



Town of Enfield Water Department Asset Management Plan

Prepared for:

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Executive Summary

This Asset Management Plan is for the Town of Enfield Water Department and describes how the utility will manage the infrastructure assets. The Town of Enfield Water Department has a staff of 2 water operators or 1 full-time equivalents (FTEs) plus the Public Works Director at 0.25 FTE for a total of 1.25 FTE employees who perform day-to-day functions to keep the utility functioning properly. The utility delivers approximately 65,000 gallons per day of water to 480 connections. Maps of the utility are maintained by the utility at the Public Works Department.

The Town of Enfield Water Department has considered a range of service levels the utility could establish. These include the following:

Table E-1. Levels of Service

Levels of Service		Achieved
Goal	Performance Targets	
Meet all State and Federal Regulatory Requirements	No more than one quality violation within a given two year period No reporting violations (reports submitted accurately and on-time)	Meets all performance objectives
Maintain Operating Fund Financial Health	Recover Full Cost of doing business Achieve relative rate stability longer and minimize rate increases Ensure that the value of the Water Fund fund balance remains at or above one full year of operating expenses	Minor performance deficiencies
Maintain a capital reserve at least 75% of annual operating expense - over the next five years build the fund to \$300,000	Year One - transfer at least \$25,000 from the surplus of the water operating fund to the capital reserve fund Year Two to Five - Transfer at least \$35,000 from the surplus of the water operating fund to the water capital reserve fund	Considerable performance deficiencies
Improve and Sustain Water Quality	Ensure that 90% of water users are either "satisfied" or "very satisfied" with the quality of their water (based on survey results) Determine most cost-effective solution for water supply source improvement Evaluate presence of lead joint pipe and replace where identified	Minor performance deficiencies
Reduce watermain breaks and disruption in service	Actively implement a comprehensive preventative maintenance program Ensure that water users experience no more than one disruption in service within a given one-year period Replace the remaining 15341 lf of 1903 pipe in poor condition. Replace 10,684 lf in 20121 and the remaining 4657 lf in 2026.	Considerable performance deficiencies

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To support the above Level of Service goals the utility has identified the following costs to help improve overall service to the community:

- Implementing the O&M will require an additional 3% annually with a total cost of \$138,237 in FY2020 and no change in full time employees (1.25).
- It is estimated that the utility will spend a total of \$3,408,200 on various water system improvement projects over the next 10 years. A detailed financial summary is presented in Table 8-1.
- Costs for water are funded through general rates 100% and connection fees which account for less than 1%.
- External financing for capital expenses exceeding \$50,000 will be financed through loans, rate increases and grants.
- The average annual surplus over the next 10 years will be \$35,000.

The utility's action plan for improving the overall management of this utility and supporting the above Level of Service goals (including addressing the financial management, environmental management and specific issues) is shown in Table E-2.

Table E-2. Action Plan

Urgency	Service (All, W, WW)	Issue	Corrective Action Plan	Target Date for Completion
The three most important actions				
High	W	1903 Distribution Main breaks on a regular basis	Replace 1903 water main with new Ductile Iron water main	2020 and 2027
Medium	W	Existing wells have decreasing yield	Preliminary Hydrogeo and test borings at Marsh or Prior well field	2020
Medium	W	Water supply quality and quantity problems	Develop Production Well	2021

Condition of Current Water Source

The Town of Enfield has the ability to source its water from three different well fields. The Prior well field is located in the northeastern portion of the service area and serves as the primary water supply source. Currently there are two wells located on the 8-acre parcel. Prior Well #1 has good quality water and provides the Town with nearly 60% of its drinking water; however, over the past several years its yield has been decreasing. Prior Well #2 has had quality issues with sand since it was installed and therefore is not used. The Marsh Well serves as the secondary source and provides a little over 30% of the water. This well is located on 25 acres of land in the northwestern part of the system. During the high usage and dry summer months of July through October; Prior Well #1 and Marsh Well work harder to keep up with demand. During this time the McConnell well is used. This well only supplies about 10% of the water and is not of the same quality as the other wells. It is hard and there are some other quality issues with an undeveloped well on this 31-acre parcel. Access to the well field is difficult due to the wetlands that the well is located in. There is a daily summary of individual well production for each well for 2018 in the Appendix.

The table below summarizes general information about each of the wells.

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Management Plan

Enfield Water Supply								
February 2019								
65,000 GPD serving 480 connections								
Name		Est. Yield	Quality	Type	Depth Ft	Pump Hp	Land Acres	Comments
Prior Well #1	Primary	65 gpm	good	Bedrock	424	7.5	8	decreasing yield no generator
McConnell Well	Backup	120 gpm	hard	Bedrock	548	15	31	2nd undeveloped well – Gross Alpha likely as a result of radioactivity issues
Marsh Well	Secondary	35 gpm	good	Bedrock	460	5	25	no 3-phase power good potential for second well
Prior Well #2	Exercise Only	20 gpm	sand	Bedrock	600	7	8	Need to redevelop / filter

Town of Enfield Water System Asset
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Condition of Current Distribution System

The Town of Enfield has approximately 15,340 linear feet of pipe that was installed in 1903. This older pipe has been some of the most problematic for the system to maintain due to continuing and recurrent breaks. Based on the condition of this pipe and the historical location of breakage, the following table represents a summary of the proposed replacement of this distribution main. The repair of these water mains has been separated into two phases with the pipes having the greatest issues being replaced sooner, in 2021 and the remaining being replaced 5 years later in 2026.

Town of Enfield - Distribution Main To Be Replaced								
Location	Description	Size	Length	Condition	Consequence of Failure	Installation Year	Replacement Year	Cost (\$200/lf)
Stevens Street	Stevens Street	6"	761	Very Poor	Moderate	01/01/1903	00/00/2021	\$152,200.00
Maple Street	Well to C-Shed & May to Rte 4	10"	2300	Very Poor	Major	01/01/1903	00/00/2021	\$460,000.00
Maple Street	C-Shed to May	10"	3200	Very Poor	Major	01/01/1903	00/00/2021	\$640,000.00
Union Street	Shedd to Shaker Hill	8"	1108	Very Poor	Major	01/01/1903	00/00/2021	\$221,600.00
Shedd Street	Pillsbury to end	6"	1209	Very Poor	Moderate	01/01/1903	00/00/2021	\$241,800.00
May Street	May Street	6"	2106	Very Poor	Major	01/01/1903	00/00/2021	\$421,200.00
								\$2,136,800.00
Shedd St. Apt.	Shedd St. Apt.	6"	116	Very Poor	Moderate	01/01/1903	00/00/2026	\$23,200.00
Shedd St. Apt.	Shedd St. Apt.	6"	150	Very Poor	Moderate	01/01/1903	00/00/2026	\$30,000.00
Wells Street	Wells Street	6"	1284	Very Poor	Moderate	01/01/1903	00/00/2026	\$256,800.00
Main Street	Oak Grove to Sargent	6"	2155	Very Poor	Moderate	01/01/1903	00/00/2026	\$431,000.00
Route 4	Baltic to Anderson Hill	6"	952	Very Poor	Major	01/01/1903	00/00/2026	\$190,400.00
								\$931,400.00
								\$3,068,200.00

The remaining distribution mains were installed throughout the 1960's and 1970's with ongoing replacement in the 1990's, 2000's and 2010's. These newer mains include about 23,160 linear feet of 4", 6", 8", 10" and 12" water main and are in good condition. The repair history on these mains will continue to be monitored.

Need for Project

The Town is very fortunate in that its two primary wells are of good water quality and no treatment is necessary. The Town is currently able to supply adequate water from the Prior #1 well and the Marsh well. However, there are times during extended droughts, pump servicing and fire emergency when the Town is forced to use the McConnell well which has poor water. Currently the town is able to manage the mixing of the well water but as the yields from the Prior Well continue to decline, they need to find an additional source that can meet the demand.

The distribution replacement is necessary to eliminate leakage, costly repairs and water outages for customers. By replacing the old high maintenance water main in two phases, the Town will obtain long term loan and grant packages in order that the Town can stabilize rate increases and reduce the need for costly repairs.

The Town should also establish an ongoing leak detection program to reduce the system loss.

