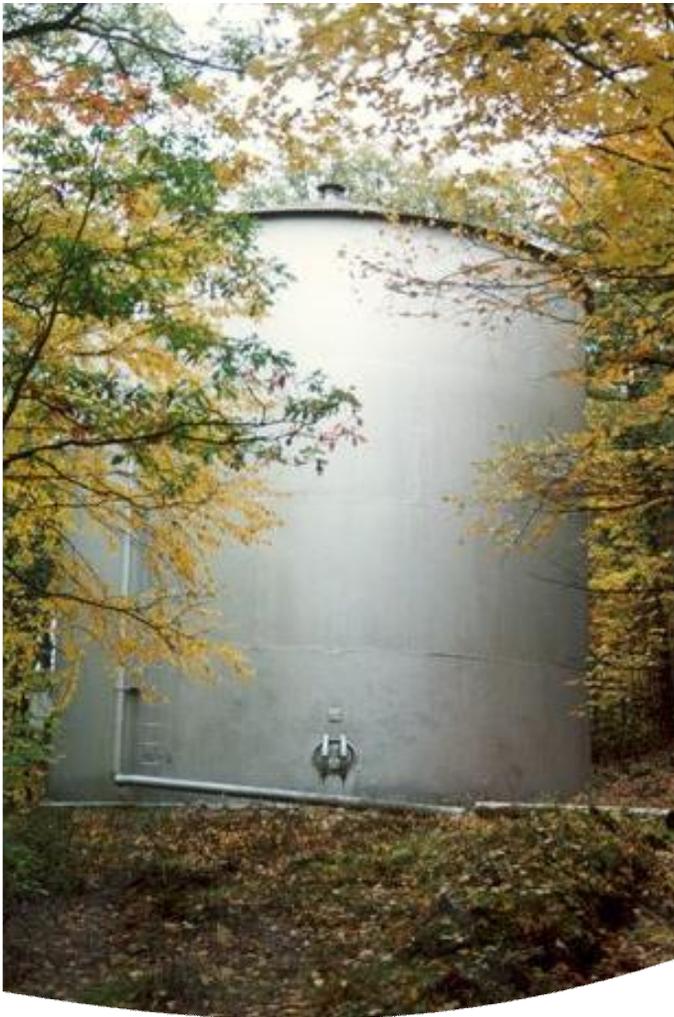
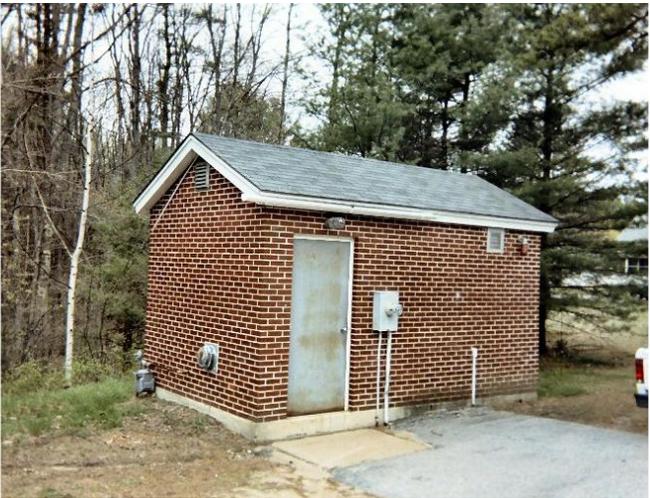


Drinking Water Infrastructure in New Hampshire:

A Capital Investment Needs Analysis



WRIGHT-PIERCE 
Engineering a Better Environment

Water
Wastewater
Infrastructure

**DRINKING WATER INFRASTRUCTURE IN NEW
HAMPSHIRE:**

A CAPITAL INVESTMENT NEEDS ANALYSIS

FOR THE

**NEW HAMPSHIRE DEPARTMENT OF
ENVIRONMENTAL SERVICES**

MARCH 2011



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INTRODUCTION AND ACKNOWLEDGEMENTS

A reliable, healthful supply of drinking water supply is vitally important to the well-being, comfort, and economic opportunity of communities. This project was initiated by the NH Department of Environmental Services (NHDES) Drinking Water and Groundwater Bureau, Sarah Pillsbury, Administrator. This resulting Study Report attempts to estimate future funding needs for drinking water infrastructure for community water systems in New Hampshire. Such an attempt is prerequisite to efforts to develop sustainable funding approaches that neither bankrupt the present, nor indefinitely defer needed refurbishment and repair into the future. Most of the estimates in this report were accomplished by developing sets of example infrastructure projects for which costs were known, or which could be estimated, and then linking them through modeling to the state's existing inventory of infrastructure by category.

This effort would not have been possible without the intellectual support, advice, and practical partnership offered by many individuals, including those from within NHDES, members of the Drinking Water Capital Needs Advisory Committee, representatives of community water systems, and individuals involved in planning and design, furnishing infrastructure equipment, and in building these water facilities.

The Wright-Pierce team wishes to thank the following individuals and organizations:

- **New Hampshire Department of Environmental Services** - The DES provided vital partnership in providing access to the state's dataset of community water system infrastructure. The Department assisted with providing the complete inventories of large water storage tanks, the water main inventories of many communities, costs for surface water plants, and many other items to assist in the effort. In particular, we wish to thank Sarah Pillsbury, Robert Mann, James Tilley, Laurie Cullerot, and Cindy Klevens for their assistance and insight. James Tilley, especially, for his careful, constructively critical eye, and on-going support and guidance.

- **Water Study Advisory Committee Members** - Thanks to Advisory Committee members, Steve Del Deo, David Bernier, Brian Goetz, Jennifer Palmiotto, Kurt Blomquist, Robert Beurivage, Robert Morency, Steve Guercia, and Wade Crawshaw for their participation and helpful feedback on project issues. Special thanks to Robert Beurivage (Manchester Water Works), John Boisvert (Pennichuck Water Works) and Peter Rice (Portsmouth Water), for their contributions, both as members of the Advisory Committee, and for their assistance in providing water main inventory for their water systems and the new Portsmouth treatment plant costs.
- **The Water Community** - Special thanks to John Mahar at Tanks Unlimited, Carl Horstmann at MassTank., and Terri Strouse of Gorham Sand and Gravel for all the elements involved in the installation of the small atmospheric tanks. To Harry Hagen of A.O. Smith, and Chris Hodgson of Natgun for helping me be current with the big tanks. Thanks to Charlie Lanza of Hampstead Water, both for your example water treatment systems and for your helpful standpoint of being in the water business. Your help was very much appreciated. Thanks to Steve LaFrance of Horizon Engineering, and to Keith Pratt of Underwood Engineers, for cost examples.

There have been many others who have helped execute the study and collect field information and data. We wish to extend our thanks to all of you who have helped and supported the project.

EXECUTIVE SUMMARY

BACKGROUND

This project was completed under contract with the NH Department of Environmental Services, Drinking Water and Groundwater Bureau. The objective of the project was to produce an accurate estimate of costs to replace existing community water system infrastructure over a 20-year period. This information would possibly be used as part of a wider effort to estimate replacement costs of other water-related infrastructure.

Drinking water system replacement costs have previously been estimated through the EPA Drinking Water Infrastructure Needs Survey and Assessment (DWINSA) conducted by EPA every four years. The DWINSA relies primarily on a random sample survey of water systems, and includes community water systems and not-for-profit non-community systems. The survey results are used to allocate Drinking Water State Revolving Funds (DWSRF) to the individual states to fund infrastructure improvements. The most recent DWINSA conducted in 2007 identified over \$320.8B of need for State Community drinking water systems nationally as summarized in Table ES-1 and Figure ES-1.

States that receive a minimum 1 percent of the most recent DWSRF allotment, including New Hampshire, were given the option of not participating in the state-specific statistical portion of the 2007 DWINSA. As New Hampshire is among the 13 opt-out states, the needs of NH systems serving from 3,301 to 100,000 people are estimated by applying data derived from participating states to NH's inventory of systems. Year 2007 DWINSA estimate for NH for 20-year needs was \$847 million (including both community and non-community water systems).

The Pie Chart below shows totals for national combined states' Community Water Systems 20-year need, from DWINSA Fourth Report to Congress, Exhibit 1.5 (Billions in January 2007 Dollars).

FIGURE ES-1

2007 EPA DWINSA ESTIMATED 20-YEAR NATIONAL NEED FOR STATES

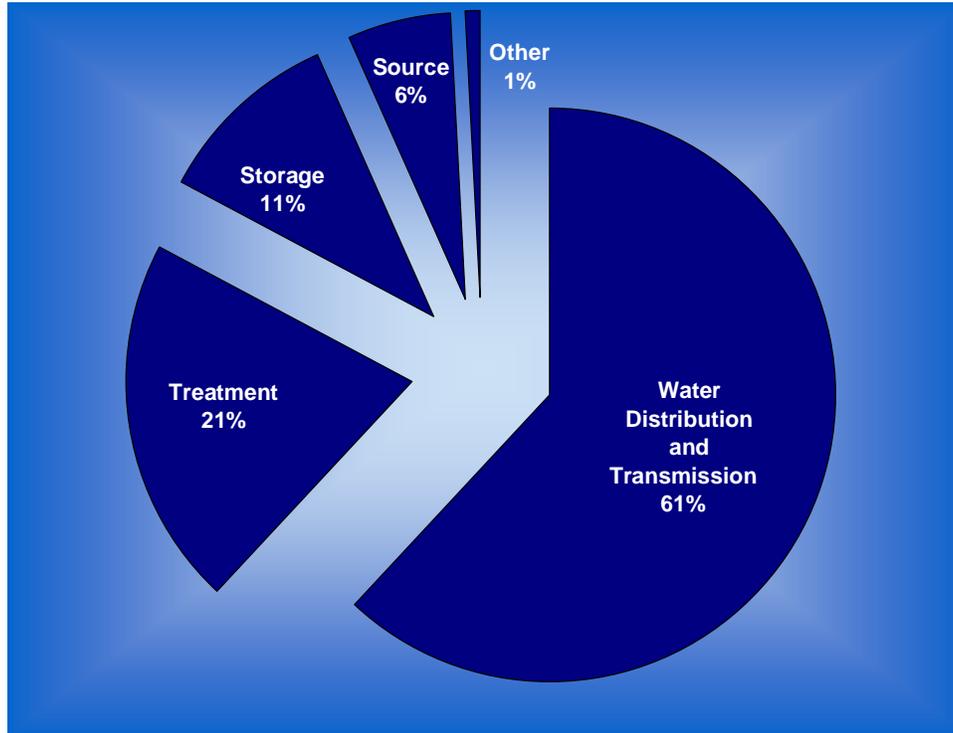


TABLE ES-1

**TOTAL 20-YEAR NATIONAL NEED (IN BILLIONS OF DOLLARS) FOR STATES
COMMUNITY WATER SYSTEMS BY SYSTEM SIZE AND TYPE**

System Size and Type	Distribution and Transmission	Treatment	Storage	Source	Other	Total Need
Large Water Systems	\$72.5	\$26.6	\$9.9	\$6.5	\$0.9	\$116.3
Medium Water Systems	\$91.5	\$29.8	\$15.9	\$7.1	\$0.8	\$145.1
Small Water Systems	\$34.7	\$10.3	\$8.5	\$5.2	\$0.6	\$59.4
Total National Need	\$198.7	\$66.8	34.4	\$18.8	\$2.3	320.8

From Exhibit 1.5 DWINSA Fourth Report to Congress
Estimated Need for All States Community Water Systems in January 2007 Dollars

GOALS AND OBJECTIVES OF THIS STUDY

In contrast with the previous EPA sponsored DWINSA cost estimates, the current study focused on community (residential) public water systems in New Hampshire. The study approach also varied in that it relied on asset inventory data and actual construction costs to the maximum extent possible. The study developed a cost model for the same basic asset groupings identified in the 2007 DWINSA with few exceptions. The goals and objectives of the study were as follows:

- Identify an accurate, reliable cost model to determine true water infrastructure needs
- Incorporate a real inventory of water infrastructure assets in the development of a cost model using NHDES' water system database
- Consider actual construction costs and asset useful life for each class of asset
- Determine the projected infrastructure need in the State of New Hampshire for the next 20-year period.

FINDINGS AND RESULTS

Table ES-2 summarizes 20-year drinking water infrastructure asset costs.

TABLE ES-2

PROJECTED ANNUAL WATER DISTRIBUTION NEEDS IN NEW HAMPSHIRE*

Description	Number	Est 2010 Replacement Cost of Entire Infrastructure Group (\$M)	Est Avg Useful Life	Est 20-Yr Need (\$M) *	Avg Annual Expenditure (\$M/Yr) **
Distribution and Transmission Piping					
Systems w/out Fire Protection	584 (23 w/ pop > 500)	\$471	50 & 100	\$158.8	\$7.9
Systems with Fire Protection	139				
small (pop < 500)	31	\$62	100	\$12.4	\$0.6
Medium (pop 500 - 3300)	69	\$568	100	\$113.5	\$5.7
Large (pop 3300-40,000)	36	\$2,018	100	\$403.7	\$20.2
Very Large (pop 40,000)	3	\$710	100	\$142.1	\$7.1
Subtotal Fire Protection		\$3,359		\$671.7	\$33.6
Subtotal All Piping	723	\$3,829		\$830.5	\$41.5
Atmospheric Storage					
Large Atmospheric Storage for Fire Protection	261	\$251	75	\$67.0	\$3.5
Small Atmospheric Storage for GW Supply	447 systems	\$42	30	\$27.7	\$1.4
Subtotal Atmospheric Storage		\$293		\$94.7	\$4.9
Pressure Booster Stations					
Pressure Boosting Pump Stations	115	\$43	Service Lives for each Bldg Asset Class	\$48	\$2.4
Water Treatment Facilities					
Surface Water Treatment	39	\$289	Service Lives for each Bldg Asset Class	\$261	\$13.1
Ground Water Treatment	506	\$477	Service Lives for each Bldg Asset Class	\$407	\$20.3
Total Water Treatment		\$766		\$668	\$33.4
Well Sources of Supply					
Level 1 Permit (<40 gpm), Bed Rock	903 systems	\$41	40	\$32.5	\$1.6
Level 2 Permit (>40 gpm) Bed Rock	68 systems	\$11	40	\$8.7	\$0.4
Level 1 Permit (< 40 gpm) Gravel	134 systems	\$6	25	\$5.9	\$0.3
Level 2 Permit (>40 gpm) Gravel	202 systems	\$32	25	\$24.4	\$1.2
Subtotals Groundwater Replacement	1307 systems	\$90		\$71.5	\$3.5
Total		\$5,021 M		\$1,713 M	\$85.7 M

Estimated 2010 Total Developed Costs broken out by factor for proportionate costs of Building Asset Categories, then adjusted by the 20 years over the service life.

