00
3/22/2018 (Thu)	0.011	0.026	0.015	0.14	0.14	0.03
3/23/2018 (Fri)	0.012	0.039	0.021	0.00	0.00	0.00
3/24/2018 (Sat)	0.011	0.027	0.015	0.00	0.00	0.00
3/25/2018 (Sun)	0.010	0.043	0.015	0.01	0.01	0.01
3/26/2018 (Mon)	0.008	0.039	0.019	0.00	0.00	0.00
3/27/2018 (Tue)	0.006	0.047	0.017	0.00	0.00	0.00
3/28/2018 (Wed)	**0.006**	0.050	0.018	0.01	0.01	0.01
3/29/2018 (Thu)	0.012	0.048	0.018	0.01	0.01	0.01
3/30/2018 (Fri)	0.009	0.046	0.018	0.06	0.03	0.01
3/31/2018 (Sat)	0.012	0.048	0.019	0.00	0.00	0.00
		Total for period	0.722	4.22		
		Min:	0.006			
		Avg:	0.023			
		Max:	0.071			

Summary Flow Report

Site:
1
Blackstone Street Pump Station Sutton, MA 10" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
4/1/2018 (Sun)	0.068	0.542	0.227	0.00	0.00	0.00
4/2/2018 (Mon)	0.068	0.473	0.206	0.18	0.18	0.03
4/3/2018 (Tue)	0.068	0.430	0.203	0.51	0.14	0.02
4/4/2018 (Wed)	0.074	0.436	0.209	0.24	0.12	0.02
4/5/2018 (Thu)	0.077	0.534	0.210	0.01	0.01	0.01
4/6/2018 (Fri)	0.068	0.582	0.210	0.22	0.11	0.02
4/7/2018 (Sat)	0.072	0.504	0.216	0.02	0.02	0.01
4/8/2018 (Sun)	0.069	0.503	0.222	0.00	0.00	0.00
4/9/2018 (Mon)	0.072	0.491	0.194	0.00	0.00	0.00
4/10/2018 (Tue)	0.063	0.452	0.190	0.00	0.00	0.00
4/11/2018 (Wed)	0.073	0.451	0.190	0.00	0.00	0.00
4/12/2018 (Thu)	0.062	0.428	0.184	0.07	0.06	0.01
4/13/2018 (Fri)	0.064	0.461	0.182	0.00	0.00	0.00
4/14/2018 (Sat)	0.061	0.468	0.199	0.01	0.01	0.01
4/15/2018 (Sun)	**0.058**	0.460	0.186	0.00	0.00	0.00
4/16/2018 (Mon)	0.061	**0.719**	**0.298**	**2.28**	**0.67**	**0.09**
4/17/2018 (Tue)	0.125	0.493	0.271	0.01	0.01	0.01
4/18/2018 (Wed)	0.104	0.474	0.245	0.00	0.00	0.00
4/19/2018 (Thu)	0.095	0.455	0.227	0.22	0.08	0.01
4/20/2018 (Fri)	0.090	0.437	0.220	0.00	0.00	0.00
4/21/2018 (Sat)	0.087	0.481	0.222	0.00	0.00	0.00
4/22/2018 (Sun)	0.075	0.490	0.230	0.00	0.00	0.00
4/23/2018 (Mon)	0.076	0.471	0.213	0.00	0.00	0.00
4/24/2018 (Tue)	0.081	0.482	0.210	0.00	0.00	0.00
4/25/2018 (Wed)	0.075	0.461	0.222	0.89	0.17	0.03
4/26/2018 (Thu)	0.082	0.489	0.225	0.02	0.01	0.01
4/27/2018 (Fri)	0.084	0.496	0.227	0.52	0.30	0.06
4/28/2018 (Sat)	0.091	0.532	0.243	0.01	0.01	0.01
4/29/2018 (Sun)	0.092	0.547	0.256	0.10	0.04	0.01
4/30/2018 (Mon)	0.075	0.479	0.224	0.15	0.09	0.02
		Total for period	6.560	5.46		
		Min:	0.058			
		Avg:	0.219			
		Max:	0.719			