Alternatives Considered Water Supply

A “do nothing” alternative is not viable because the existing combination of wells do not meet the current demand without additional treatment.

Alternative 1: The Marsh well is currently producing good quality water however it is the lowest producing well at 35 GPM. The Town owns 25 acres at the site. The development of a second 8” bedrock well at the Marsh site is a good alternative to supplement the current production. The first step would be to complete preliminary hydrogeological work including the installation of 1 or 2 test borings.

Alternative 2: The Prior well site has potential for a second well. Although Prior #2 has sand issues; it could be surged and redeveloped. There is the possibility of “over-reaming” the well and installing a sand pack between the current well and a new 12” well. This is somewhat risky and not guaranteed to provide enough filtration to eliminate the sand issue. A new replacement well, Prior #3 could be sited at the Prior well field. In the 1990’s the Town completed video logging and found that from depth 305 to 320 provided significant water flow and also sediment infiltration.

Alternative 3: Development of another well at the McConnell site is not recommended due to the poor water quality issues and the difficult accessibility to the well field (wetlands) resulting in a more expensive option. However, there is the potential to treat the McConnell well water for the gross alpha permit violation and the hardness. The treatment is difficult at best in that it would require an absorption media and we would need to verify that the gross alpha hit is a result of the high levels of uranium and radon in order to determine the best treatment methods.

Alternative 4: Interconnection to Shaker Village. The connection point to the Shaker Village system is 1.2 miles from the Enfield system; however, there is a bay/stream crossing that would be costly and environmental difficult to permit unless we hung the waterline on the bridge.

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Opinion of Probable Cost

Alternative #1 New Well at Marsh or Prior Field:		
Phase I:	Preliminary hydrogeological work and test borings	\$40,000
Phase II:	Develop Production Well	\$200,000
Alternative #2 Redevelop Prior Well #2		
Phase I:	Feasibility Analysis – Camera, test and workplan	\$20,000
Phase II:	Redevelop well based on results of feasibility	\$60,000
Alternative #3 Treatment of McConnell Water		
Phase I:	Groundwater Testing and Analysis and Determination Of treatment options	\$15,000
Phase II:	Installation of Treatment	Unknown
Alternative #4: Connection to Shaker Village		
	Design and Construction	\$1,267,000
Phase 1 Distribution Improvements 2020		\$2,136,800
Phase 2 Distribution Improvements 2027		\$931,400

Recommendations

- Initiate on-going leak detection program / apply for NHDES leak detection funds
- Complete preliminary hydrogeological work and test borings at Marsh Site
- Work with USDA and NHDES SRF programs to determine grant / loan funding opportunities for well construction and distribution improvements

Phase I Distribution	\$2,136,800
<u>Production Well</u>	<u>\$ 240,000</u>
Total	\$2,376,800
- Implement Annual Rate Structure Increases
 - 11% 2020 to 2025
 - 5% 2026 and ongoing
- Implement Phase II Distribution Improvements

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The table below summarizes the effect of the recommendations on average annual water rates.

Town of Enfield Water Rates

Year	Total To Collect	% Change	Annual Average Residential Water Bill	Annual Commercial Bill
2018	\$202,330		\$186.10	\$933.68
2019	\$202,330		\$196.46	\$ 982.13
2020	\$225,000	11%	\$218.48	\$ 1,092.17
2021	\$250,000	11%	\$242.75	\$ 1,213.52
2022	\$278,000	11%	\$269.94	\$ 1,349.44
2023	\$308,000	11%	\$299.07	\$ 1,495.06
2024	\$342,000	11%	\$332.08	\$ 1,660.10
2025	\$380,000	11%	\$368.98	\$ 1,844.56
2026	\$400,000	5%	\$388.40	\$ 1,941.64
2027	\$420,000	5%	\$407.82	\$ 2,038.72

Average Residential Bill is based on 65,170 Gallons per Year

1 Introduction

This Asset Management Plan is for the Town of Enfield Water Department and describes how the utility will manage the infrastructure assets. Customer service demands and regulations require utilities to actively manage drinking water and wastewater assets through careful maintenance, repair and replacement decisions. This plan is an effective tool for combining technical, management and financial practices to ensure that the level of service required by the community is provided at the appropriate cost.

The plan has the following purposes:

1. To demonstrate responsible management of the drinking water and wastewater assets
2. To communicate and justify funding requirements indicated by the plan
3. To provide a management roadmap for the utility
4. To serve as a link between the Town of Enfield Water Department and its customers

The Asset Management Plan contains an overview of the utility, mission statement, level of service agreement, critical asset list, operation and maintenance strategy, capital investment program, and financial strategies.

1.1 Mission Statement

The mission statement defines the goals of the Town of Enfield Water Department and is the guide for level of service agreements discussed in section 3. The Town of Enfield Water Department mission statement is as follows:

We commit to improving and maintaining the public health protection and performance of our drinking water and associated distribution utility assets, and minimizing the long-term cost of operating those assets. We strive to make the most cost-effective and environmentally responsible renewal and replacement investments and provide the highest-quality water and customer service possible.

1.2 Asset Management Team

The Town of Enfield Water Department has a staff of 1.25 FTEs who perform day-to-day functions to keep the utility functioning properly. Together, these individuals have volunteered as members of the "the asset management team." Jim Taylor will support the plan and serve as plan lead to perform asset management planning responsibilities. The team is responsible for preparing, implementing, and updating this plan.

To the extent that other staff such as engineering consultants, Town Manager or Board of Selectmen are involved with this or other projects, the asset management team is responsible for coordinating such involvement in the developing and implementing this plan. More specific roles and responsibilities are listed in Table 1-1 and Table 1-2.

Town of Enfield Water System Asset Management Plan

Table 1-1. Town of Enfield Water Department Asset Management Team

Name	Title	Organization	Role / Responsibility on Project
Cathy Conway	None	Horizons Engineering	Engineer
Jim Taylor	None	Town of Enfield	Facility Manager
Ryan Aylesworth	None	Town of Enfield	Local Official

2 Utility Overview

The Town of Enfield Water Department serves a portion of the Town of Enfield with a population of 4535. The following table demonstrates key statistics about the utility and the population it serves. Maps of the utility are maintained by the utility at the Public Works Department.

Table 2-1. Town of Enfield Water Department Utility Overview

	Unit	Description
WATER SUPPLY		
Water Supply Connection - Customer Breakdown		
Residential Facilities connected to potable water	No.	450
Commercial Facilities connected to potable water	No.	29
Industrial Facilities connected to potable water	No.	1
The Drinking Water Network		
Pumping Equipment	Number	9
Concrete & Metal Storage Tanks	Storage Capacity Days	500000
Transmission Mains	Number	3
Distribution / Collection Mains	LF	54424
Computer Equipment / Software	Number	4
Motor Controls / Drives	Number	4
Sensors	Number	1
Buildings	Number	5
Treatment Equipment	Number	1
Tools and Shop Equipment	Number	1
Transportation Equipment	Number	2
Security Equipment	Number	1
Land	Acres	96
Meters	Number	1
Raw Water Reservoirs	Storage Capacity Days	0
Generators	Number	1
Wells	Number	6
Tank Piping	Number	1
General Water Supply Information		
Number of connections	No.	480
Storage Capacity	MG	0.5
Reserve Storage	Days	
How Sourced	Descr.	Wells
Interconnected or Shared with other Drinking Utilities	Descr (if yes)	NO
Water loss and Inflow / Infiltration calculations	Descr.	
- Infiltration – Average daily wet weather flow = less than 120 gallons per capita per day (gpcd)		
- Inflow – Peak wet weather flow = less than 275 gpcd		
- Peaking Factor in sewer trunk lines = less than 4.0		
Total Volume Produced	Gallons/Day	
Total Volume Sold	Gallons/Day	65000
Average / Peak Daily Consumption	Gallons/Day	
Water Supply Asset Values		

Town of Enfield Water System Asset Management Plan

	Unit	Description
Replacement Value	\$000,000	14,708,808
Depreciated Replacement Value	\$000,000	5,873,456

The Town of Enfield does not expect customer growth therefore we project a 0% growth over the next 10 years. We do not plan on expanding the utility service area. Therefore the utility will include a 0% growth in its future utility requirements and its Capital Improvement Program (CIP) and Finance Strategy.