* 20-Year need period from 2010-2030; ** in 2010 dollars

Figure ES-2, below, compares the USEPA DWINSA estimated needs for New Hampshire for 1995, 1999, 2003, and 2007 with the findings of this 2010 Study. The DWINSA needs estimates were normalized to 2010 costs using the ENR 20-City Construction Cost Index prior to plotting.

Figure ES-2: NH 20-Year Needs: EPA DWINSA Estimated Compared with Study Result

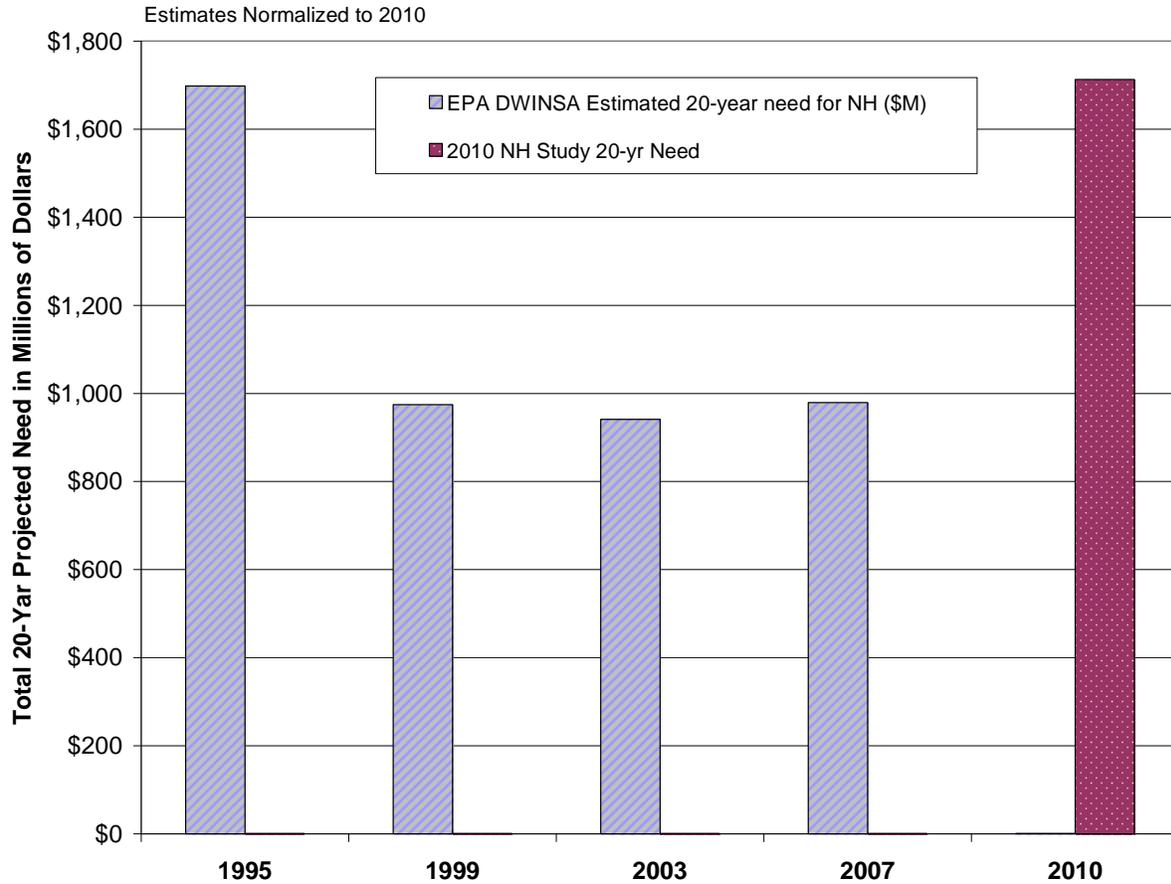
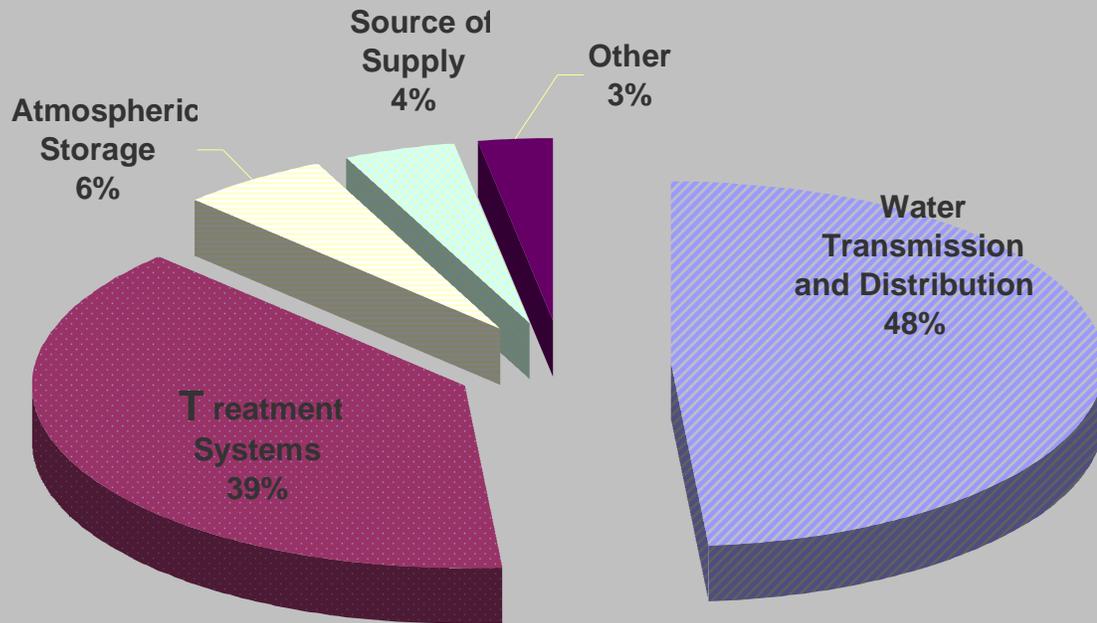


Figure ES-3 shows that infrastructure value in New Hampshire is greater than the historical EPA estimates since 1999. For the \$1713 million 20-year funding need, Figure ES-3 shows how it is apportioned amongst the various infrastructure asset categories.

Figure ES-3: Apportionment of \$1713 M 20-Year Funding Need by Infrastructure Type



The 2007 DWINSA survey identified \$850 million as the 20-year funding need for New Hampshire. When adjusted to 2010 dollars, this value was approximately \$980 million. The revised 20-year need identified in this report was approximately \$1713 million dollars.

Figure ES-3 shows that it is the water distribution and transmission infrastructure that comprise the largest share of funding need (48%), followed by treatment (39%) (groundwater treatment constitutes the greater share at \$407M compared to surface water treatment at \$261M). The order of these two largest asset categories is consistent with the order seen for DWINSA results in Figure ES-1. The wide disparity in cost percentage determined for these two categories in the two studies highlights the significant difference in methodology.

Section 1

SECTION 1

DETERMINING THE VALUE OF DRINKING WATER INFRASTRUCTURE IN NEW HAMPSHIRE: A CAPITAL INVESTMENT NEEDS ANALYSIS

1.1 BACKGROUND

The United States Environmental Protection Agency (EPA) conducts a Drinking Water Infrastructure Needs Survey and Assessment (DWINSA) approximately every 4-years, with survey data generated/released in 1995/1997, 1999/2001, 2003/2005 and 2007/2009. In addition to assessing infrastructure needs in each state, the survey is also used to allocate funds through each individual state's State Revolving Loan Fund (SRF). The EPA used existing needs information provided by water systems, as documented through master plans and capital improvement plans (CIP) or through use of professional judgment, to calculate the drinking water infrastructure needs nationally for these prior studies. The DWINSA estimates needs for systems which are eligible to receive SRF loans: community systems and not-for-profit non-community systems.

For the 2007 DWINSA, states that receive a minimum 1 percent of the most recent SRF allotment were given the option of not participating in the statistical portion of the survey. For states choosing this option, including New Hampshire, the needs of systems serving 3,301 to 100,000 people were estimated based on the state's inventory of systems and the data derived from participating states. The needs for non-participating states that were derived in this way contribute to the estimate of total national need.

The 2007 DWINSA survey identified an infrastructure need of \$337 billion of investment for the next 20 year period in the United States for public water systems. For the State of New Hampshire, a need of approximately \$850M (\$980 adjusted to 2010 dollars) was identified in the needs assessment for the same 20-year period. Of this amount, only about \$62M was identified

for needs in the small, non-community non-transient, and transient water systems, which comprise the largest number of public water systems in the State of New Hampshire.

In 2010, the New Hampshire Department of Environmental Services (NHDES), retained Wright-Pierce to develop an alternative cost model to quantify the infrastructure needs of community water systems in New Hampshire for the next 20-year period. The effort was initiated to obtain a more accurate cost basis for anticipated discussions about meeting current and future infrastructure replacement needs.

The purpose of this study is to evaluate capital needs to replace existing infrastructure at community water systems over the coming 20 years, but not to address population growth, nor changes in either regulation or technology.

The cost models which were applied to the existing infrastructure to determine the coming investment needs are discussed herein. To develop a predictive relationship between infrastructure and costs, actual construction costs were collected and tabulated. The costs included construction costs, engineering costs, and other development costs where these were available (legal, administrative, financing). Cost models were developed using such cost records of actual projects that could be supplied from records in the NHDES database, bidding results from similar projects in neighboring states. Useful life data and depreciation were applied that were used in other more highly regulated New England states.

1.2 MAJOR ASSET CLASS GROUPINGS FOR THE ANALYSIS

A typical water system consists of one or more of the following components or major asset groupings:

1. Water Distribution Systems - Water distribution systems include the piping infrastructure extending from the source to the customer's tap, including distribution mains, transmission mains and appurtenances.

2. Distribution and Supply Storage Tanks - Water storage tanks store water in distribution systems to supplement peak flows and for fire protection. Others may augment supply and pressure in systems supplied by groundwater.
3. Sources of Supply - Sources of supply include infrastructure serving water from flowing and non-flowing surface water bodies, reservoirs, wells/springs, groundwater pumping stations and intakes. The study focused on groundwater sources as the most prevalent in the state. Surface water intakes are included in the overall cost information for surface water treatment plant construction.
4. Water Treatment Facilities - Surface water and groundwater supplies are often treated to improve water quality at a centralized water treatment facility. Some communities have more than one treatment facility.
5. Pressure Boosting/Pumping Facilities - Drinking water is often pumped to bring the pressure up sufficiently to distribute water to customers, either directly or with inclusion of a hydropneumatic system to dampen pressure fluctuations.

The analysis was based largely upon a combination of statistical modeling of historical constructed project costs in combination with inventorying of existing assets in the State of New Hampshire. The New Hampshire Department of Environmental Services (DES) maintains an excellent database of water system assets for each water system in New Hampshire. In the case of several assets, the database does not document an inventory of infrastructure for all community systems. Important assets not inventoried included transmission and distribution piping, and groundwater pumping and treatment facilities. In each case, a method was developed that was based on documented characteristics of water systems that could be related to the existing inventory of assets, including population and the capacity of a given system.

The NHDES database inventory included records applicable for the water system assets in the other general categories discussed above. For these remaining asset classes, the inventories in the DES database and other DES records were sufficiently comprehensive and well-developed to allow a simple inventory to assess need. A description of the methodology used and the projected needs for each asset class is discussed in each asset's report section and its related appendix.

1.3 PROJECTIONS OF CAPITAL NEEDS IN THE STATE OF NEW HAMPSHIRE

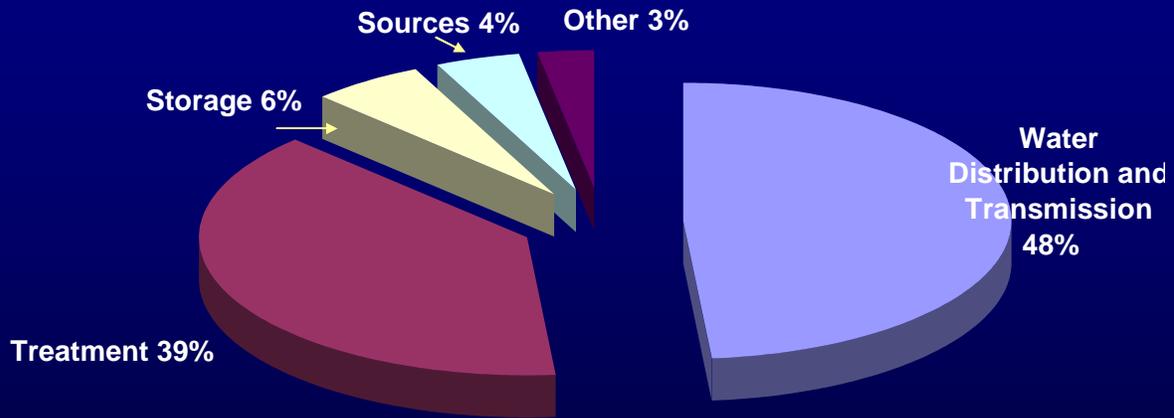
Costs were obtained for the categories of assets listed below in Table 1-1, below. Costs are first presented as the total present day (2010) replacement costs, followed by the annual amount to meet the 20-year funding need, and the total 20-year funding need. Figure 1-1 displays the results graphically.