Summary Flow Report

Site:
2
10 Depot Street | Sutton, MA | 8" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
4/1/2018 (Sun)	0.000	**0.125**	0.009	0.00	0.00	0.00
4/2/2018 (Mon)	0.000	0.033	0.007	0.18	0.18	0.03
4/3/2018 (Tue)	0.000	0.121	0.007	0.51	0.14	0.02
4/4/2018 (Wed)	0.001	0.042	0.007	0.24	0.12	0.02
4/5/2018 (Thu)	0.000	0.029	0.007	0.01	0.01	0.01
4/6/2018 (Fri)	0.001	0.042	0.007	0.22	0.11	0.02
4/7/2018 (Sat)	0.001	0.056	0.008	0.02	0.02	0.01
4/8/2018 (Sun)	0.001	0.113	0.008	0.00	0.00	0.00
4/9/2018 (Mon)	**0.000**	0.044	0.007	0.00	0.00	0.00
4/10/2018 (Tue)	0.000	0.029	0.007	0.00	0.00	0.00
4/11/2018 (Wed)	0.000	0.036	0.006	0.00	0.00	0.00
4/12/2018 (Thu)	0.000	0.033	0.007	0.07	0.06	0.01
4/13/2018 (Fri)	0.000	0.099	0.006	0.00	0.00	0.00
4/14/2018 (Sat)	0.000	0.062	0.007	0.01	0.01	0.01
4/15/2018 (Sun)	0.000	0.102	0.007	0.00	0.00	0.00
4/16/2018 (Mon)	0.000	0.088	**0.013**	**2.28**	**0.67**	**0.09**
4/17/2018 (Tue)	0.002	0.040	0.009	0.01	0.01	0.01
4/18/2018 (Wed)	0.001	0.105	0.009	0.00	0.00	0.00
4/19/2018 (Thu)	0.001	0.072	0.007	0.22	0.08	0.01
4/20/2018 (Fri)	0.001	0.028	0.006	0.00	0.00	0.00
4/21/2018 (Sat)	0.001	0.117	0.008	0.00	0.00	0.00
4/22/2018 (Sun)	0.001	0.044	0.010	0.00	0.00	0.00
4/23/2018 (Mon)	0.001	0.049	0.007	0.00	0.00	0.00
4/24/2018 (Tue)	0.001	0.053	0.006	0.00	0.00	0.00
4/25/2018 (Wed)	0.000	0.054	0.006	0.89	0.17	0.03
4/26/2018 (Thu)	0.001	0.123	0.007	0.02	0.01	0.01
4/27/2018 (Fri)	0.001	0.027	0.007	0.52	0.30	0.06
4/28/2018 (Sat)	0.001	0.102	0.008	0.01	0.01	0.01
4/29/2018 (Sun)	0.001	0.056	0.009	0.10	0.04	0.01
4/30/2018 (Mon)	0.001	0.064	0.007	0.15	0.09	0.02
		Total for period	0.227	5.46		
		Min:	0.000			
		Avg:	0.008			
		Max:	0.125			