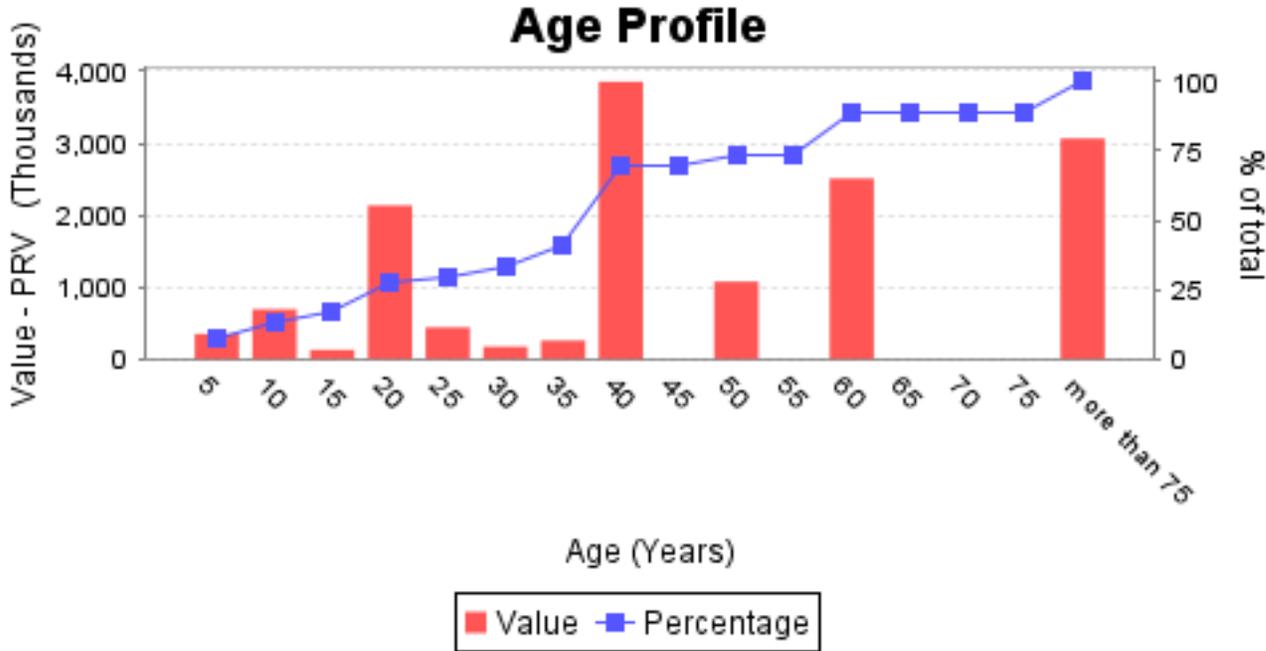


Figure 2-1. Town of Enfield Enfield Water Department Age Profile

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**Figure 2-2. Town of Enfield Water Department Schematic NOTE SEE FULL SCALE MAP
ATTACHMENT**

3 Level of Service Agreement

The goal of the Town of Enfield Water Department is to deliver safe water by providing services that meet or exceed customer expectations and comply with federal regulations. This section describes the utility's Level of Service goals and the key performance targets for each of the level of service goal for present and future performance. The level of service describes the characteristics of utility's performance such as "how much", "of what nature", and "how frequently" about the service and the performance target define how each level of service will be measured. The utility's progress toward meeting those goals will be reported annually.

The levels of service determine the amount of funding that is required to maintain, renew and upgrade the water infrastructure to provide the customers with the levels of service specified. The Level of Service goals are defined across the four service areas identified below and a performance target is defined for each goal as a measure for the Level of Service goal. Changes to the levels of service goals and how the utility addresses the issues will affect funding requirements and how well the utility can provide the proper service to the community. The target levels of service that the utility has chosen to meet are presented in Table 3-1. This table lists the Level of Service goals and measures the success of each goal.

Table 3-1. Level of Service Goals - for example table, see Appendix E

Service Area	Levels of Service		Achieved
	Goal	Performance Targets	
Conservation, Compliance and Enhancement	Meet all State and Federal Regulatory Requirements	No more than one quality violation within a give two year period No reporting violations (reports submitted accurately and on-time)	Meets all performance objectives
Service Quality and Cost (including Aesthetics, Reliability, Responsiveness and Capacity)	Maintain Operating Fund Financial Health	Recover Full Cost of doing business Achieve relative rate stability longer and minimize rate increases Ensure that the value of the Water Fund fund balance remains at or above one full year of operating expenses	Minor performance deficiencies
Asset Preservation and Condition	Maintain a capital reserve at least 75% of annual operating expense - over the next five years build the fund to \$300,000	Year One - transfer at least \$25,000 from the surplus of the water operating fund to the capital reserve fund Year Two to Five - Transfer at least \$35,000 from the surplus of the water operating fund to the water capital reserve fund	Considerable performance deficiencies
Health, Safety and Security	Improve and Sustain Water Quality	Ensure that 90% of water users are either "satisfied" or "very satisfied" with the quality of their water (based on survey results) Determine most cost	Minor performance deficiencies

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Service Area	Levels of Service		Achieved
	Goal	Performance Targets	
		effective solution for water supply source improvement Evaluate presence of lead joint pipe and replace where identified	
Service Quality and Cost (including Aesthetics, Reliability, Responsiveness and Capacity)	Reduce watermain breaks and disruption in service	Actively implement a comprehensive preventative maintenance program Ensure that water users experience no more than one disruption in service within a given one-year period Replace the remaining 15341 lf of 1903 pipe in poor condition. Replace 10,684 lf in 20121 and the remaining 4657 lf in 2026.	Considerable performance deficiencies