TABLE 1-1

PROJECTED ANNUAL WATER INFRASTRUCTURE NEEDS IN NEW HAMPSHIRE

Description	Est'd Number of Water Systems/ Counted Units	Est'd Replacement Cost (2010 - \$M)	Avg Annual Expenditures for years 2010 through 2030 (\$M/year)	20 Year Need (\$M)
Water Transmission/Distribution Systems				
Systems w/out Fire Protection	584 (23 w/ pop > 500)	\$471	\$7.9	\$159M
Systems w/ Fire Protection	139	\$3358	\$33.6	\$671.5M
Total Dist/Trans	723	\$3829	\$41.5	\$830.5
Treatment Systems				
Surface Water Treatment	39	\$288.7	\$13.1	\$261.3
Ground Water Treatment	506	\$477	\$20.3	\$407
Total Treatment		\$765.7	\$33.4	\$668.3
Atmospheric Storage				
Lg Fire Protection Tanks	261	\$251.2	\$3.5	\$67
Sm GW Storage	---	\$41.5	\$1.4	\$27.7
Total Atmospheric Storage	---	\$292.7	\$4.9	\$94.7
Pressure Booster Stations				
Pressure Booster Stations	115	\$43.4	\$2.4	\$48.3
Well Source of Supply				
Level 1 BRW	903	\$40.6	\$1.6	\$32.5
Level 2 BRW	68	\$10.9	\$0.4	\$8.7
Level 1 GW	134	\$6.0	\$0.3	\$5.9
Level 2 GW	202	\$32.3	\$1.2	\$24.4
Total Well Sources	1307	\$89.8	\$3.5	\$71.5
Total Needs	---	\$5,021 M	\$85.7M	\$1,713M

**Figure 1-1: NH 2010 Water Infrastructure Needs Assessment:
20-Year Funding Need Apportioned by Infrastructure Type**



1.4 CONCLUSION

The 2007 DWINSA survey identified a \$850M (\$980 indexed to 2010) 20-year funding need for drinking water infrastructure for community and not-for-profit non-community systems in New Hampshire. The results of the current study show a greater 20-year need for community systems alone of approximately \$1,713 million dollars. Despite the wide disparity in these estimates, it should be noted that there are significant differences in goals and methods used in the DWINSA and the current Needs Analysis.

Section 2

SECTION 2

WATER DISTRIBUTION SYSTEM ASSETS

2.1 WATER DISTRIBUTION SYSTEM ASSETS OVERVIEW

A model was developed for distribution system piping for the purpose of determining an aggregated total cost in 2010 dollars. This aggregated 2010 estimate was then extrapolated to the funding needed to replace and refurbish water main infrastructure sustainably over the years. The state of New Hampshire had (at the time of this writing) approximately 723 community water systems, so the size of the need is significant.

Estimating the 2010 replacement cost of New Hampshire's pipeline infrastructure was not straightforward, because the quantity, size, and materials of construction of pipes serving New Hampshire's community water systems has not been collected into a central location. Moreover, the amount, size, and types of pipes for the smallest community water systems may not be known by many individual systems themselves with certainty. However, it is important to attempt to assign a statewide aggregate value because water transmission and distribution piping represents a significant funding need. Over many years water mains have comprised the largest investment value for drinking water infrastructure. Water mains typically have useful lives of between 50 and 100 years depending on the type of pipeline material and installation. The implication is that many pipes now in the ground are reaching the end of their service and will need to be replaced.

Tremendous differences may be found among water distribution systems in different communities, making them difficult to compare directly. Each community supports a unique combination of water main lengths, diameters, pipeline materials, and configurations that, taken together, do not seem to be related to the population served or the average volumes of water consumed. These differences are influenced not only by population, but also by the characteristics of the population served, geography, the location of important commercial and industrial customers, and fire protection requirements. However, it is these very differences

which provide a useful basis for classifying water systems so as to enable a useful predictive model to be developed.

2.2 GENERAL APPROACH

Because the length of distribution pipe is not known for all NH water systems, the first need was to develop a model for estimating prospective lengths. Once estimated, pipe length could be used as a basis for projecting current, 2010 replacement costs for all systems in the database. Of course, such an approach would not be necessarily be correct for any given particular system, but is defensible when aggregated into a state total. For the purposes of this study, distribution and transmission piping have been combined, and will be termed "distribution" piping for convenience in this report.

A statistical approach was used to create a mathematical model relating population to pipe length using communities for which this information was available. A dataset of sample communities for which pipe lengths are known were collected and tabulated, breaking out detailed information on pipe lengths by each diameter present in the water system. Data sources included the NHDES record-drawing database, and several community water systems that provided their own datasets (Manchester Water Works and Pennichuck Water).

The tabulated systems were classified (discussed next) into groupings that enabled a meaningful, predictive comparison between population served and expected total water main lengths.

First, community water systems were separated into those that provide fire protection services and those that do not. Compared to community water systems that provide fire protection services, there are many more small systems do not provide either the flow volumes needed nor sufficient storage for fire fighting purposes. For such small water systems, 2-4-inch diameter distribution system piping predominates. A distribution system which is sized to provide fire suppression flows will be observed to include a greater amount of larger diameter water mains compared to the non-fire protected system serving a similarly sized population. For this reason,

the replacement costs of fire-protected and non-fire protected distribution systems were modeled separately.

Next, for both fire-protected and non-fire protected groupings, water systems were classified according to population size.

In fire-protected systems, the variation in total pipe lengths, among systems serving similar populations, tended to increase dramatically as one moved into larger population size groupings, such that larger population systems could neither justifiably be compared (statistically), nor modeled with the systems serving smaller populations.

To mitigate this problem for the analysis of fire-protected water systems, populations were divided into the following sub-groups based on US EPA standard population groupings for small, medium, and large community water systems. An extra category for the three very large systems was added. Because there were only three systems in this size category, and because detailed pipeline information was available for each of the very large systems, a predictive model based on population did not need to be created. The size categories for systems with fire protection were classified as follows:

- Systems with Fire Protection
 - Small Systems serving population less than 500 (31 water systems)
 - Medium Systems serving population between 501 and 3,300 (69 water systems)
 - Large Size Systems serving population between 3,301 and 40,000 (36 water systems)
 - Very Large Systems serving a population greater than 40,000 (3 water systems)

For the non-fire protected systems, the populations were almost all within the small systems classification. A large variation in total pipe lengths was observed among systems when they were plotted against populations. However, this variation was found to be related not to population, but to the housing characteristics of the population served, i.e., whether the population was living grouped together or spread out geographically (whether the population served was dispersed or concentrated). The systems without fire protection were therefore categorized as follows:

- Systems without Fire Protection (584 water systems in NH, 23 w/ pop. > 500)
 - Dispersed populations in residential developments and manufactured housing
 - Concentrated populations in condominiums, apartments, and elderly housing.

After the tabulated systems were placed in their respective subgrouping, the inventoried pipe lengths could be examined for how much pipe of each diameter was present for each tabulated system. The amount of pipe of each diameter was divided by the total pipe length to find the percent of the total. This would be used later when the cost model was applied to each community water system.

For each of the above subcategories, linear regression analysis related population to the total pipe lengths. The regression equations were then used to extrapolate an estimated pipe length to the entire list of water systems in the state, creating an estimate of total length of water main according to population size. The pipe diameter percentages were then applied to each estimated total pipe length, breaking the total pipe length result into subgroupings by diameter. Standard unit development costs were applied to each diameter grouping to estimate replacement cost in 2010 dollars.

The estimated 2010 replacement cost for each diameter grouping was then adjusted by a factor for its estimated pipe service life. The service life for small non-fire protected system water mains was assumed to be 50 years. For all other water mains, the useful life was assumed to be 100 years. It is recognized, that some pipe line materials may have longer useful lives than other materials, but an average life of 100 years was assumed to represent an average performance life for water mains in small, medium and large water systems with fire protection. The results of this calculation for each water system in New Hampshire was then summed to project the yearly cost over the service life, and then adjusted to the 20-year funding need.

The analyses and methodology are discussed in detail in Appendices A and B (for Non-Fire-Protected Systems and Fire-Protected Systems, respectively).

2.3 SUMMARY OF INVESTMENT NEED FOR WATER DISTRIBUTION SYSTEM PIPING IN NEW HAMPSHIRE

Table 2-1 summarizes the estimated total cost to replace all of the water distribution systems in the State. If all community water distribution systems in the State of New Hampshire were replaced during the year 2010, it would take an estimated cost of \$3,829,000,000 (normalized to 2010 dollars). On an annual basis, the State of New Hampshire would theoretically be required to expend \$41.5M annually to assure sustainable replacement of these assets before the useful life of the asset is reached.

**TABLE 2-1
PROJECTED WATER DISTRIBUTION NEEDS IN NEW HAMPSHIRE**

Water System Size by Population	Number of Water Systems	Estimated Distribution System Replacement Cost (2010 \$M)	Est'd Avg Useful Life of Distribution System	Avg Annual Expenditures for years 2010 through 2030 (\$M/year)	Total Collected over 20 years
Systems w/out Fire Protection	584 (23 w/ pop > 500)	\$471 M	50 & 100	\$7.9	\$158.8 M
Systems with Fire Protection					
Small Systems	31	\$62 M	100	\$0.6	\$12.4 M
Medium Systems	69	\$568 M	100	\$5.7	\$113.5 M
Large Systems	36	\$2,018 M	100	\$20.2	\$403.7 M
Very Large Systems	3	\$710 M	100	\$7.1	\$142.1 M
Total for Fire Protected Systems	139	\$3,358 M		\$33.6 M	\$671.5 M
Total Needs	723	\$3,829 M		\$41.5M	\$830.5 M

Section 3

SECTION 3

ATMOSPHERIC WATER STORAGE TANKS

3.1 PURPOSE AND TYPES OF WATER STORAGE

Water storage tanks are important to the reliability and smooth operation of community water systems. Water stored in tanks may provide some or all of the following functions in a community water system:

- Storage for fire suppression
- Storage to dampen peak hourly fluctuations in water usage demands
- An emergency backup supply
- Reduce pump cycling
- Maintain steady pressure and flows

Storage facilities function by holding water at pressures equal to atmospheric (i.e., have a free surface of water in contact with atmosphere), or they can be a closed vessel capable of holding pressure generated by pumps. Small community systems that do not provide fire protection will typically incorporate a small hydropneumatic tank to even out small demands, reducing the stress on booster pumps. Those small systems which use exclusively groundwater sources of supply, may also require atmospheric storage to address wide swings in demand, reduce well pump cycling, provide emergency storage, or provide storage at elevation for reliable pressure. All atmospheric storage tanks, both for small groundwater systems and for large fire protected systems are included in this section. Consideration of pressure vessel storage is blended in with the overall cost of groundwater treatment facilities, rather than receiving separate treatment.

Atmospheric storage facilities break out according to function and size. Tanks which serve distribution systems with fire hydrants throughout (Fire Protected Systems), tend to be quite large (over 100,000 gallons), while those serving community water systems that don't provide

hydrants on the streets (Non Fire Protected Systems) tend to be small and often use a groundwater source of supply.

Stored water makes up for shortages in volume, flow rate, or pressure when demand peaks, as may occur during a fire emergency, during periods of peak summer demand, or during winter water main breaks. A fire-protected system requires the ability to store and release large volumes at high rates over an extended period of time. These volumes and release rates are often far greater than the capacity of the system's treatment facilities to produce water. Typically water systems refill their storage tanks over time during evening hours when customer demand is low. This may be done using the existing pressure within the distribution system, or the water may need to be "boosted" to fill the tank.

Water levels within water storage tanks are intended to fluctuate over a fixed range of elevations to control the pressure or "hydraulic gradeline" within a water distribution system. When the community served has variable topography, water systems will often separate the distribution system into "pressure zones" with each served by a dedicated storage tank. Many systems also have redundant storage tanks to allow one tank to be temporarily decommissioned for inspection or reconditioning.

To fulfill these functions, fire-protected system atmospheric storage tanks are located at high elevations and are located geographically distributed out around in the distribution system (not located at the source). Such positioning enables a community water system to provide adequate pressure to customers located at higher elevations, and allows the interior volume to be effectively drained to allow a turn over (or change out) of the water within the tank (to keep water fresh). An acceptable tank location can be relatively difficult to obtain at an affordable cost to the water system because sites at higher elevations may have a view, good drainage, and are traditionally considered to be desirable home sites.

Small water systems that do not provide fire protection (usually groundwater systems, with some exceptions) typically do not have large storage tanks. Small systems will typically store from 1000 to 60,000 gallons of water within single or multiple tanks. Peak demands may be met

using small gravity storage tanks or pressurized bladder (hydropneumatic) tanks, either alone or in combination with atmospheric storage. Small system atmospheric tanks are often buried near other facilities serving the source. Small system tanks may be used for any of the typical role of large fire-protected tanks such as maintaining a pressure gradeline when located at elevation, reducing well pump cycling, meeting peak demands, and enabling booster pumps more latitude in the volume pumped (sometimes well outputs can be limited for meeting occasional peak flows).