Summary Flow Report

Site:
3
16 Main Street | Sutton, MA | 10" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
4/1/2018 (Sun)	0.011	0.037	0.018	0.00	0.00	0.00
4/2/2018 (Mon)	0.011	0.036	0.017	0.18	0.18	0.03
4/3/2018 (Tue)	0.010	0.042	0.021	0.51	0.14	0.02
4/4/2018 (Wed)	0.018	0.048	0.025	0.24	0.12	0.02
4/5/2018 (Thu)	0.011	0.046	0.022	0.01	0.01	0.01
4/6/2018 (Fri)	0.010	0.028	0.014	0.22	0.11	0.02
4/7/2018 (Sat)	0.009	0.026	0.005	0.02	0.02	0.01
4/8/2018 (Sun)				0.00	0.00	0.00
4/9/2018 (Mon)				0.00	0.00	0.00
4/10/2018 (Tue)	0.015	0.057	0.010	0.00	0.00	0.00
4/11/2018 (Wed)	0.012	0.038	0.019	0.00	0.00	0.00
4/12/2018 (Thu)	0.012	0.034	0.017	0.07	0.06	0.01
4/13/2018 (Fri)	0.010	0.033	0.017	0.00	0.00	0.00
4/14/2018 (Sat)	**0.004**	0.042	0.015	0.01	0.01	0.01
4/15/2018 (Sun)	0.008	0.052	0.017	0.00	0.00	0.00
4/16/2018 (Mon)	0.010	0.041	0.020	**2.28**	**0.67**	**0.09**
4/17/2018 (Tue)	0.012	**0.070**	**0.029**	0.01	0.01	0.01
4/18/2018 (Wed)	0.020	0.051	0.028	0.00	0.00	0.00
4/19/2018 (Thu)	0.015	0.042	0.025	0.22	0.08	0.01
4/20/2018 (Fri)	0.011	0.045	0.024	0.00	0.00	0.00
4/21/2018 (Sat)	0.016	0.042	0.023	0.00	0.00	0.00
4/22/2018 (Sun)	0.013	0.055	0.026	0.00	0.00	0.00
4/23/2018 (Mon)	0.015	0.048	0.023	0.00	0.00	0.00
4/24/2018 (Tue)	0.015	0.047	0.022	0.00	0.00	0.00
4/25/2018 (Wed)	0.014	0.053	0.023	0.89	0.17	0.03
4/26/2018 (Thu)	0.017	0.046	0.027	0.02	0.01	0.01
4/27/2018 (Fri)	0.017	0.041	0.026	0.52	0.30	0.06
4/28/2018 (Sat)	0.014	0.048	0.025	0.01	0.01	0.01
4/29/2018 (Sun)	0.011	0.062	0.023	0.10	0.04	0.01
4/30/2018 (Mon)	0.015	0.041	0.022	0.15	0.09	0.02
		Total for period	0.582	5.46		
		Min:	0.004			
		Avg:	0.021			
		Max:	0.070			

Summary Flow Report

Site:
1
Blackstone Street Pump Station Sutton, MA 10" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
5/1/2018 (Tue)	0.085	0.481	0.221	0.01	0.01	0.01
5/2/2018 (Wed)	0.081	0.496	0.217	0.00	0.00	0.00
5/3/2018 (Thu)	0.077	0.496	0.205	0.03	0.02	0.01
5/4/2018 (Fri)	0.078	0.498	0.212	0.00	0.00	0.00
5/5/2018 (Sat)	0.075	0.432	0.214	0.00	0.00	0.00
5/6/2018 (Sun)	0.067	0.484	**0.234**	0.44	0.19	0.03
5/7/2018 (Mon)	0.071	0.461	0.205	0.00	0.00	0.00
5/8/2018 (Tue)	0.076	**0.504**	0.204	0.00	0.00	0.00
5/9/2018 (Wed)	0.074	0.454	0.200	0.00	0.00	0.00
5/10/2018 (Thu)	0.066	0.486	0.196	0.00	0.00	0.00
5/11/2018 (Fri)	0.068	0.417	0.192	0.00	0.00	0.00
5/12/2018 (Sat)	0.062	0.462	0.211	0.22	0.07	0.01
5/13/2018 (Sun)	0.061	0.487	0.218	0.00	0.00	0.00
5/14/2018 (Mon)	0.068	0.475	0.199	0.00	0.00	0.00
5/15/2018 (Tue)	0.059	0.469	0.191	**0.61**	**0.39**	**0.18**
5/16/2018 (Wed)	0.056	0.502	0.187	0.00	0.00	0.00
5/17/2018 (Thu)	0.057	0.467	0.186	0.00	0.00	0.00
5/18/2018 (Fri)	**0.047**	0.426	0.069	0.00	0.00	0.00
		Total for period	3.561	1.31		
		Min:	0.047			
		Avg:	0.198			
		Max:	0.504			