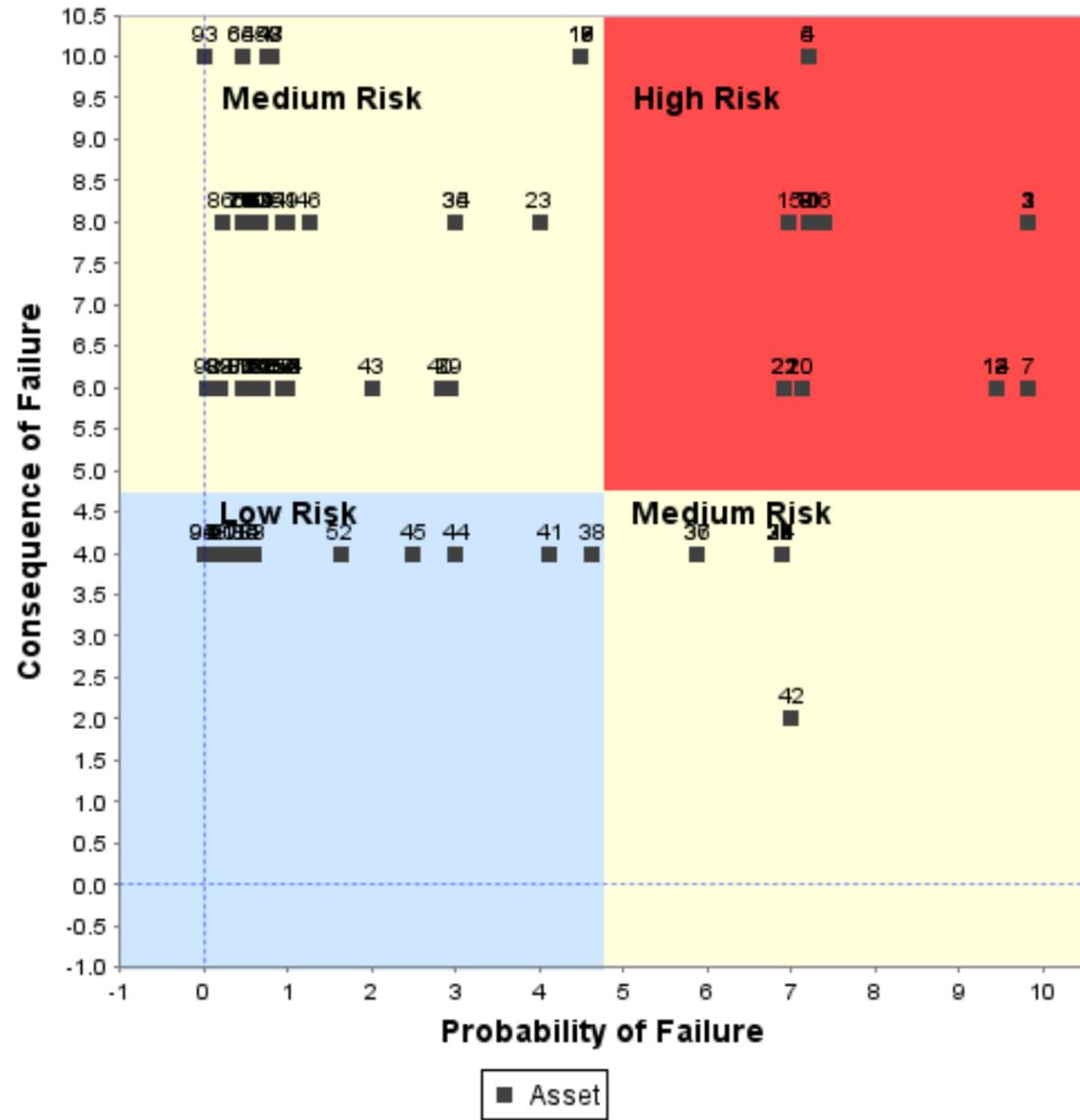
4 Critical Assets

Some assets are more important than others in making sure that customers receive safe drinking water, or making sure that wastewater is treated effectively, or both. Therefore, the asset management team used the CUPSS software (developed by the U.S. Environmental Protection Agency) to identify and prioritize critical assets and to improve practices used for routine operation and maintenance. This process includes reviewing all assets and recording their conditions (likelihood of failure), criticality to the utility (consequence of failure) and redundancy (the number of back-up assets to help support each asset). This will ensure that the utility delivers the level of service described in the previous section.

The Town of Enfield Water Department asset management team has completed the critical asset assessment. The assessment was based on a physical inspection and review of the visible assets such as the pump stations and an assessment of underground distribution mains based on repair history and age of pipe.

Tables 4-1 and 4-2 list assets critical to maintain the performance of the utility. [for additional information on assets, see the My Check Up Asset Report.] The tables are located in the appendix of this report. The following page graphically depicts the critical assets.

Asset Management Plan



High Risk Assets

- Water Tank Piping
- Prior #1 Building
- Marsh Well Piping
- Prior #1 Well
- Maple Street 2
- Prior #1 Controls

Medium Risk (Low Consequence Failure/High Probability)

- Shaker Hill Road to Livingstone Lodge
- Margery Lane
- Water Tank Fencing

Medium Risk (High Consequence Failure/Low Probability)

- Prior 2 Land
- Rte 4 from Baltic to Lovejoy
- Water Tank Land
- Prior Well Road
- Main Street from High to Oak
- Rte 4 from High to Flanders
- Baltic from Shedd to Rte 4
- Baltic Mill Line
- McConnel Well
- Prior 2 Well
- Prior Well 2 Piping
- Shedd Lapan Connector
- DPW Ford
- Oak Grove
- DPW Bobcat
- Water Tank Electronics
- DPW Office
- Marsh Well Controls

Low Risk

- New Production Well
- Prior 2 Sand Filter
- Pillsbury Street
- Main St from Sargent to Bridge
- Georgia St
- Cambridgeville
- Prior 1 SCADA
- DPW Sterling Truck
- Prospect Pines
- Lapan Circle to end

5 Operation and Maintenance (O&M) Strategy

O&M consists of preventive and emergency/reactive maintenance. In this section, the strategy for O&M varies by the asset, criticality, condition and operating history. The risk matrix in My Check Up Asset Report provides the utility's assets and identifies the risk value for each asset. This risk matrix and section 4.0 of this document were used as the basis for establishing the maintenance program as a way to make sure that the utility addresses the highest risk assets. In addition, the maintenance program addresses the level of service performance objectives to ensure that the utility is running at a level acceptable to the customer.

Unexpected incidents could require changing the maintenance schedule for some assets. This is because corrective action must be taken in response to unexpected incidents, including those found during routine inspections and O&M activities. Utility staff will record condition assessments when maintenance is performed, at established intervals, or during scheduled inspections. Assets rated at the top of the priority ranking are presented below with the maintenance strategies. As an asset is repaired or replaced, its condition will improve and therefore can reduce the overall risk of the asset failing. The maintenance strategy will be revisited every few years.

5.1 Preventive Maintenance

Preventive maintenance is the day-to-day work necessary to keep assets operating properly, which includes the following:

1. Regular and ongoing annual tasks necessary to keep the assets at their required service level
2. Day-to-day and general upkeep designed to keep the assets operating at the required levels of service
3. Tasks that provide for the normal care and attention of the asset including repairs and minor replacements

Preventive maintenance is carried out because of a planned maintenance program (such as regularly scheduled asset repairs) and historically problematic operations (such as blockages and root infestation). Equipment must be maintained according to manufacturer's recommendations to achieve maximum return on investment. By simply following the manufacturer's suggested preventive maintenance the useful life of equipment can be increased 2 to 3 times when compared to run till failure. Communities that have eliminated preventive maintenance practices from their operating budget can achieve positive returns from a relatively small additional investment.

Table 5-1 (in appendix) shows preventive maintenance cost based on best management practices and manufacturer's recommended servicing intervals. Deferred maintenance tasks that have not historically been performed because of inadequate funding or staffing must be projected into future operating budgets to achieve life expectancy projected by the manufacturer or engineer.

5.2 Emergency/Reactive Maintenance

Reactive maintenance is often carried out because of customer requests or sudden asset

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failures. The required service and maintenance to fix the customers issue(s) is identified by staff inspection.

Table 5-2. Town of Enfield Water Department Emergency/Reactive Maintenance Expenses for 2018

Task Name	Cost(\$)	Frequency	Estimate Annual Cost
Total Emergency/Reactive Cost			0

5.3 Deferred Maintenance

Deferred maintenance is any maintenance, repair, restoration or replacement work that should have been accomplished before now, and that has not been performed. The utility has a total of \$202,000 for all maintenance activities. The following includes the utility's plan to reduce overall deferred maintenance over the following 10 years. Replacement of old high maintenance distribution mains.

6 Water Quality

This section addresses how the Town of Enfield Water Department addresses water quality and water efficiency issues under the two major federal statutes governing water are the Safe Drinking Water Act (SDWA), the Clean Water Act (CWA), and State Drinking Water Regulations.

Source Water Assessments and Protection

The cost of water treatment, as well as the risks to public health, can be reduced by protecting source water from contamination. Town of Enfield Water Department has reviewed the source water assessments and protection studies that provide information about the drinking water in Town of Enfield Water Department and the community. The study results show that the utility should take the action to help reduce potential sources of contamination and protect drinking water. These issues include the following:

- No water quality issues.

The associated actions are identified in the action plan in Section 9.0; for list of contaminants, see Appendix A.

Total Maximum Daily Loads (TMDLs)

6.1 Implementation Strategy to Protect Watersheds

Water Quality Monitoring Strategy

Water and Energy Efficiency

The water and energy sectors are highly interdependent. Customers use enormous amounts of energy to withdraw, treat, and distribute water. Identifying approaches to integrate energy efficient practices into the daily management and long-term planning for our utility also contribute to the long-term sustainability of water infrastructure by reducing operation costs and adding to a utility's bottom line. Town of Enfield Water Department is initiating the following steps to encourage water and energy efficiency to aid in forestalling future large capital expenditures in infrastructure and have identified several water and energy efficiency capital improvement project with a total cost of

- Participating in off-peak pumping
- Securing adequate storage
- Purchasing efficient pumps and motors
- Properly sizing equipment to its intended duty/load requirement
- Installing renewable energy technologies on-site or purchasing renewable energy credits
- Using variable speed devices
- Water audits and water loss control programs
- Considering how the utility handles heating, ventilation, air conditioning, and lighting

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- Conducting a baseline energy evaluation to assess the utility's energy consumption status.
- Sustainable pricing
- Employing consumer outreach programs (free home water audits, rebate programs, an such)
- Using practices to generate energy (for example, combined heat and power (CHP), also known as cogeneration, is a reliable, cost-effective option for wastewater treatment facilities that have installed, or are planning to install, anaerobic digesters. Biogas from these digesters can be used in a CHP system as "free" fuel to generate reliable electricity and power).