3.2 SOURCES OF INFORMATION

Larger Storage Tanks in Fire-Protected Systems: For large storage tanks, DES had developed a list of known fire protection tanks along with their storage capacities. There are approximately 280 storage tanks serving fire protected water systems in the State of New Hampshire. This asset inventory was constructed between the late 19th century up through year 2010, resulting in a range of tank ages and styles. Of these, approximately 261 contained enough information on which to project replacement costs. Most tanks in the inventory contained the capacity in gallons, and materials of construction. The listing of tanks is included in Appendix C.

To determine a relationship between potential replacement costs and capacity for tanks on the DES inventory, a cost model was first developed using actual constructed tank projects. Total developed costs (indexed to 2010) were developed from the records filed at Wright-Pierce and DES. Manufacturer's also provided their product costs as a courtesy. Costs were obtained for several styles of tank for which actual developed cost information was available. The relationships between storage capacity and total developed costs were examined for each style of tank, and then combined into one cost vs. capacity mathematical model. This relationship was applied to the known capacities of tanks in the NHDES inventory to determine a replacement value.

Storage Tanks in Small Systems with No Fire Protection: DES does not maintain an inventory of each of the smaller storage tanks in non-fire protected community systems.

Applying a cost model for small, non-fire protected atmospheric storage tanks presented a challenge in that the total volume of storage available in each community water system was listed, but not the number or capacity of storage tanks.

To find a way into this dilemma, an estimated count of tanks to which a model could be applied was created from the total gallons of storage for each community water system that was available in the database. The total stored volume for each community was divided by a "model" 10,000 gallon storage tank to give an estimate of the number of 10,000 gallon tanks (an integer and a fraction) hypothetically present in a system. Each integer was multiplied by the estimated developed cost of a 10,000 gallon tank, and the fractional gallons calculated using the cost equation. The integer and fractional estimates were then summed to the total tank estimated replacement cost for each system's total volume of storage.

The cost model was developed by contacting regional suppliers and local installers of buried coated steel tanks for equipment and installation cost information. These costs were adjusted for freight, appurtenances, and installation, and developed into a model linear equation relating cost to storage volumes.

The methodologies used in calculating an estimated 2010 cost and projected need for the Fire-Protected Tanks and the Non-Fire Protected Tanks in Small Systems are discussed in more detail in Appendix C for Atmospheric Storage Tanks.

3.3 PROJECTIONS OF CAPITAL NEEDS FOR STORAGE TANKS

Large Tanks in Fire-Protected Systems: The total cost to replace these inventoried structures was estimated to be \$251M. As discussed, the useful life of a tank serving a fire-protected system was assumed to be 75 years, regardless of the material of construction. It is recognized that some of the categories of tanks, such as bolted steel tanks, require significantly more maintenance to keep the asset viable for this duration of time. However, only the capital cost to replace the asset was considered in this analysis.

On an annual basis, approximately \$3.3M would be required annually to fully replace all the larger storage tanks. For the 20-year period between 2010-2030, the State of New Hampshire would require approximately \$67M based in 2010 funds to replace these assets on a sustainable 75 year life cycle period. It should be noted, because many of these tanks are already exceeding their useful lives, that the analysis assumes only a linear replacement cycle regardless of the age or progressive point towards obsolescence. It should also be noted that an assumed 75-year useful life for a storage tank is typical of values used in other New England states by cost accountants for private sector water utilities.

Tanks Serving Small, Non-Fire Protected Systems: The total cost to replace these structures was in 2010 dollars was estimated to be \$41.5M, and \$27.7M over the 20-year period. The useful life is shorter than that of the larger fire-protected tanks, and was assumed to be 30 years, regardless of the material of construction. It is recognized that some tanks may be located within buildings and may have a longer service life than buried tanks, however, the situation of tanks for each system in NH was not known.

On an annual basis, approximately \$1.4M annually would be required to fully replace all storage tanks for these systems assuming a 30-year useful life for this asset. For the 20-year period between 2010-2030, the State of New Hampshire would require approximately \$ 27.7M based in 2010 funds to replace these assets on a sustainable 30 year life cycle period. It should be noted, because many of these tanks are already exceeding their useful lives, that the analysis assumes only a linear replacement cycle regardless of the age or progressive point towards obsolescence.

The estimated replacement costs and infrastructure dollar needs for atmospheric tanks are summarized in Table 3-1 below.

TABLE 3-1**ATMOSPHERIC WATER STORAGE TANKS - PROJECTED REPLACEMENT COSTS**

System Type	Estimated Number of Water Storage Tanks	Estimated Replacement Cost of Storage Tanks (2010) (\$)	Estimated Avg Useful Life of Storage Tanks (years)	Avg Annual Expenditures for yrs 2010 through 2030 (\$/year)	Est'd Needs for 20-Year Period (2010-2030) (\$)
118 Fire Protected Systems	261 tanks	\$251.2M	75	\$3.3 M/year	\$67.0M
447 Non Fire Protected GW* Systems	--	\$41.5M	30	\$ 1.4M/year	\$ 27.7M
Totals		\$292.7		\$4.7M/year	\$94.7M

* included two fire-protected systems w/alt fire protection supply, and one surface water source.

Section 4

SECTION 4

WELL SOURCES OF SUPPLY

4.1 BACKGROUND

Water wells comprise the majority of water sources in the state of New Hampshire (there are 1314 active wells serving community water systems). Of the community water systems in the state, 662 supply at least some of their demand using groundwater, compared to 38 which use surface water in total or in part. Water wells may need to be redeveloped or replaced periodically, depending upon the specific water quality (although some may last over 50 years). Water wells may be categorized by the permitted production rate and by the geological formation in which the well is placed.

Wells may be bored into bedrock to capture water moving through the rock fractures. Bedrock wells tend to be deep, up to 1600 feet in depth (420 to 470 feet on average), but because they depend on the fractures to bring water into the borehole they are limited as to the quantity and rate of water that they can yield.

New England is fortunate to have deep layers of sand and gravel overlaying bedrock (why they are often termed "overburden" wells) which can transmit vast amounts of water, making them a good source of water supply to large communities. These wells tend to be shallow, with average depths of 40 to 55 feet.

A detailed explanation of the development of the methodology and cost spreadsheets are included in Appendix. D.

4.2 PROJECTIONS OF CAPITAL NEEDS FOR WELL REPLACEMENTS IN THE STATE OF NEW HAMPSHIRE

The total cost to replace wells in 2010 dollars was estimated to be \$89.8 M in the State of New Hampshire. As discussed above, the service life of wells was assumed to be 25 years for bedrock wells and 40 years for gravel wells.

On an annual basis, approximately \$3.5M annually would be required to fully replace all wells in the state. For the 20-year period between 2010-2030, the State of New Hampshire would require approximately \$71.6M based in 2010 funds to replace these assets. It should be noted that the analysis assumes only a linear replacement cycle regardless of the age or progressive point towards obsolescence. The data for the analysis is summarized in Table 4-1 below.

**TABLE 4-1
WATER SUPPLY WELLS - PROJECTED REPLACEMENT COSTS**

Category	Estimated Replacement Cost of Wells (2010) (\$)	Estimated Average Service Life of Well (years)	Average Annual Expenditures for years 2010 through 2030 (\$/year)	Estimated Infrastructure Needs for 20-Year Period (2010-2030) (\$)
Level 1 BRW	\$40.6 M	25	\$1.6 M	\$32.5 M
Level 2 BRW	\$10.9 M	25	\$ 0.4 M	\$8.7 M
Level 1 GW	\$6.0 M	40	\$0.3 M	\$ 5.9 M
Level 2 GW	\$32.3M	40	\$1.2 M	\$24.4M
Total Wells	\$89.8M		\$3.5M	\$71.5M

Section 5

SECTION 5

WATER TREATMENT FACILITIES

This section discusses modeling approaches that were commonly applicable to the surface water treatment facilities, ground water treatment facilities, and pressure booster stations. Appendix E is the companion Appendix for this section. The aspects particular to each type of facility are discussed in separate sections, Section 6 and Appendix F for Surface Water Treatment Plants, Section 7 and Appendix G for Groundwater Facilities, and Section 8 and Appendix H for Pressure Boosting Stations. What each of these three types of infrastructure have in common is that the facilities always involve a building to house equipment. The details of analysis that are in common to each are discussed in this Section 5 and in greater detail in Appendix E.

5.1 ABOUT WATER TREATMENT FACILITIES

Water treatment facilities treat surface water and groundwater supplies through processes that make water acceptable for drinking. Each water treatment facility is custom-designed for the water quality goals and objectives specific to a particular source of supply. Surface water treatment facilities in New Hampshire may employ the following technologies:

- Slow Sand Filtration
- Conventional Treatment using coagulation, flocculation sedimentation and filtration
- Granular Media Pressure Filtration
- Membrane Filtration

Where groundwater treatment is provided, such facilities commonly include disinfection and also may include injection of sequestering/corrosion inhibition agents and pH adjustment chemicals. These treatments consist, for the most part, of a liquid chemical feed system using a tank and metering pump. In some cases, when large volumes are treated or additional treatment is required, groundwater systems may use the following technologies:

- Granular Media (Greensand) Pressure Filtration
- Ion Exchange
- Oxide-Coated Media Filtration

- Low Profile Aeration

Treatment facilities were grouped into two major classifications:

- Surface Water Treatment Facilities and
- Groundwater treatment Facilities

However, this classification, while convenient, is a line that is frequently crossed. For example, granular media pressure filtration is often thought of as primarily for groundwater treatment, but it may also be used for surface waters (Kinetico ceramic filters).

5.2 WATER TREATMENT FACILITIES: SURFACE AND LARGER PRESSURE FILTER PLANTS

The purpose of this study is to evaluate capital needs to serve the existing population over the coming 20 years, not to project capital needs to meet either population growth, or changes in regulatory requirements. The study seeks to identify the funding need for replacing worn out components of existing facilities, but not to fund the replacement of a whole treatment plant in kind.

Water treatment facilities consist of various components, for example, the building itself, the treatment equipment housed within, concrete structures and piping, tankage, and changes to the site terrain. These components don't tend to wear out at the same rate (different expected service lives), requiring different replacement/refurbishment cycles, and have varying replacement costs.

A cost breakout of treatment plant components may be found from when they are first constructed, in a document called a "Schedule of Values". This document is often created after a building contract is awarded and before construction begins. It is a record of construction costs according to each skilled construction trade discipline responsible for furnishing, installing, and constructing each asset category. It is used during construction, to track the value of work completed in each category for the purpose of paying the contractor. These documents are not entirely consistent among projects in the way elements of cost are grouped, but they generally follow the same groupings. The general contractor may combine certain building trade

disciplines such as "architectural" and "structural" because together they "describe" the building, or he/she may opt to use the construction company's own resources (instead of subcontracting to other firms) to complete certain aspects of the work. "Mechanical" (which includes plumbing and "heating ventilation and air conditioning (HVAC)" may be combined with "Treatment Processes" and interior piping. Similarly, the "electrical" and "instrumentation/telemetry" sections may be combined. However, the schedule of values is usually the only available detailed record of the actual historical construction costs (especially after time has passed and records are destroyed). For this aspect of evaluating treatment plant cost components, the Schedules of Values were collected and examined to determine the relative percentage share of total construction cost grouped by building asset class. These groupings of relative percent share of total construction cost is shown in Table 5-1. The percentages are based upon averaged costs in each building class for nine surface water treatment plants, and six ground water pressure filtration plants for which scheduled costs could be obtained.

TABLE 5-1
WATER FACILITY COMPONENTS
(FOR BOTH SURFACE WATER AND PRESSURE FILTRATION PROJECTS)*

Division	Surface Water Process Plants	Pressure Filter Plants	Pressure Booster Stations
Civil/Site	15%	20%	10%
Structural	18%	18%	15%
Architectural	12%	12%	15%
Process/Mechanical	38%	30%	35%
Electrical/Inst/Telemetry	17%	20%	25%
Total % of Construction Cost	100%	100%	100%

*Compiled from a set of nine surface water plants 0.2 to 6 MGD capacity (membrane, slow sand, and conventional) and six pressure filter plants 0.3 to 2 MGD capacity; constructed over a period from 1992 to 2009. Engineering/Development/Admin averaged 15% of total developed cost. Pressure booster stations based on three stations for which break out costs were available.

In Table 5-1, the Contractors' costs for "General Conditions" and the Engineering/Development/Administrative costs were spread across the construction trade disciplines as a percentage of the construction costs applied to each division.

Each aspect of a built facility would have different needs for refurbishment or replacement over time. Although, there is certainly variation with each specific asset class, it is a good general approach for modeling to assume that things built under any particular asset category tend to share similar characteristics and have the same longevity. For example, instrumentation or software systems may be expected to become outdated or require replacement within a comparatively short time frame compared to the more rugged treatment process equipment (filters, pressure vessels). Table 5-2 shows the combined asset divisions with an estimated service life for each.