Summary Flow Report

Site:
2
10 Depot Street Sutton, MA 8" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
5/1/2018 (Tue)	0.001	0.032	0.007	0.01	0.01	0.01
5/2/2018 (Wed)	0.000	0.026	0.006	0.00	0.00	0.00
5/3/2018 (Thu)	0.000	0.027	**0.007**	0.03	0.02	0.01
5/4/2018 (Fri)	0.000	0.039	0.006	0.00	0.00	0.00
5/5/2018 (Sat)	0.000	0.028	0.006	0.00	0.00	0.00
5/6/2018 (Sun)	0.000	**0.105**	0.006	0.44	0.19	0.03
5/7/2018 (Mon)	0.000	0.089	0.006	0.00	0.00	0.00
5/8/2018 (Tue)	0.000	0.029	0.006	0.00	0.00	0.00
5/9/2018 (Wed)	0.000	0.028	0.006	0.00	0.00	0.00
5/10/2018 (Thu)	0.000	0.043	0.007	0.00	0.00	0.00
5/11/2018 (Fri)	0.000	0.049	0.006	0.00	0.00	0.00
5/12/2018 (Sat)	0.000	0.088	0.007	0.22	0.07	0.01
5/13/2018 (Sun)	0.000	0.033	0.007	0.00	0.00	0.00
5/14/2018 (Mon)	0.000	0.030	0.006	0.00	0.00	0.00
5/15/2018 (Tue)	**0.000**	0.032	0.006	**0.61**	**0.39**	**0.18**
5/16/2018 (Wed)	0.000	0.056	0.007	0.00	0.00	0.00
5/17/2018 (Thu)	0.000	0.054	0.006	0.00	0.00	0.00
5/18/2018 (Fri)	0.000	0.026	0.003	0.00	0.00	0.00
		Total for period	0.111	1.31		
		Min:	0.000			
		Avg:	0.006			
		Max:	0.105			

Summary Flow Report

Site:
3
16 Main Street Sutton, MA 10" Circular Line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
5/1/2018 (Tue)	0.015	0.051	0.023	0.01	0.01	0.01
5/2/2018 (Wed)	0.009	0.042	0.020	0.00	0.00	0.00
5/3/2018 (Thu)	0.008	0.029	0.015	0.03	0.02	0.01
5/4/2018 (Fri)	0.008	0.031	0.016	0.00	0.00	0.00
5/5/2018 (Sat)	0.008	0.033	0.014	0.00	0.00	0.00
5/6/2018 (Sun)	**0.006**	0.033	0.013	0.44	0.19	0.03
5/7/2018 (Mon)	0.008	0.040	0.017	0.00	0.00	0.00
5/8/2018 (Tue)	0.007	0.054	0.022	0.00	0.00	0.00
5/9/2018 (Wed)	0.008	0.055	0.022	0.00	0.00	0.00
5/10/2018 (Thu)	0.011	**0.078**	0.020	0.00	0.00	0.00
5/11/2018 (Fri)	0.011	0.057	0.023	0.00	0.00	0.00
5/12/2018 (Sat)	0.012	0.050	0.023	0.22	0.07	0.01
5/13/2018 (Sun)	0.007	0.067	0.023	0.00	0.00	0.00
5/14/2018 (Mon)	0.008	0.048	0.023	0.00	0.00	0.00
5/15/2018 (Tue)	0.011	0.047	0.018	**0.61**	**0.39**	**0.18**
5/16/2018 (Wed)	0.013	0.036	0.018	0.00	0.00	0.00
5/17/2018 (Thu)	0.012	0.058	**0.026**	0.00	0.00	0.00
5/18/2018 (Fri)	0.018	0.044	0.010	0.00	0.00	0.00
		Total for period	0.347	1.31		
		Min:	0.006			
		Avg:	0.019			
		Max:	0.078			

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COMMITMENT & INTEGRITY DRIVE RESULTS