Best Management Practices (BMPs)

Adopting BMPs is an emerging trend among the water utility industry. Widespread adoption of better management practices offers great promise to reduce costs and direct system investments using a risk-based approach. BMPs are inherently pollution prevention practices. The asset management team has considered installing several types of BMPs. They include a total implementation cost of to be determined and conduct BMP activities throughout its preventive maintenance.

7 Capital Improvement Program (CIP)

The Town of Enfield Water Department capital improvement program (CIP) plan is the description of future capital projects. Capital improvement projects generally create a new asset that previously did not exist or they upgrade and improve an existing capacity. The projects can result from growth or environmental needs, such as the following:

1. Expenditure that purchases or creates a new asset or in any way improves an asset beyond its original design capacity
2. Upgrades that increase the capacity of the asset
3. Construction designed to produce an improvement in the standard operation of the asset beyond its present capacity

In addition to capital improvement projects, the asset management team has reviewed and is establishing a renewal (or rehabilitation) strategy. Renewal expenditure is anything that does not increase the asset's design capacity but restores an existing asset to its original capacity. Any improvement projects that require more than simply restoring an asset to its original capacity are deemed to be a renewal project, such as the following:

1. Activities that do not increase the capacity of the asset (i.e., upgrade and enhance the assets restoring them to their original size, condition, and capacity)
2. Rehabilitation involving improvements and realignment or restores the assets to a new or fresh condition

In making renewal decisions, the utility considered several categories other than the normally recognized physical, failure or breakage. Such renewal decisions include the following:

1. Structural
2. Capacity
3. Level of service failures
4. Outdated functionality
5. Cost or economic impact

The utility staff and management know of potential assets that need to be repaired or rehabilitated. Reminders in the CUPSS task calendar let the staff members know when the condition of an asset begins to decline according to the manufacturer's life cycle recommendations of assets. The CUPSS Check Up Reports also have provided recommendations (replace, repair, or rehabilitate) for each asset. The utility staff members have taken these reminders and recommendations into account.

A summary of the current plan is presented in Table 7-1. Because the expected needs of the utility will change each year, the CIP plan will be updated to reflect those changes. Greater detail is presented in the town CIP.

Town of Enfield Water System Asset
Management Plan

Town of Enfield Water System 10 Year Capital Improvement Plan

Table 7-1

Capital Improvement Project	Year to Conduct	Total Cost	Annual Savings
New Well Siting	2020	\$40,000	\$40,000
TOTAL 2020		\$40,000	
Maple Street 1	2021	\$460,000	\$3,898
May Street	2021	\$421,200	\$3,569
Union Street	2021	\$221,600	\$1,878
Shedd Street Pillsbury to end	2021	\$241,800	\$2,049
Stevens Street	2021	\$152,200	\$1,290
Maple Street 2	2021	\$640,000	\$5,424
New Production Well	2021	\$200,000	\$100,000
TOTAL 2021		\$2,336,800	
McConnell Well Pump	2026	\$15,000	\$750
McConnell Well Controls / Electronics	2026	\$5,000	\$250
McConnell Well SCADA	2026	\$5,000	\$500
Route 4 Baltic to Anderson	2026	\$190,400	\$1,548
Wells Street	2026	\$256,800	\$2,088
Main Street Oak Grove to Sargent	2026	\$431,000	\$3,504
Shedd St. Apt. 1	2026	\$23,200	\$189
Shedd St. Apt. 2	2026	\$30,000	\$244
TOTAL 2026		\$956,400	
Prior #1 Pump	2027	\$15,000	\$577
Prior #1 Controls / Electronics	2027	\$5,000	\$192
DPW Sterling Utility Truck	2027	\$55,000	\$2,750
TOTAL 2027		\$75,000	
Marsh Well Pump	2028	\$7,500	\$750
Marsh Well VFD	2028	\$7,000	\$700
DPW Ford Truck	2028	\$55,000	\$5,500
TOTAL 2028		\$69,500	

A complete listing of all projects is included in the Appendix.

8 Financial Management Strategy

This section describes the Town of Enfield Water Department financial condition and its strategy for future financing. Expenses greater than \$25,000 are considered capital costs. Capital costs are one-time expenses (not including labor) used to replace or upgrade, because of capacity, a part of the utility. Capital costs do not include any O&M costs.

Costs for water are funded through general rates 100% with connection fees less than 1%. External financing for capital expenses exceeding \$50,000 will be financed through loans, increase user rates and grants. For details of capital projects, see the CIP plan. Table 8-1 below presents the estimated external financing.

If large expenses are required for expansion or upgrades, the Town of Enfield Water Department plans to pay for the improvements through grants or loans. The utility estimates that it will spend a total of \$6,181,000 on water over the next 10 years to accommodate growth in the town, compliance with state and federal regulations, and introduce new drinking water or wastewater requirements. A detailed financial summary for the next 10 years is presented in Table 8-1.

Financial ratios are used to determine the financial health of a utility. The utility used the following Operating, Debt, Sales and Expense Ratios to shed light on the financial status of the utility and are included in Appendix E of this report.

8.1 Financial Forecast

The Financial Forecast shows predicted values of both revenue and expenses for the asset management teams using the values provided in the financial history, see Appendix D. The projections are used to help the utility plan for and predict future expenses and revenue and how to better finance capital improvement projects by acquiring loans or grants or by planned rate changes.

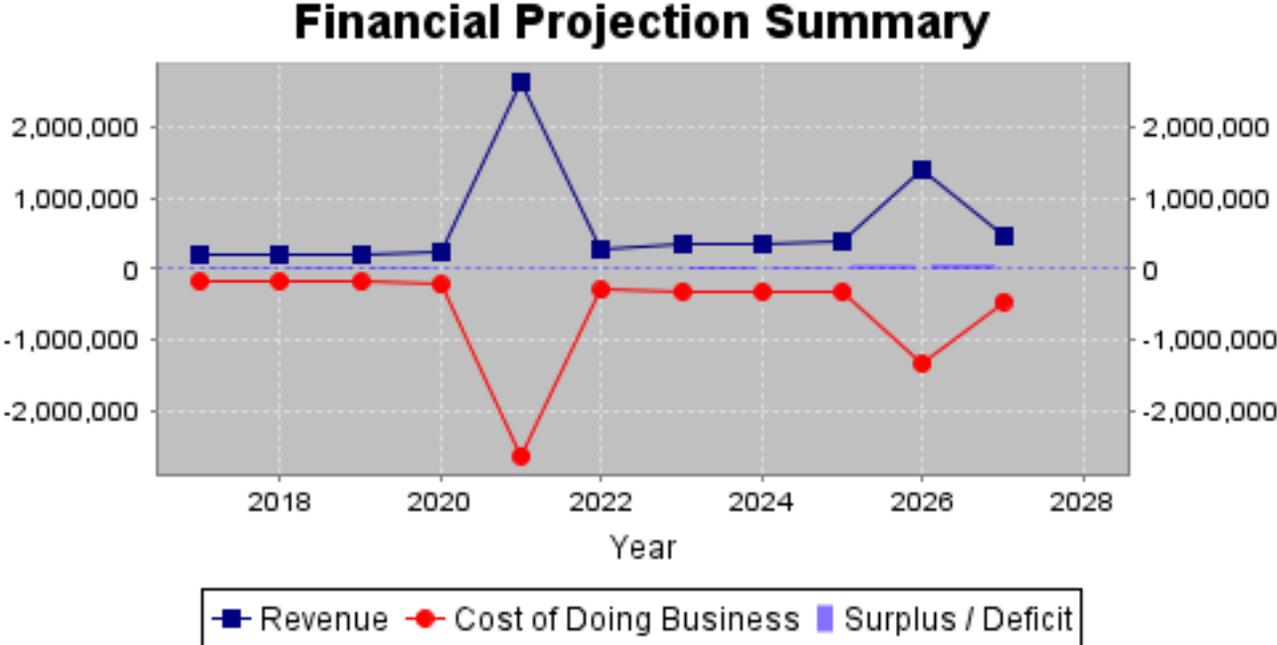


Figure 8-1. Financial Projection Summary. Demonstrates the difference between revenue and the cost of doing business (expense) and whether the utility has a surplus or deficit

8.2 Total Expenditure

The following table illustrates the forecasted financial needs for the next 10 years. The actual expenditure in FY 2017 and FY 2018, and the approved budget for 2019, is also shown for comparison.