TABLE 5-2
ESTIMATED SERVICE LIFE BY BUILDING DIVISION

Division	Example Division Components	Est Service Life of Component Group, Years/ Combined Group	
Civil/Site	Clearing & grubbing, excavation, trenching, loaming/seeding/mulching/ landscaping, paving, pre-cast concrete vaults, demolition, site piping	75	
Structural	Cast-in-place concrete, rebar, masonry, channels, clearwells	100	
Architectural	Roof trusses, carpentry, damp-proofing, metals/grating, coatings	25	
Process	Treatment process equipment, interior piping, valves, gauges, chemical feed systems, fill stations	20	15
Mechanical	Plumbing, heating, ventilation, sanitary systems (sometimes this division includes process piping and equipment), storage silios, lifts, gantrys, special mechanical equipment	10	
Electrical	Service entrance & distribution, wiring/conduits, power panels, emergency backup power & transfer switch, telephone, security systems	20	15
Instrumentation/ Telemetry	Process instrumentation, control panels, process computers (programmable logic controllers), operator interface, control wiring/conduits	10	

Architectural and Structural Divisions were kept separate in Table 5-2 because of the very different service lives of their components. The Architectural Division components such as windows, doors, roofing, and paint tend to be subject to more deterioration over time compared to the long-lived concrete and masonry comprising a structural system. These percentages for division share of total costs and service life for each division will be applied wherever the component cost approach is used.

Section 6

SECTION 6

SURFACE WATER TREATMENT FACILITIES

6.1 SURFACE WATER TREATMENT

Surface water treatment plants employ many of the very same treatment processes as do facilities treating ground water, industrial water, and wastewater. Surface water treatment plants typically treat large volumes of water for comparatively large populations compared to groundwater supplied water treatment facilities. Moreover, lakes and rivers are more likely to become contaminated from natural (e.g., seasonal lake turnover) and anthropogenic causes, requiring additional treatment processes to make the water suitable for drinking. For these reasons, surface water treatment facilities are often larger, and house more treatment processes compared to groundwater facilities, so they are that much more costly and complex by comparison.

The DES database is well developed for this asset. The database contains the construction cost records for most of the surface water treatment facilities in New Hampshire. The availability of cost data for the actual facilities enabled use of a simple inventory approach of the treatment facilities to more accurately determine replacement cost need in the state over the next 20 years for this infrastructure.

6.2 SURFACE WATER TREATMENT PROJECTION OF CAPITAL NEEDS

The number of surface water facilities serving from 0.10 to 50 MGD in the dataset is fairly small for the 38 systems served by surface water in New Hampshire. (One surface water facility treats less than 20,000 gpd and is therefore omitted from this count) The date of construction and construction cost for each surface water treatment plant serving over 0.10 MGD was available from NHDES records. This provided an inventory of plant costs to which the division cost component/service life approach could be applied (described in detail in Appendix E). The complete inventory for 39 tabulated NH surface water treatment facilities is included in Appendix F. Note that Pennichuck, Manchester and Portsmouth systems each occur twice (original plants and upgrades) in the listing of 39 separate facilities.

The total cost to replace these facilities in 2010 dollars was estimated to be \$288.7M for surface water treatment facilities in the State of New Hampshire over the 20 year period, summarized in Table 6-1 below.

TABLE 6-1
PROJECTED SURFACE WATER TREATMENT FACILITY REPLACEMENT COSTS
IN NEW HAMPSHIRE

Type of Treatment	Estimated Number of Water Systems in New Hampshire	Estimated 2010 Replacement Cost (\$)	Estimated 20-year Replacement Cost of System Components (\$)	Average Annual Expenditures for years 2010 through 2030 (\$/year)
Surface Water	38	\$288.7	\$261.3M	\$13.1

Section 7

SECTION 7

GROUND WATER TREATMENT FACILITIES

7.1 BACKGROUND

New Hampshire communities served by groundwater sources are much greater in number compared to those served by surface water. There is a correspondingly greater variety in the types of facilities for treating ground water compared to those treating surface water. Surface water treatment is typically undertaken by larger community water systems, not only because of the larger yield afforded by surface water bodies, but also because surface water has historically required comparatively complex and expensive treatment (expense which is more easily supported when rate payers are numerous). For any given community water system using groundwater, more than one groundwater source well is often needed to meet drinking water demand because the yield of groundwater wells is limited by geological aquifer characteristics (e.g., transmissivity), and at least two wells are required in regulation to provide adequate backup. Also, if wells are overpumped the aquifer may be damaged, reducing its ability to maintain its original yield. For these reasons, wells may be separated by fairly large geographical distances so that each source must have its own on-site treatment facilities, which each feed water to a common distribution system.

In New Hampshire, there are 662 community water systems that use groundwater exclusively (sixteen surface water systems also use groundwater). The groundwater sources from which potable water is collected, treated, and pumped include:

- Wells in bedrock and in geological sediments that overlie bedrock (most frequently gravel in New England). These may be dug wells, drilled wells, artesian wells, and driven point wells.
- Springs, in which groundwater naturally flows out of the surface of the earth.
- Infiltration galleries, where perforated piping is placed to collect water moving through or into an aquifer, sometimes from surface water base flow.

For the purpose of the following discussion these will be collectively referred to as "wells" or "groundwater wells".

For the reasons discussed above, several wells may be required to adequately serve a single community population, although in many cases smaller populations are easily served by a single well source. The 662 community groundwater systems, grouped together, are served by a total of approximately 1307 individual well sources. These wells are classified according to state permitting system based on volume and geological formation: a Level 1 permit governs yields < 40 gpm and a Level 2 permit is for yields \geq 40 gpm. Based on these classifications, there are 1037 Level 1 permitted wells (903 bedrock wells and 134 gravel wells) and 270 Level 2 permitted wells (68 bedrock wells and 202 gravel wells) in New Hampshire.

A more complex community and municipal well can require facilities to house equipment for pumping, electrical power, tankage, treatment equipment, controls and telemetry. As testament to the variety of groundwater facilities, one also frequently finds simple and basic wells that are equipped only with a pitless adapter and no treatment before water is pumped directly into the distribution system (similar to the typical configuration for residential housing). When wells are near enough to each other, they may be served by a single facility, and isolated wells each need to be served by dedicated facilities. In New Hampshire, at the time of this writing, there were approximately 500 individual facilities serving from one to seven wells each.

7.2 TYPES OF GROUNDWATER TREATMENT FACILITIES

Groundwater treatment has historically been considered to be less complex (fewer and less involved treatment processes) compared to surface water treatment. The smallest of such facilities may be housed in a space in the basement of an apartment house. In recent years the trend has been toward increasing complexity, especially in municipal groundwater systems. Increasing complexity can be traced to increasing USEPA regulation of groundwater contaminants, and the promulgation of rules requiring treatment techniques focused on maintaining quality within the distribution system (e.g., the Lead and Copper Rule may require water conditioning at the source to mitigate metal leaching from privately owned plumbing). Other increases in complexity and sophistication may be attributed to more emphasis on security, need and a desire for remote supervision and control capabilities.

Community wells may have approved daily production volumes ranging from as little as 2 gallons per minute to quantities in excess of two million gallons per day. The type of treatment

that may be required is dependent upon the water chemistry, and not the volume produced from the well. The result is that any supply volume may need to be treated by one, none, or multiple approaches.

Groundwater treatment, where provided, commonly includes disinfection treatment and may also include application of a sequestering/corrosion inhibition agent, and/or pH adjustment. These treatments, for the most part, consist of a liquid chemical feed system consisting of a tank and metering pumps. Other very common treatments address iron, manganese, arsenic, and hardness. Groundwater treatment facilities tend to use the following technologies for some of the listed purposes/functions (although technologies more geared toward surface water may also be used in some cases):

- Chemical Addition
 - Disinfectant (sometimes ultraviolet light)
 - pH Adjustment
 - Corrosion inhibitor
 - Nuisance metal sequestering agent (types of phosphate or silicate)
 - Fluoride (5 groundwater systems only)
- Aeration to remove volatile gases (also for pH adjustment)
- Granular Media Pressure Filtration (involves chemical additions and filtration through specialized media)
 - Softening and Ion exchange (granular media is a resin)
 - Greensand, Alumina
 - Oxide-coated media
- Activated Carbon Adsorption
- Oxidation/Filtration
- Membrane Filtration

7.3 KNOWN GROUNDWATER TREATMENT FACILITY DEVELOPMENT AND CONSTRUCTION WITH EXISTING OF CAPITAL NEEDS FOR GROUND WATER TREATMENT FACILITIES

The greatest determinant of cost of any facility is the size of the building required to house the processes. The NHDES database lists the treatment processes provided at each facility, but does

not include its capacity, nor the size of the building, which are normal features to which a cost model may be applied. In this case, the challenge was not so much to locate recently constructed facilities from which to derive a model, but was to find a way to relate or "hang" the cost model on the inventory of facilities. DES staff were able to associate each of the groundwater sources with the particular facility that served them. Because a "safe yield" was known for each groundwater source, that parameter was chosen as a substitute for facility "capacity" which was then used as a link to a cost model. This is described in much more detail in Appendices E and G, where Appendix E describes the approach taken that is common to all building-based assets, and Appendix G describes the steps taken to link safe yield to cost specifically for groundwater facilities.

7.4 PROJECTIONS OF CAPITAL NEEDS FOR GROUND WATER TREATMENT FACILITIES

The complete inventory for groundwater treatment facilities in New Hampshire including are included in Appendix G.

The total cost to replace these facilities in 2010 dollars was estimated to be \$477M for ground water pump/treatment facilities in the State of New Hampshire. Over the 20 year period, the Component Replacement Cost was determined to be \$407 M, summarized in Table 7-1 below.

**TABLE 7-1
PROJECTED GROUND WATER PUMP/TREATMENT FACILITY REPLACEMENT COSTS IN NEW HAMPSHIRE**

Type of Treatment	Estimated Number of Water Systems in New Hampshire	Estimated 2010 Replacement Costs	Estimated 20-year Replacement Cost of System Components (2010) (\$)	Average Annual Expenditures for years 2010 through 2030 (\$/year)
Ground Water	506	\$477M	\$407M	\$20.3

Section 8

SECTION 8

BOOSTER STATIONS

8.1 BACKGROUND

Booster stations typically house pumps and equipment to pressurize, equalize, and control the flow of water. The purpose of booster stations may include ensuring adequate water pressure for customers located in areas of higher elevation, filling water storage tanks, and providing unusual additional large volumes of water in the event of a fire flow, or for an unanticipated water main break (important to prevent water pressures from dropping so as to prevent backflow/siphoning conditions which would require a boil water order following such an event). Often booster stations house pressure reducing/sustaining valves, electrical equipment, controls, communications, and chemical feed equipment for boosting disinfectant concentrations. Such installations can therefore be critical to the water supply security of a community. There are approximately 115 booster station facilities in New Hampshire, generally part of larger municipal-type water systems.

Methodology is described in Appendix H with calculations are presented in spreadsheet form. .

Table 8-1 summarizes the results.

TABLE 8-1
PROJECTED BOOSTER STATION REPLACEMENT COSTS IN NEW HAMPSHIRE

Type of Treatment	Estimated Number of Booster Stations in New Hampshire	Estimated 2010 Replacement Costs	Estimated 20-year Replacement Cost (2010 \$)	Average Annual Expenditures for years 2010 through 2030 (\$/year)
Ground Water	115	\$43.4	\$48.3M	\$2.4

One may note that for this asset category, the 20-year replacement need is slightly greater than the 2010 replacement cost, unlike the situation for other asset categories addressed. Long-lived

process equipment is less likely to be found in these facilities, and a greater proportion of the equipment present have the shorter 15-year service lives such as electrical, and instrumentation systems resulting more frequent replacement (a factor of 1.3 over the 20-year period). Booster stations tend to be buildings with a comparatively small footprint, meaning that the structural and architectural construction service life replacement costs would also be comparatively lower.

APPENDIX A
Water Distribution System
Assets for Systems with No Fire Protection

APPENDIX A

WATER DISTRIBUTION SYSTEM ASSETS FOR SYSTEMS WITH NO FIRE PROTECTION

A.1 CHARACTERISTICS OF SMALL SYSTEMS WITHOUT FIRE PROTECTION

More water systems in the state of New Hampshire do not support fire protection than do. There are (at this writing) 584 Non-Fire protected systems number (out of a total of 723). Of the 584 Non-Fire Protected systems, there are approximately 561 classified as "very small systems" serving a population of 500 or fewer. Non-fire protected systems are not strictly limited to very small systems. Within New Hampshire, an additional 23 non-fire protected systems serve from 538 to 3000 people.

Like the fire-protected systems, when all tabulated systems in the non-fire protected category were plotted against population, there was a large variation between pipe lengths in similarly populated systems. However, this variation was much less pronounced when the tabulated sample set was divided according to the housing characteristics of the population served before the scatterplot was made relating population and total pipe lengths. The most important characteristic was found to be whether the population living pattern was closely grouped together or spread out geographically (whether the population served was dispersed or concentrated).

A.2 METHODOLOGY

A.2.1 Tabulating a Sample Set of Water Systems

A set of data for approximately 56 non-fire protected New Hampshire water systems was collected and tabulated by population and pipe lengths according to diameter (for both distribution and transmission piping). DES staff compiled the data from the New Hampshire record-drawing database of representative non-fire protected community water systems.

A.2.2 Classifying Non-Fire Protected Systems According to Residential Style

Non-fire protected systems are also almost entirely residential in character, and for New Hampshire, are all ground water supplied. An initial scatter plot made of the tabulated sample for population served and total pipe lengths showed significant scatter and lack of correlation. Indicating that non-fire-protected systems exhibit more diversity in the format and character of their distribution systems compared to fire protected systems.

When the non-fire protected tabulated set was broken apart according to the style of housing served by such systems according to the DES classifications, and then scatter plotted, better correlations were found between populations and pipe lengths. Two broad categories were developed that could be modeled for the various water system residential "styles".