Town of Enfield Water System Asset Management Plan

Table 8-1. Town of Enfield Water Department Total Expenditure Summary - Actual/Forecast

FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	Expense/Revenue	Typical Year	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
			Water Supply											
0.0%	0.0%	0.0%	Annual Growth	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
		480	Number of Customers	480	480	480	480	480	480	480	480	480	480	480
		\$1	Average Customer Bill	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1	\$1
\$380,000	\$394,336	\$400,000	Cash on Hand	\$125,864	\$457,435	\$33,350	\$48,417	\$43,514	\$93,601	\$143,788	\$194,076	\$244,464	\$0	\$0
0.2%	0.2%	0.2%	Interest Rate											
0%	0%	0%	Average Inflation	2.4%	3%	3%	3%	3%	3%	3%	3%	3%	0%	0%
			Revenues											
\$188,988	\$202,330	\$202,330	Revenue from User Rates	\$260,300	\$225,000	\$250,000	\$278,000	\$308,000	\$342,000	\$380,000	\$400,000	\$420,000	\$0	\$0
\$0	\$0	\$0	Interest	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$0	\$0	\$0	Revenue from Grants	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$0	\$0	\$0	Revenue from Loans	\$293,000	\$0	\$1,930,000	\$0	\$0	\$0	\$0	\$1,000,000	\$0	\$0	\$0
\$0	\$0	\$0	Savings Withdraw	\$54,600	\$0	\$450,000	\$20,000	\$40,000	\$0	\$0	\$0	\$36,000	\$0	\$0
\$1,804	\$0	\$0	Other Revenues	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$190,792	\$202,330	\$202,330	Total Revenues	\$607,900	\$225,000	\$2,630,000	\$298,000	\$348,000	\$342,000	\$380,000	\$1,400,000	\$456,000	\$0	\$0
			Expenses											
\$1,977	\$454	\$454	Building Maintenance	\$518	\$454	\$467	\$481	\$496	\$510	\$526	\$542	\$558	\$574	\$574
\$321	\$2,992	\$2,992	Hydrant Maintenance	\$3,419	\$2,992	\$3,082	\$3,175	\$3,270	\$3,368	\$3,469	\$3,573	\$3,680	\$3,791	\$3,791
\$2,449	\$1,421	\$1,421	Equipment	\$1,624	\$1,421	\$1,464	\$1,508	\$1,553	\$1,600	\$1,648	\$1,697	\$1,748	\$1,801	\$1,801
\$257	\$776	\$776	Contracts	\$886	\$776	\$799	\$823	\$847	\$873	\$899	\$926	\$954	\$982	\$982
\$760	\$1,035	\$1,035	Gasoline	\$1,182	\$1,035	\$1,066	\$1,098	\$1,131	\$1,164	\$1,199	\$1,235	\$1,272	\$1,311	\$1,311
\$5,504	\$6,385	\$6,385	Monitoring & testing	\$7,295	\$6,385	\$6,576	\$6,774	\$6,977	\$7,186	\$7,402	\$7,624	\$7,853	\$8,088	\$8,088
\$6,558	\$0	\$0	Distribution System Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$1,198	\$4,644	\$4,644	Meters & Backflow Prevention	\$5,306	\$4,644	\$4,783	\$4,927	\$5,075	\$5,227	\$5,384	\$5,545	\$5,712	\$5,883	\$5,883

Town of Enfield Water System Asset Management Plan

FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	Expense/Revenue	Typical Year	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029
\$0	\$0	\$0	Treatment	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$11,812	\$16,348	\$16,348	Utilities	\$18,679	\$16,348	\$16,838	\$17,343	\$17,864	\$18,399	\$18,951	\$19,520	\$20,106	\$20,709	\$20,709
\$0	\$2,948	\$2,948	Taxes	\$3,368	\$2,948	\$3,036	\$3,127	\$3,221	\$3,318	\$3,417	\$3,520	\$3,625	\$3,734	\$3,734
\$2,738	\$4,246	\$4,246	Supplies	\$4,852	\$4,246	\$4,374	\$4,505	\$4,640	\$4,779	\$4,923	\$5,070	\$5,222	\$5,379	\$5,379
\$796	\$0	\$0	Production & Storage Maintenance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$96,063	\$96,908	\$96,908	Salaries, wages, benefits	\$110,726	\$96,908	\$99,816	\$102,810	\$105,894	\$109,071	\$112,343	\$115,714	\$119,185	\$122,761	\$122,761
\$132	\$80	\$80	Vehicle & Equip Repairs	\$91	\$80	\$82	\$85	\$87	\$90	\$93	\$96	\$98	\$101	\$101
\$1,000	\$0	\$0	Grounds & Easement Maint	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$0	\$0	\$0	Equipment Rental	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$0	\$0	\$0	Other Expenses	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$131,564	\$138,237	\$138,237	Sub-Total Annual Operating Expenses	\$157,947	\$138,237	\$142,384	\$146,655	\$151,055	\$155,586	\$160,254	\$165,062	\$170,013	\$175,114	\$175,114
\$6,500	\$0	\$0	Capital Improvements Projects Required	\$340,820	\$40,000	\$2,336,800	\$0	\$0	\$0	\$0	\$956,400	\$75,000	\$0	\$0
\$14,651	\$13,438	\$13,438	Annual Debt Payment	\$85,261	\$14,651	\$106,161	\$106,161	\$106,161	\$106,161	\$106,161	\$153,576	\$153,576	\$0	\$0
\$25,000	\$25,000	\$25,000	Annual Reserve Fund Contribution	\$34,500	\$25,000	\$35,000	\$35,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$0	\$0
\$0	\$0	\$0	Emergency Reserve	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
\$46,151	\$38,438	\$38,438	Total Non-Operating Expenses	\$460,581	\$79,651	\$2,477,961	\$141,161	\$156,161	\$156,161	\$156,161	\$1,159,976	\$278,576	\$0	\$0
\$177,715	\$176,675	\$176,675	Total Cost of Doing Business	\$618,528	\$217,888	\$2,620,345	\$287,816	\$307,216	\$311,748	\$316,415	\$1,325,038	\$448,589	\$175,114	\$175,114
\$13,076	\$25,655	\$25,655	Cash Surplus / Deficit	(\$10,628)	\$7,112	\$9,655	\$10,184	\$40,784	\$30,252	\$63,585	\$74,962	\$7,411	(\$175,114)	(\$175,114)

Town of Enfield Water System Asset Management Plan

Table 3.1 Financial Projections Table

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Inflation	0.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
Growth	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Cash on Hand	\$380,000	\$405,760	\$431,572	\$457,435	\$33,350	\$48,417	\$43,514	\$93,601	\$143,788	\$194,076	\$244,464
Annual Operating Expenses	\$131,564	\$135,511	\$139,576	\$143,763	\$148,076	\$152,518	\$157,094	\$161,807	\$166,661	\$171,661	\$176,811
Capital Improvements	\$0	\$0	\$0	\$40,000	\$2,336,800	\$0	\$0	\$0	\$0	\$956,400	\$75,000
Annual Debt Payment	\$14,651	\$14,651	\$14,651	\$14,651	\$106,161	\$106,161	\$106,161	\$106,161	\$106,161	\$153,576	\$153,576
Capital Reserve	\$25,000	\$25,000	\$25,000	\$25,000	\$35,000	\$35,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Emergency Reserve	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Annual Cost of Doing Business	\$171,215	\$175,162	\$179,227	\$223,414	\$2,626,037	\$293,679	\$313,255	\$317,968	\$322,822	\$1,331,637	\$455,387
Revenue from Fees	\$188,988	\$202,330	\$202,330	\$225,000	\$250,000	\$278,000	\$308,000	\$342,000	\$380,000	\$400,000	\$420,000
Revenue from Grants	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Revenue from Loans	\$0	\$0	\$0	\$0	\$1,930,000	\$0	\$0	\$0	\$0	\$1,000,000	\$0
Savings Withdraw	\$0	\$0	\$0	\$0	\$450,000	\$20,000	\$40,000	\$0	\$0	\$0	\$36,000
Other Revenues	\$1,804	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Revenue Surplus/Deficit	\$19,577	\$27,168	\$23,103	\$1,586	\$3,963	\$4,321	\$34,745	\$24,032	\$57,178	\$68,363	\$613

9 Action Plan

The Town of Enfield Water Department Asset Management Plan refers to many objectives, targets, maintenance and improvements for the utility. Table 9-1 brings all these items together to clearly identify the actions required to successfully implement the Asset Management Plan. For example action items, see Appendix F.

Table 9-1 Action Plan Table

Urgency	Service (All, W, WW)	Issue	Corrective Action Plan	Performance Target No.	Target Date for Completion	Status	Final Completion Date
The five most important actions							
High	W	1903 Distribution Main breaks on a regular basis	Replace 1903 water main with new Ductile Iron water main	None	2020 and 2027	NS	
Medium	W	Existing wells have decreasing yield	Preliminary Hydrogeo and test borings at Marsh or Prior well field	None	2020	NS	
Medium	W	Water supply quality and quantity problems	Develop Production Well	None	2021	NS	

9.1 Review Schedule

The Town of Enfield Water Department is/are scheduled to review this plan annually and update the community on new information and changes on February 2020.

10 Appendices

Appendix A. Contaminant List

Contaminant	Achieved Compliance?

Town of Enfield Water System Asset
Management Plan

Appendix B. Impaired Waterbodies and/or TMDLs List

Waterbody	Cause of Impairment

Town of Enfield Water System Asset
Management Plan

**Appendix C. Financial History
Expenses for Town of Enfield Water Department**

Year:2015

Type of Expense	Budgeted	Actual	Inflation
Equipment	\$0	\$239	0.00%
Salaries, wages, benefits	\$0	\$123,270	0.00%
Supplies	\$0	\$2,275	0.00%
Contracts	\$0	\$426	0.00%
Utilities	\$0	\$18,318	0.00%
Monitoring & testing	\$0	\$5,291	0.00%
Debt Payment	\$0	\$16,800	0.00%
Capital Reserve Contribution	\$0	\$50,000	0.00%
Building Maintenance	\$0	\$0	0.00%
Meters & Backflow Prevention	\$0	\$5,671	0.00%
Distribution System Maintenance	\$0	\$10,664	0.00%
Production & Storage Maintenance	\$0	\$6,248	0.00%
Hydrant Maintenance	\$0	\$0	0.00%
Equipment Rental	\$0	\$0	0.00%
Gasoline	\$0	\$928	0.00%
Grounds & Easement Maint	\$0	\$400	0.00%
Vehicle & Equip Repairs	\$0	\$482	0.00%
Total Expense	\$0	\$241,013	

Year:2016

Type of Expense	Budgeted	Actual	Inflation
Equipment	\$0	\$909	0.00%
Salaries, wages, benefits	\$0	\$107,668	0.00%
Supplies	\$0	\$1,021	0.00%
Contracts	\$0	\$526	0.00%
Utilities	\$0	\$12,392	0.00%
Monitoring & testing	\$0	\$5,617	0.00%
Debt Payment	\$0	\$15,759	0.00%
Capital Reserve Contribution	\$0	\$0	0.00%
Building Maintenance	\$0	\$0	0.00%
Meters & Backflow Prevention	\$0	\$6,558	0.00%
Distribution System Maintenance	\$0	\$2,816	0.00%

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Production & Storage Maintenance	\$0	\$17,117	0.00%
Hydrant Maintenance	\$0	\$153	0.00%
Equipment Rental	\$0	\$450	0.00%
Gasoline	\$0	\$781	0.00%
Grounds & Easement Maint	\$0	\$1,250	0.00%
Vehicle & Equip Repairs	\$0	\$22	0.00%
Total Expense	\$0	\$173,040	

Year:2017

Type of Expense	Budgeted	Actual	Inflation
Equipment	\$0	\$2,449	0.00%
Salaries, wages, benefits	\$0	\$96,063	0.00%
Supplies	\$0	\$2,738	0.00%
Contracts	\$0	\$257	0.00%
Utilities	\$0	\$11,812	0.00%
Monitoring & testing	\$0	\$5,504	0.00%
Capital Improvements	\$0	\$6,500	0.00%
Debt Payment	\$0	\$14,651	0.00%
Capital Reserve Contribution	\$0	\$25,000	0.00%
Building Maintenance	\$0	\$1,977	0.00%
Meters & Backflow Prevention	\$0	\$1,198	0.00%
Distribution System Maintenance	\$0	\$6,558	0.00%
Production & Storage Maintenance	\$0	\$796	0.00%
Hydrant Maintenance	\$0	\$321	0.00%
Equipment Rental	\$0	\$0	0.00%
Gasoline	\$0	\$760	0.00%
Grounds & Easement Maint	\$0	\$1,000	0.00%
Vehicle & Equip Repairs	\$0	\$132	0.00%
Total Expense	\$0	\$177,715	

Year:2018

Type of Expense	Budgeted	Actual	Inflation
Equipment	\$2,000	\$1,421	0.00%
Salaries, wages, benefits	\$147,241	\$96,908	0.00%
Supplies	\$2,500	\$4,246	0.00%

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Contracts	\$500	\$776	0.00%
Utilities	\$15,500	\$16,348	0.00%
Monitoring & testing	\$0	\$6,385	0.00%
Capital Improvements	\$0	\$0	0.00%
Debt Payment	\$13,438	\$13,438	0.00%
Capital Reserve Contribution	\$0	\$25,000	0.00%
Building Maintenance	\$200	\$454	0.00%
Meters & Backflow Prevention	\$5,000	\$4,644	0.00%
Distribution System Maintenance	\$0	\$0	0.00%
Production & Storage Maintenance	\$10,000	\$0	0.00%
Hydrant Maintenance	\$11,500	\$2,992	0.00%
Equipment Rental	\$1,000	\$0	0.00%
Gasoline	\$1,000	\$1,035	0.00%
Grounds & Easement Maint	\$1,000	\$0	0.00%
Vehicle & Equip Repairs	\$500	\$80	0.00%
Treatment	\$200	\$0	0.00%
Taxes	\$0	\$2,948	0.00%
Total Expense	\$211,579	\$176,675	

Year:2019

Type of Expense	Budgeted	Actual	Inflation
Equipment	\$1,421	\$0	0.00%
Salaries, wages, benefits	\$96,908	\$0	0.00%
Supplies	\$4,246	\$0	0.00%
Contracts	\$776	\$0	0.00%
Utilities	\$16,348	\$0	0.00%
Monitoring & testing	\$6,385	\$0	0.00%
Capital Improvements	\$0	\$0	0.00%
Debt Payment	\$13,438	\$0	0.00%
Capital Reserve Contribution	\$25,000	\$0	0.00%
Building Maintenance	\$454	\$0	0.00%
Meters & Backflow Prevention	\$4,644	\$0	0.00%
Distribution System Maintenance	\$0	\$0	0.00%
Production & Storage Maintenance	\$0	\$0	0.00%
Hydrant Maintenance	\$2,992	\$0	0.00%

Town of Enfield Water System Asset Management Plan

Equipment Rental	\$0	\$0	0.00%
Gasoline	\$1,035	\$0	0.00%
Grounds & Easement Maint	\$0	\$0	0.00%
Vehicle & Equip Repairs	\$80	\$0	0.00%
Treatment	\$0	\$0	0.00%
Taxes	\$2,948	\$0	0.00%
Total Expense	\$176,675	\$0	

Revenue for Town of Enfield Water Department

Year: 2015

Type of Revenue	Budgeted	Actual	Inflation
Revenue from user rates	\$0	\$184,097	0.00%
Total Revenue	\$0	\$184,097	

Year: 2016

Type of Revenue	Budgeted	Actual	Inflation
Revenue from user rates	\$0	\$244,550	0.00%
Total Revenue	\$0	\$244,550	