One would expect apartments, school dormitories, and senior housing to consist of a limited number of buildings and a more limited water distribution system, and have a more intensely populated, or "concentrated" residential pattern. Whereas single family residences and mobile home parks are often set up on a lot system with minimum lot sizes separating buildings, resulting in a "dispersed" settlement pattern. Housing consisting of residential and manufactured housing developments would represent the "dispersed" pattern, and the "concentrated" pattern would be represented by apartments, condominiums and senior housing. Condominium systems were difficult to classify as either concentrated or dispersed because the category includes both converted apartment buildings and separate housing units near recreational (lake and ski) areas. Table A-1 shows the DES classifications and the numbers of water systems comprising them. Table A-2 examines these classifications further, presenting the comparative populations they serve, and the number of total systems serving the different population categories. Table A-3 contains the dataset, showing the 52 individual sample systems that were modeled (after analysis for outliers) according to whether they were categorized as "dispersed" or "concentrated", and listing the percentage of occurrence of each pipe diameter.

TABLE A-1
NON- FIRE PROTECTED WATER SYSTEM CATEGORIZATION

Number in Category	Population Groupings		
584	Total Non-Fire Protected Systems		
23	Serving Population > 500		
561	Total Very Small Systems w/ Pop < 500		
Number in Category	Attribute	Category Abbreviation	Category Description
43	C	APT	Apartments
148	C/D	CON	Condominiums
12	C	DOM	Schools, Dormitories
10	C	HOM	Resident Homes (group, Nursing)
23	C	SRH	Senior Housing
236		Total Concentrated Systems	
9	D	LCW	Large CWS w Pop > 1000
4	D	MCW	Major CWS (>1500 pope or SW supply)
124	D	MHP	Manufactured Housing Park
176	D	SFR	Single Family Residences
9	D	POR	Privately Owned Redistribution Systems
26		SCW	Small CWS (<1000 Pop & No FP)
348		Total Dispersed Systems	

"C" - indicates a system where residences are close to each other or "Concentrated" in character

"D" - indicates a system where residences are on lots spaced apart, or "Dispersed" in character

"CWS" - Community Water System serves 15 connections or 25 persons year round

"SW" - Surface Water Supply

"GW" - Ground Water Supply

"FP" - Fire Protection

Table A-2 Classification of Non-Fire Protected Systems

System Type	Database Abbrev	Designation	Total Pop Served by Category	No. of Systems in Classification	Share of Total Pop Served
"Concentrated" Style No-FP Systems					
Resident Homes (group, nursing)	HOM	Concentrated	1,396	10	5.6%
Schools, Dormitories	DOM	Concentrated	1,489	12	5.9%
Senior Housing	SRH	Concentrated	1,651	23	6.6%
Apartments	APT	Concentrated	3,270	43	13.0%
Condominiums	CON	Concentrated	17,339	148	69.0%
Subtotal pop served by all concentrated systems			25,145	236	27.4%
"Dispersed" Style No-FP Systems					
Privately Owned Redistribution Systems	POR	Dispersed	2,824	9	4.2%
< 1000 pop and No FP	SCW	Dispersed	5,251	26	7.9%
Major CWS (>1500 pop or Surface Supply)	MCW	Dispersed	7,114	4	10.7%
Large community water system w/ pop > 1000	LCW	Dispersed	9,221	9	13.8%
Mobile Home Park	MHP	Dispersed	19,527	124	29.3%
Single Family Residences	SFR	Dispersed	22,657	176	34.0%
Total pop served by all dispersed systems			66,594	348	72.6%
TOTALS			91,739	584	
				Systems serving Pop > 500 population	23
				Total of Very small systems	561

Population Ranges of Non-Fire Protected Systems	Number of Systems	Percentage of Total Systems	Cumulative %
25 to 150	424	69%	69.0%
151 to 300	107	17%	87%
301 to 500	30	5%	92%
501 to 1000	44	7%	99%
1001 to 2000	8	1%	100%
Total	613		

Table A-3: NH Non-Fire Protected Systems; 52 Tabulated Systems for Which Pipe Lengths and Diameters were Known (52)

Fire Protection?	EPA ID	Water System	System Type	Pop. Served	# Service Connections	Totaled Pipe Length, Feet	Length of Pipe by Diameter								Unknown size or mat'l	
							<2"	2" to 4"	6"	8"	10"	12'	14'-16"	18"-20"		>24"
# Concentrated Systems	14	Concentrated Population Systems Tabulated			Pop. Served	# Service Connections	Totaled Pipe Length, Feet									
N	432040	PEU/SHAKER HEIGHTS	APT	55	22	868	-	868	-	-	-	-	-	-	-	
N	1392290	PEU/HARVEST VILLAGE	APT	175	70	1,268	-	1,268	-	-	-	-	-	-	-	
N	1176010	HOLLIS VILLAGE MARKET PLACE	APT	272	41	807	-	807	-	-	-	-	-	-	-	
N	1032070	COACH RUN CONDOMINIUMS	CON	60	24	1,449	416	1,033	-	-	-	-	-	-	-	
N	1932120	CROSS RIDGE ESTATES	CON	73	29	1,319	-	1,319	-	-	-	-	-	-	-	
N	882210	GILFORD MEADOWS	CON	75	40	1,456	-	1,456	-	-	-	-	-	-	-	
N	612130	RICHARDSON ESTATES	CON	98	36	1,854	-	1,854	-	-	-	-	-	-	-	
N	2542070	VILLAGES OF WINDHAM	CON	105	42	2,691	-	589	2,102	-	-	-	-	-	-	
N	2542170	PEU/LAMPLIGHTER VILLAGE	CON	162	65	6,583	-	2,219	-	4,364	-	-	-	-	-	
N	2542060	PEU/HARDWOOD HTS BIRCH HILL	CON	250	40	3,898	-	1,258	979	1,648	-	13	-	-	-	
N	752020	LAKEVIEW CONDOMINIUMS	CON	328	131	5,896	-	3,878	-	-	-	-	-	-	-	
N	2544020	WINDHAM TERRACE	HOM	110	1	1,120	149	-	971	-	-	-	-	-	-	
N	262060	PEU/STONE SLED FARM	SRH	38	25	2,960	-	2,535	425	-	-	-	-	-	-	
N	1972070	PEU/CLEARWATER ESTATES	SRH	80	32	2,848	-	2,848	-	-	-	-	-	-	-	
# Dispersed Systems	37	Dispersed Population Systems Tabulated			Pop. Served	# Service Connections	Totaled Pipe Length, Feet									
N	1461010	VILLAGE DISTRICT OF EIDELWEISS	LCW	1050	420	64,915	44,515	9,650	900	9,850	-	-	-	-	-	
N	881020	GUNSTOCK ACRES VILLAGE DIST	LCW	1425	570	99,299	406	70,009	28,884	-	-	-	-	-	-	
N	1993010	MONADNOCK TENANTS	MHP	190	75	10,745	-	10,745	-	-	-	-	-	-	-	
N	1973030	PEU/GREEN HILLS ESTS	MHP	600	240	15,190	-	2,389	8,411	4,390	-	-	-	-	-	
N	1831010	ORFORD VILLAGE DISTRICT	SCW	128	51	6,654	154	6,500	-	-	-	-	-	-	-	
N	821010	FITZWILLIAM VILLAGE	SCW	161	55	13,840	8,970	4,870	-	-	-	-	-	-	-	
N	2082010	PEU/BEAVER HOLLOW	SFR	30	11	3,370	-	3,370	-	-	-	-	-	-	-	
N	1612260	CROSSWINDS	SFR	61	29	4,469	-	4,469	-	-	-	-	-	-	-	
N	1852020	PEU/GAGE HILL	SFR	65	26	3,800	-	3,800	-	-	-	-	-	-	-	
N	2352020	NORTHERN SHORES WATER	SFR	70	28	3,240	304	2,936	-	-	-	-	-	-	-	
N	2452010	PEU/DANIELS LAKE	SFR	70	28	2,741	570	2,171	-	-	-	-	-	-	-	
N	512260	DAVIS HILL	SFR	75	30	5,308	-	4,367	941	-	-	-	-	-	-	
N	612090	HUBBARD HILL	SFR	80	32	2,797	-	2,797	-	-	-	-	-	-	-	
N	1332050	PEU/THURSTON WOODS	SFR	85	34	4,481	-	1,155	3,336	-	-	-	-	-	-	
N	1182050	PEU/WESCO UTILITIES	SFR	88	35	3,076	-	2,894	182	-	-	-	-	-	-	
N	1392040	PEU/PINEHAVEN WATER TRUST	SFR	90	36	4,562	-	4,562	-	-	-	-	-	-	-	
N	612110	PEU/FARMSTEAD ACRES	SFR	95	36	2,124	-	73	2,051	-	-	-	-	-	-	
N	612170	MAPLE HAVEN	SFR	95	63	7,550	-	935	6,615	-	-	-	-	-	-	
N	2542140	PEU/CASTLE REACH	SFR	97	39	5,143	-	-	2,848	2,295	-	-	-	-	-	
N	2542180	PEU/SPRUCE POND ESTS	SFR	100	41	5,960	-	-	-	5,960	-	-	-	-	-	
N	1392240	PEU/NESENKEAG	SFR	110	44	4,850	-	1,180	3,670	-	-	-	-	-	-	
N	2302040	EASTFIELD CROSSING	SFR	113	45	6,613	-	4,777	1,836	-	-	-	-	-	-	
N	1392250	PEU/AVERY ESTATES	SFR	118	47	4,911	-	362	1,679	2,870	-	-	-	-	-	
N	2542150	PEU/FLETCHER CORNER ESTATES	SFR	133	53	3,896	-	825	637	2,434	-	-	-	-	-	
N	612140	HI AND LO ESTATES	SFR	140	56	5,183	-	5,183	-	-	-	-	-	-	-	
N	1182040	PEU/SMYTHE WOODS	SFR	160	64	7,575	-	7,575	-	-	-	-	-	-	-	
N	2052070	AUTUMN WOODS	SFR	180	72	8,081	-	4,385	3,696	-	-	-	-	-	-	
N	1972010	PEU/LIBERTY TREE ACRES	SFR	183	72	11,273	-	10,616	657	-	-	-	-	-	-	
N	1852020	CHALK POND WATER	SFR	200	80	12,856	-	12,856	-	-	-	-	-	-	-	
N	1542030	PEU/SUNRISE ESTATES	SFR	203	81	6,567	5,894	673	-	-	-	-	-	-	-	
N	612080	REDFIELD ESTATES	SFR	250	100	13,046	-	10,513	-	2,533	-	-	-	-	-	
N	612070	GLEN RIDGE DEV	SFR	255	102	11,544	1,948	9,596	-	-	-	-	-	-	-	
N	612010	PEU/OAKWOOD TERRACE	SFR	305	122	5,262	-	641	4,621	-	-	-	-	-	-	
N	2542010	PEU/GOLDEN BROOK	SFR	313	125	9,218	100	9,118	-	-	-	-	-	-	-	
N	612020	PEU/MAPLE HILL ACRES	SFR	458	183	19,480	2,840	12,960	1,900	1,780	-	-	-	-	-	
N	2542030	PEU/W AND E	SFR	498	199	44,125	-	36,150	1,671	6,304	-	-	-	-	-	
N	612150	DREW WOODS	SFR	980	392	45,389	7	20,199	6,507	17,074	-	1,602	-	-	-	
# Total No -FP Systems	52	Total No -FP Systems Tabulated (outliers removed)			Total for Each category		524,160	66,273	307,233	87,537	61,502	-	1,615	-	-	
Dispersed -	37	SRF, MCW, LCW, MHP, SCW, POR			Nominal Diameter Category		<2"	2" to 4"	6"	8"	10"	12'	14'-16"	18"-20"	> 24"	Unknown
Concentrated -	14	HOM, DOM, CON, APT, SRH			% for All 52 Tallied Non FP Systems		13%	59%	17%	12%	0%	0.3%	0%	0%	0%	0%
Outliers Removed																
N	142010	PEU/LOCKE LAKE	MCW	2038	836	92,992	-	92,610	382	-	-	-	-	-	-	
N	341030	WATERVILLE ESTATE VILL DIST/W	LCW	1230	410	118,395	-	108,978	9,417	-	-	-	-	-	-	
N	1722020	SLOPE N SHORE CLUB	CON	180	73	18,772	-	-	-	-	-	-	-	-	18,772	
N	1732020	WADE FARM CONDOMINIUMS	CON	40	16	8,501	-	8,501	-	-	-	-	-	-	-	
Total for Concentrated Systems							35,017	565	21,932	6,495	6,012	-	13	-	-	
Nominal Diameter Category							<2"	2" to 4"	6"	8"	10"	12'	14'-16"	18"-20"	> 24"	Unknown size or mat'l
% for 37 Concentrated Systems (Total of 43.5K Ft of Pipe) -HOM, DOM, CON, APT, SRH							1.6%	62.6%	18.5%	17.2%	0.0%	0%	0%	0%	0%	0%
Total for Dispersed Systems							489,143	65,708	285,301	81,042	55,490	-	1,602	-	-	
Nominal Diameter Category							<2"	2" to 4"	6"	8"	10"	12'	14'-16"	18"-20"	> 24"	Unknown size or mat'l
% for 14 Dispersed Systems (total of 489K Ft of Pipe) -SFR, MHP, MCW, LCW, SCW							13.4%	58.3%	16.6%	11.3%	0.0%	0%	0%	0%	0%	0%

A.2.3 Least Squares Regression to Model Population and Pipe Lengths

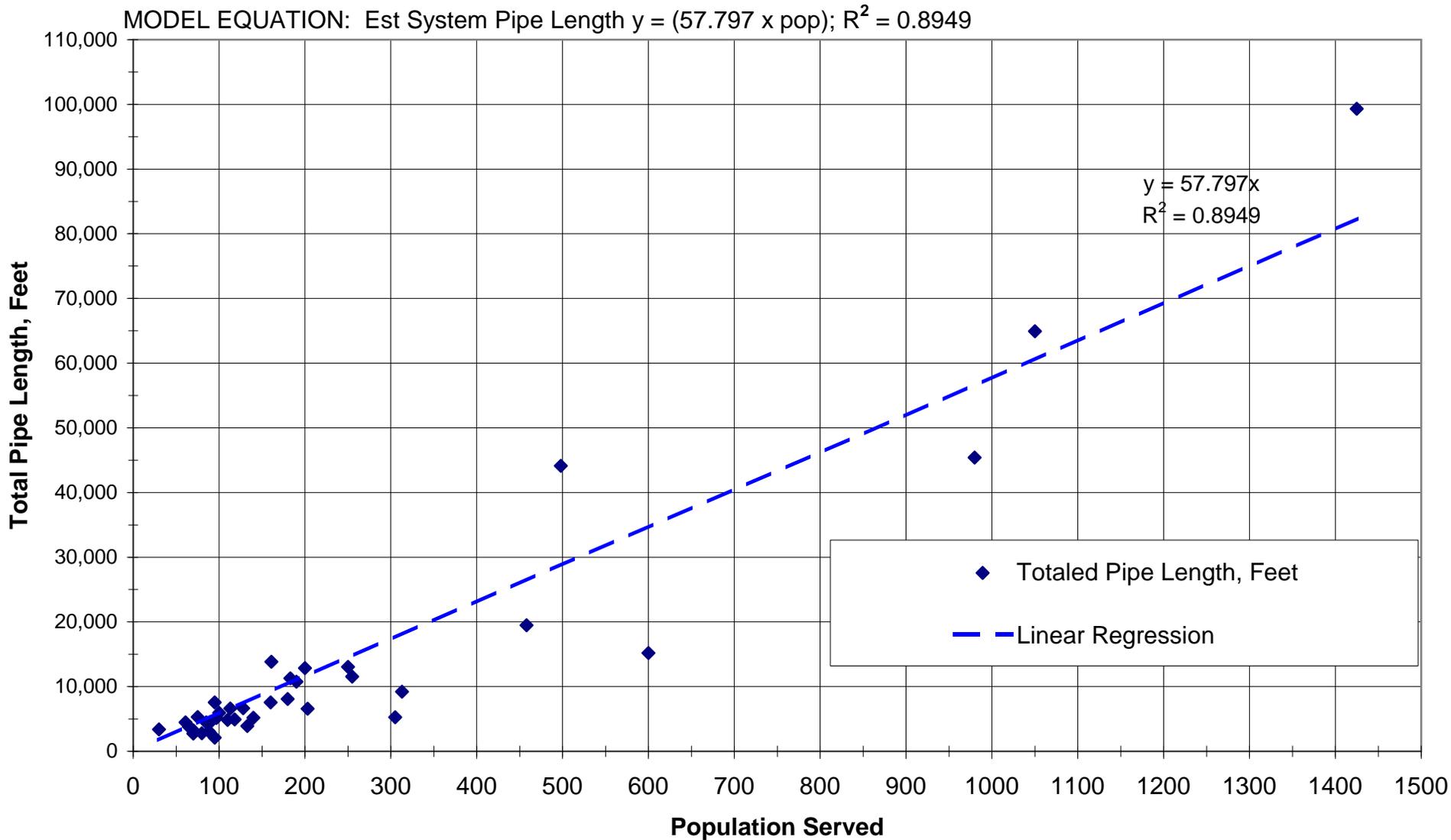
A least squares (regression) analysis was made for the scatterplots of each set, "Dispersed" and "Concentrated", obtaining a mathematical equation to relate the population served to the total length of all water mains found in the system. The scatter plots with the regression line of best fit are shown in Figures A-1 and A-2. The resulting equations for these relationships were then applied to the entire list of non-fire protected water systems in the state, creating an estimate of total length of water main according to population size.

The resulting equations for either "dispersed" or "concentrated" systems could then be applied to the populations served for each non-fire protected water system in the DES database, to provide an estimate of possible total pipe length that may be present in a system serving a population of that size.

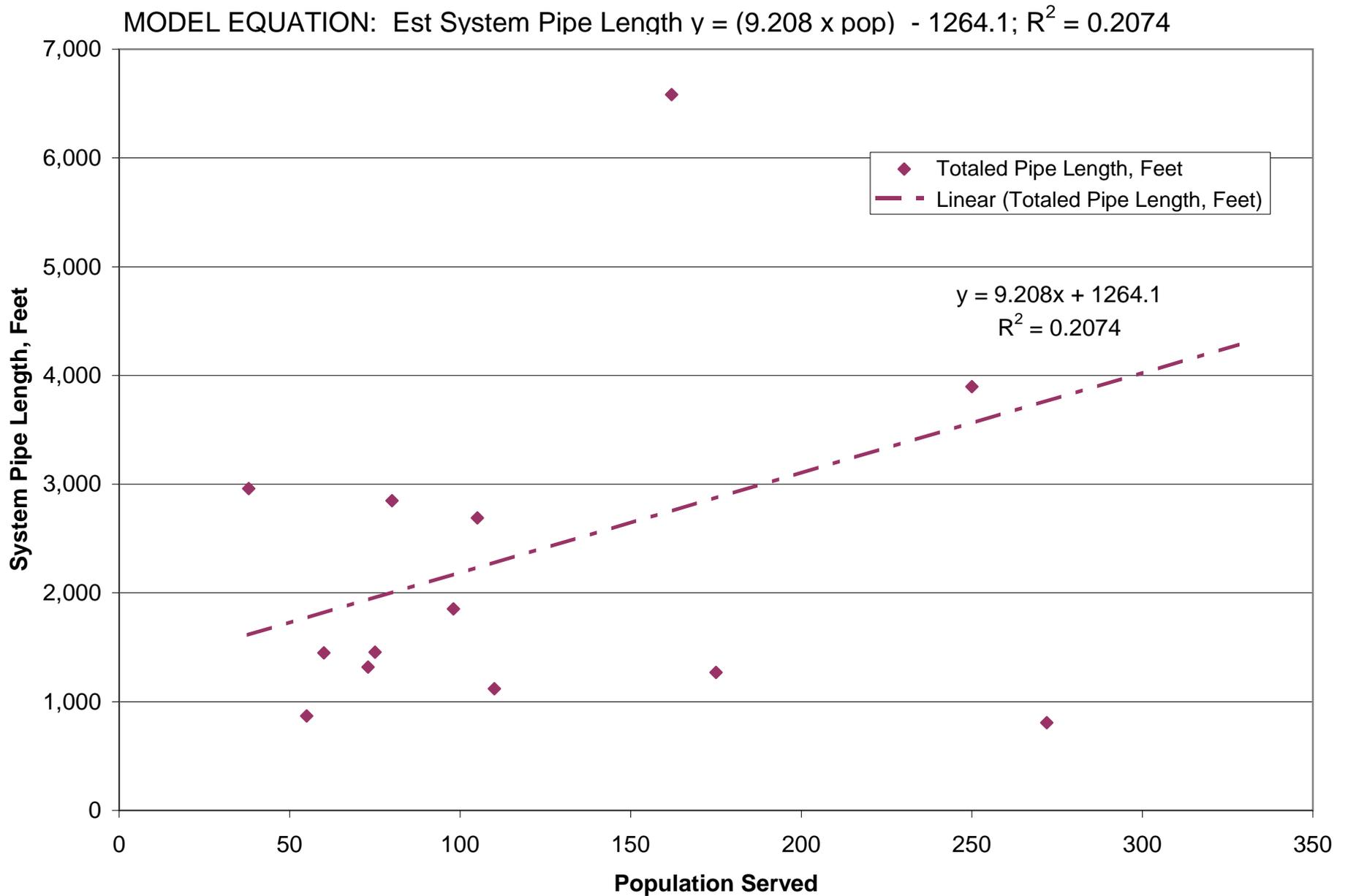
A.2.4 Estimate of Lengths According to Diameter

The estimated total pipe length estimated by the regression equations were then broken apart according to the proportion of diameter sizes that could be expected for the type of system (dispersed vs. concentrated). This was done to allow application of a unit cost to the estimated pipe lengths, because the cost of pipelines is determined (to an extent) by the diameter of the pipe installed. While it is understood that many other factors over and above diameter contribute to cost (the conditions and environment in which pipe is installed is tremendously important), this information is not available for the 575 water systems in the database; such that only typical project costs by diameter could be applied. To obtain an estimate of the lengths by diameter, the columns of pipe lengths by diameter in Table A-3 were summed and calculated for pipe diameter frequency. The percents of the total are shown graphically for all classifications Figures A-3. The particular styles grouped under each category are shown on Figure A-4 for "Dispersed" style systems, and Figure A-5 for "Concentrated Style Systems as frequency histograms of pipe sizes. This gave each subgroup's typical distribution of pipe diameters that might be expected within an inventory of water mains.

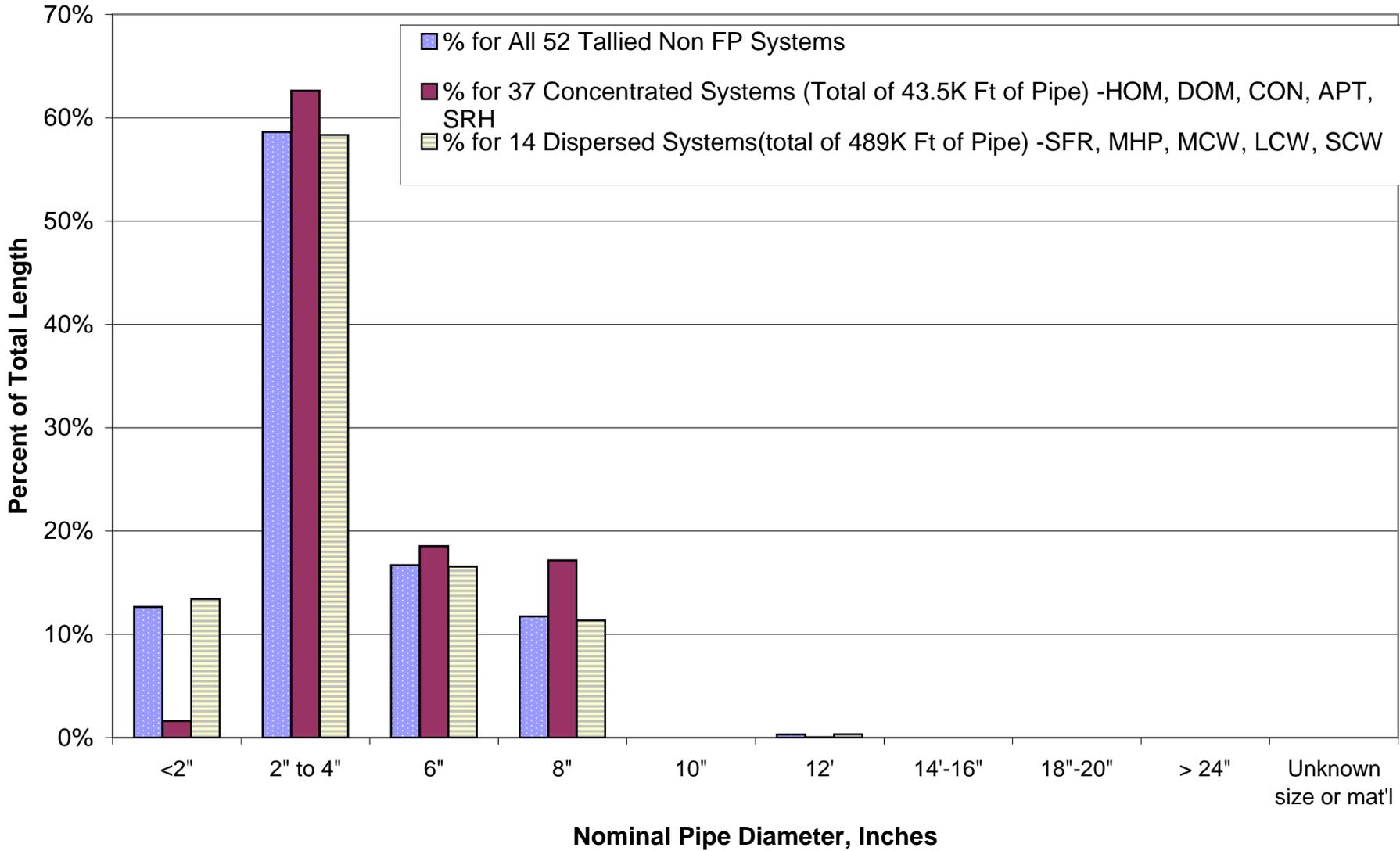
**Figure A-1: NH Non-Fire Protected Distribution Systems:
Population vs Total Pipe (feet)
For 37 Tabulated "Dispersed Style" Systems:
(SFR, SCW, MHP- Model will also apply to LCW, MCW, POR)**



**Figure A-2: NH Non-Fire Protected Distribution Systems:
Population vs Total Pipe Length
For 14 Tallied "Concentrated Style" Systems:
(HOM, DOM, CON, APT, SRH)**