Year: 2017

Type of Revenue	Budgeted	Actual	Inflation
Revenue from user rates	\$0	\$188,988	0.00%
One-time fees	\$0	\$1,575	0.00%
Miscellaneous	\$0	\$229	0.00%
Total Revenue	\$0	\$190,792	

Year: 2018

Type of Revenue	Budgeted	Actual	Inflation
Revenue from user rates	\$188,988	\$202,330	0.00%
One-time fees	\$1,575	\$0	0.00%
Miscellaneous	\$229	\$0	0.00%
Total Revenue	\$190,792	\$202,330	

Year: 2019

Type of Revenue	Budgeted	Actual	Inflation
Revenue from user rates	\$202,330	\$0	0.00%

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One-time fees	\$0	\$0	0.00%
Miscellaneous	\$0	\$0	0.00%
Total Revenue	\$202,330	\$0	

Town of Enfield Water System Asset Management Plan

Appendix D. Financial Ratios

Year	Operating Ratio ¹	Debt Ratio ²	Sales Ratio ³	Expense Ratio ⁴
2017	 1.45	 3.92	 1.00	 0.77
2018	 1.49	 4.56	 1.00	 0.77
2019	 1.45	 4.28	 1.00	 0.78
2020	 1.57	 5.54	 1.00	 0.64
2021	 14.72	 0.96	 0.10	 0.06
2022	 1.82	 1.18	 0.93	 0.52
2023	 1.96	 1.42	 0.89	 0.50
2024	 2.11	 1.70	 1.00	 0.51
2025	 2.28	 2.01	 1.00	 0.52
2026	 8.16	 1.49	 0.29	 0.13
2027	 2.38	 1.58	 0.92	 0.39

1. Formula: $OR = \text{Operating Revenue} / \text{Operating Expense}$ Definition: The operating ratio demonstrates the relationship between operating revenues and operating expenses. A high ratio indicates that the organization has operating efficiency by keeping expenses low relative to revenue.

2. Formula: $DR = \text{Total Liabilities} / \text{Total Assets}$ Definition: The debt ratio measures the amount of debt being used by the organization. A ratio of 0.6 means that 60% of operations have been financed with debt and the remaining 40% has been financed by equity.

3. Formula: $SR = \text{Sales} / \text{Total Revenue}$ Definition: The sales ratio measures the percentage of total revenue that is made up of sales from operations. A low ratio indicates that the organization is overly reliant on outside funding.

4. Formula: $ER = \text{Operating Expense} / \text{Total Expense}$ Definition: The expense ratio measures the amount of operating expenses compared to total expenses. A high ratio indicates that most expenditures are for operations – leaving the remaining balance for non-operating costs (such as debt service, capital improvements, and the like). If the non-operating balance is small, the utility is not likely to meet all its capital-related expenses, which could cause the system to deteriorate more rapidly.

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Appendix E. Glossary

Term	Definition
Annual Debt Payment	The dollar amount that must be paid each year toward retiring existing debt.
Annual Operating Expenses	Total annual cost of operating and maintaining the water or wastewater utility service. This does not include savings or future draws from capital savings accounts.
Asset	A component of a facility with an independent physical and functional identity and age (e.g. pump, motor, sedimentation tank, main).
Asset Category	Where the asset best fits within your system (e.g., source water, distribution or collection), for organizational purposes.
Asset Inventory	A list of assets with details about each one (installation date, original cost, condition, and such). Also known as an asset register.
Asset Management	A process for maintaining a desired level of customer service at the best appropriate cost.
Asset Name	The name of the technology or equipment that is used for your system to properly function (for example, "5th Street Pumping Station"). See also, Asset.
Asset Status	This is how your utilities view an asset. Assets can be active (most assets), not in use or a future investment. You would designate an asset a "future investment" if you would like it added to your capital improvement plan.
Asset Type	The asset's functional purpose for a specific asset category (for example, intake structure, pumping station, transmission main, storage tank, and the like).
Associated Asset	Assets that are directly related to a primary asset's function.
Associated Location	A location that complements an associated asset.
Capital Improvement (Expense)	Funds required for the future purchase, repair or alteration to or for an asset, structure, or major pieces of equipment.
Capital Improvement Program (CIP) Plan	A plan that projects and assesses which projects (including asset improvements, repairs, replacements, and such) need to be completed in the future.
Capital Reserve Contribution	Funds set aside to fund capital improvements (i.e. future

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Term	Definition
	purchase, repair or alteration to or for an asset, structure, or major pieces of equipment).
Cash on Hand	The amount of cash that is available to the system within a 24 hour period.
Condition	The current condition, in your opinion, of an asset according to its age and physical functionality (ranging from poor to excellent).
Consequence of Failure	The real or hypothetical results associated with the failure of an asset.
Debt Payment	The dollar amount that must be paid each year toward paying down or retiring existing debt.
Debt Ratio	Debt Ratio = Total Liabilities / Total Assets The debt ratio measures the amount of debt being used by the organization. A ratio of 0.6 means that 60% of operations have been financed with debt and the remaining 40% has been financed by equity.
Emergency Reserve Contribution	Funds set aside for unexpected repairs and replacements. CUPSS recommends that utilities work toward an emergency reserve balance of 25% of its annual operating expenses.
Expected Useful Life	The average amount of time, in years, that a system or component is estimated to function when installed new.
Expense	Money spent by the utility to continue its ongoing operations.
Expense Ratio	Expense Ratio = Operating Expense / Total Expense The expense ratio measures the amount of operating expenses compared to total expenses. A high ratio indicates that most expenditures are for operations—leaving the remaining balance for non-operating costs (such as debt service, capital improvements, and such). If the non-operating balance is small, the utility is not likely to meet all its capital-related expenses, which might cause the system to deteriorate more rapidly.
Financial Assets	Intangible assets such as cash and bank balances.
Growth	The amount, as a percent, a community's demand for water or wastewater treatment has increased or decreased. This value will be used to adjust future

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Term	Definition
	revenues and expenses.
Inflation	The anticipated rate of increase in the price level of goods and services.
Interest Rate	A rate that is charged or paid for the use of money. Note: Do not include a percentage sign.
Level of Service	The characteristics of system performance such as how much, of what nature, and how frequently, with regard to the system's service.
Liabilities	The financial obligations for which the utility is responsible.
Maintained According to Factory Recommendation	The frequency of routine maintenance as recommended by the manufacturer.
Operating Expenses	Total annual cost of operating and maintaining the water or wastewater utility service. This does not include savings or future funds withdrawal from capital savings accounts. Operating expenses include maintenance, equipment, salaries, wages, benefits, supplies, chemicals, contracts, utilities, monitoring, testing, emergency, rent, mortgage, insurance, services, training costs, billing costs, fees, and security costs.
Operating Ratio	<p>Operating Ratio = Operating Revenue / Operating Expense</p> <p>The operating ratio demonstrates the relationship between operating revenues and operating expenses. A high ratio indicates that the organization has operating efficiency by keeping expenses low relative to revenue.</p>
Original Cost	The amount paid for the initial purchase of an asset.
Probability of Failure	The chance an asset will fail based on the percent of effective life consumed and redundancy.
Redundancy	Spare assets that have the ability to do the same job, if a failure of the primary asset were to occur.
Replacement Cost	How much will it cost to replace the asset, if required today?
Revenue	Funds earned by the system through the sale of water or by other means.
Revenue Surplus/Deficit	The difference between the total cost of doing business and the funds received from fees, loans and grants, and interest earned from any accounts. If the result is zero or

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Term	Definition
	greater, the utility is taking in enough money to fully recover its costs and have a surplus. If the result is less than zero, the utility will not cover all costs and therefore will have a deficit.
Risk	The potential for realization of unwanted adverse consequences or events.
Routine Maintenance Cost	How much does it cost for a single routine maintenance activity to be performed on the asset?
Sales Ratio	Sales Ratio = Sales / Total Revenue The sales ratio measures the percentage of total revenue that is made up of sales from operations. A low ratio indicates that the organization is overly reliant on outside funding.
Savings Withdrawal	A fixed amount of money removed from the savings account of the utility to help pay for capital improvement items or other planned or unplanned maintenance.
Total Annual Cost of Doing Business	The total annual operating expenses plus the required total annual reserve contributions to reserve funds.