**Figure A-3: NH Systems w/ No Fire Protection
52 Tabulated Systems Sorted by Diameter and System Type**



**Figure A-4: NH Non-Fire Protected Systems:
Percent Share of Population Within "Dispersed" Style Systems**

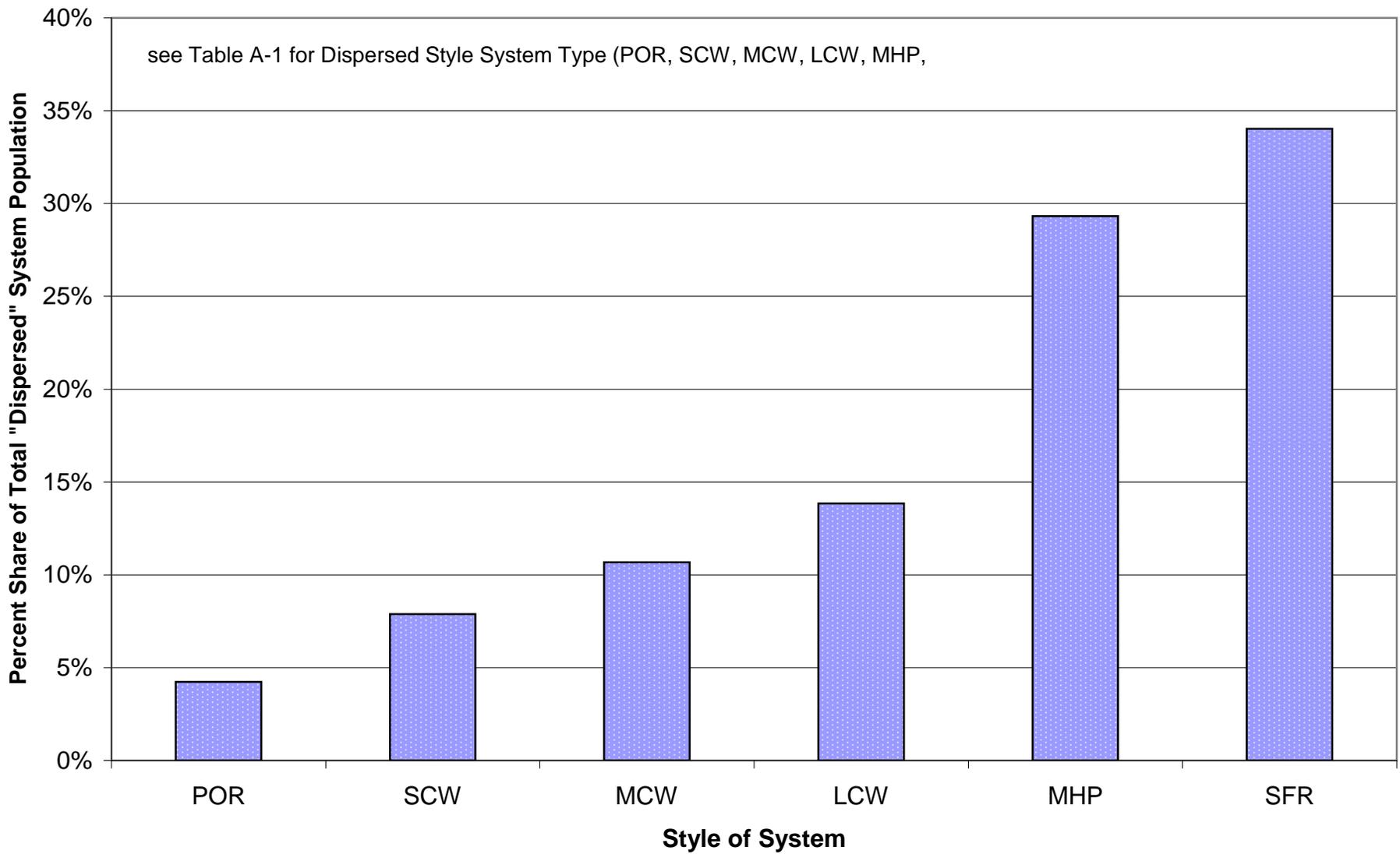
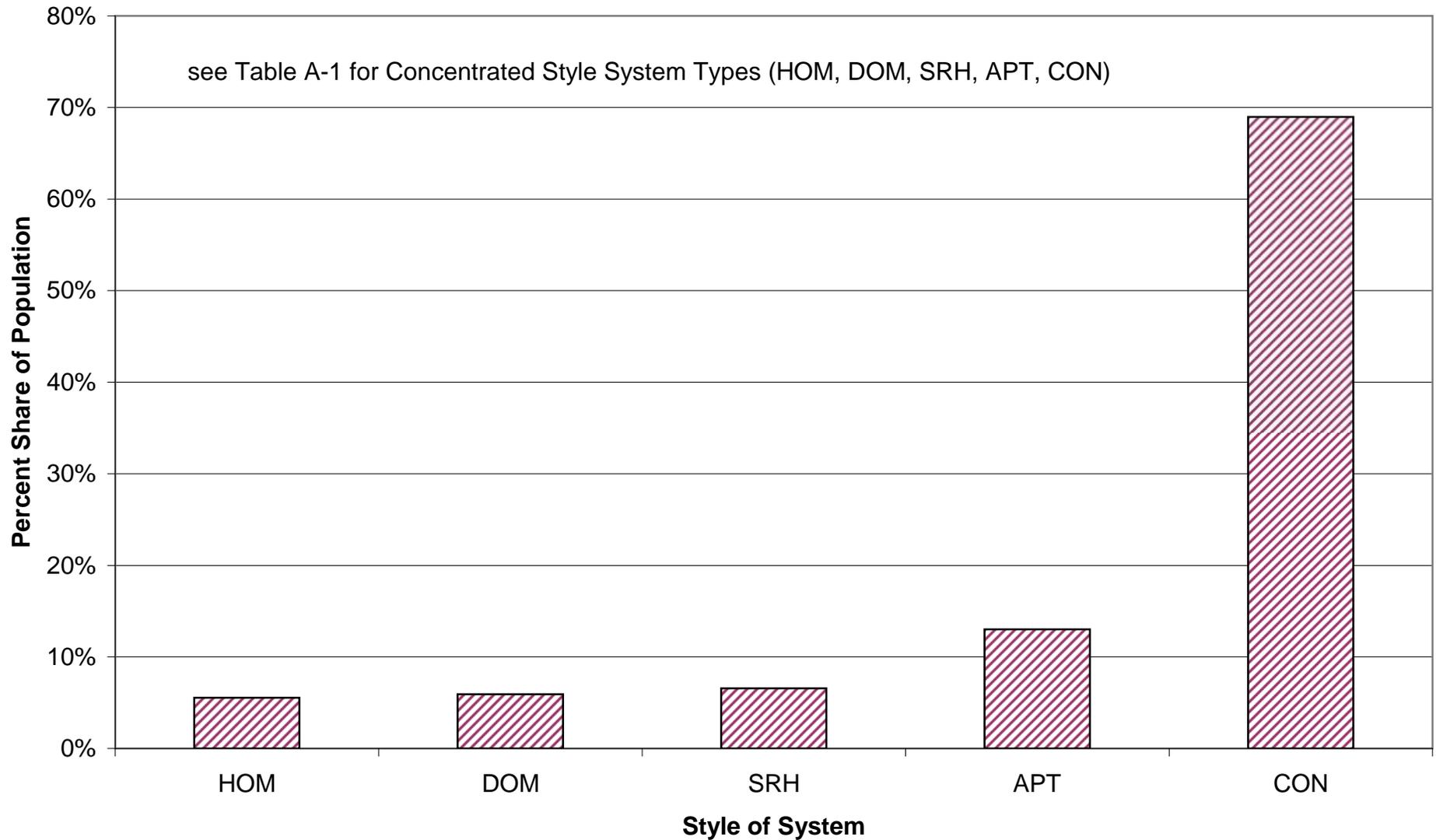


Figure A-5: NH Non-Fire Protected Systems: Share of Non-Fire Protected Category Population Served by "Concentrated" Style Systems



A.2.5 Pipeline Construction Costs

An estimate of 2010 cost needed to be made for each diameter pipe length estimated for each system (described above). To do this, a replacement cost was applied to each length of pipe diameter for each water system in the database. The diameter costs were determined by using standard unit construction costs. The construction costs used for this evaluation are presented in Table A-4 on the next page. These were developed for this evaluation, based on a sampling of recent construction projects (Table A-5). These unit costs are understood to be averages. Traffic control, whether there is ledge removal, utility interference, pavement restoration and a variety of other factors affect the overall costs from project to project.

The pipeline unit costs assume a 35% factor for professional services to plan, design, bid and construct a project in accordance with current NHDES standards using funds from the State Revolving Loan Fund (SRF). Construction projects costs were normalized to the year 2010 using the Engineering News Record (ENR) 20-City Average Construction Cost Index, before converting into a total developed cost per foot. For these systems, 2 to 4-inch piping predominates. It should be noted that 6-inch and 10-inch mains are generally understood to be uncommon and obsolete in most circumstances, so a common replacement cost was assumed for 8-inch and 12-inch mains, respectively.

TABLE A-4
UNIT CONSTRUCTION COSTS FOR WATER MAIN REPLACEMENT

Pipe Diameter	Unit Construction Cost*
2-4-inch	\$110/L.F.
6-8-inch	\$120/L.F.
10-12-inch	\$160/L.F.

* L.F. - lineal foot

A.2.5 ESTIMATED SERVICE LIFE

After application of the unit construction cost to each pipe diameter length to achieve an estimated 2010 replacement cost for each diameter, the annualized cost was then determined based on an estimated useful life of pipeline assets. For non-fire protected systems, service life for 2-4-inch mains was assumed to be 50 years. For all other water mains, the useful life was assumed to be 100 years. It is recognized, that some pipe line materials may have longer useful lives than other materials, but an average life of 100 years was assumed to represent an average performance life for a water main for small, medium and large water systems with fire protection. In this step of the model, the 2010 construction cost was divided by the estimated service life of the pipe to achieve an annual replacement cost for each diameter, which were then summed back together to achieve an annual replacement cost for the water system datapoint.

A.2.6 DETERMINING THE AGGREGATED NON-FIRE PROTECTED SYSTEM ESTIMATED REPLACEMENT COST

The service life adjusted costs by diameter were then summed to obtain an estimated yearly need for each water system in the database. This value was multiplied by 20 to find the 20-year need. The final model incorporating all the steps listed above are displayed in the Excel spreadsheet Table A-6.

The following summarizes the steps taken to complete the pipe analysis:

- All water systems were first separated into two major categories: Fire-Protected and Non-Fire Protected (based on the assumption that for any given population, a fire protected system would have more and larger pipe than a non-fire protected system).
- For the Non Fire Protected Category, samples were classified into sets according to water system population "type": dispersed (e.g., single-family homes, manufactured housing developments, etc.) and concentrated (apartments, condominiums, resident homes, etc.).
- Total constructed costs were determined for different water main sizes, from actual pipeline projects normalized to 2010 costs.

- Estimated service lives for pipes of different diameters were obtained.
- Actual pipe lengths according to diameter were collected for systems within each category, and tabulated.
- Each diameter length was divided by total length to obtain the percent frequencies of pipe diameters for each tabulated sample set of NH systems.
- A scatter plot was generated for population and pipe lengths for each group of "dispersed" and "concentrated" tabulated systems.
- Least squares regression analysis was made for each scatter plot (population vs. pipe length), within MS Excel to find the best fit equation that best related population to pipe length.
- Applied best fit equations to each system's population for the purpose of estimating total pipe lengths. This resulted in a 2010 total developed cost for the estimated total length of pipe in a community.
- Applied the percentages breakdown of pipe lengths found in the tabulated set to the total estimated length found from the best fit equation.
- Applied total developed cost per linear foot for each diameter,
- Divided cost by diameter by service life to get a yearly cost for each diameter over the service life,
- Summed all diameter length costs to a yearly cost.
- Multiplied the yearly cost by 20 years to obtain the 20-year need.

A.3 CAPITAL NEEDS PROJECTION FOR SMALL SYSTEMS W/OUT FIRE PROTECTION

For this grouping, a cost was determined for completely replacing all the Non-Fire Protected water distribution systems. On an annual basis, approximately \$7.9M per year would be required to fully replace all distribution mains for these systems.

Table A-5, below shows the total cost to replace all of the Non-Fire Protected water distribution systems normalized to 2010 dollars. For comparison with other infrastructure refer to Table 1-1

in Section 1. This represents the infrastructure need to modernize all the distribution pipelines in the entire state for such systems on a sustainable basis. For comparison with other infrastructure refer to Table 1-1.

TABLE A-5
PROJECTED NON-FIRE PROTECTED PIPE SYSTEMS NEEDS IN NEW HAMPSHIRE

Water System Asset Category	Est'd Number of Water Systems in New Hampshire	Est'd Replacement Cost of Entire Distribution System (2010)	Est'd Avg Useful Life of Distribution System	Avg Annual Expenditures for years 2010 through 2030 (\$M/year)	Total Collected over 20 Years
Systems w/out Fire Protection	584 (23 w/ pop > 500)	\$471M	50 & 100	\$7.9	\$159 M

APPENDIX B
Water Distribution System
Assets for Systems with Fire Protection

APPENDIX B

WATER DISTRIBUTION SYSTEM ASSETS FOR SYSTEMS WITH FIRE PROTECTION

B.1 CHARACTERISTICS OF FIRE PROTECTED WATER SYSTEMS

In New Hampshire, there are approximately 139 community water systems which size their system to provide fire protection to the community. Information as to the lengths of pipes and diameters of piping within these systems is not systematically collected at this time, and so must be modeled to obtain an estimate of pipe lengths in the state.

Fire protected water distribution systems are distinct from those that do not serve fire protected communities in terms of the size and expense of the in-ground pipe infrastructure, although many of them do serve communities with both large and small populations. Most community water systems serving populations greater than 500 also tend to provide sufficient storage volume for fire protection, necessitating comparatively larger diameter piping. However, there are approximately 31 systems serving fewer than 500 that do provide fire protection, and therefore also require relatively larger pipe diameters compared to communities of the same size that do not provide fire protection.

A convenient way to categorize population was to use the EPA-defined community water system population categories. Table B-1 shows the population categories and the total number systems within each EPA defined community water system population category. Figure B-1 displays this graphically. These show that most water systems providing fire protection serve EPA-defined medium sized populations.

Figure B-1: Total NH Systems w/ Fire Protection by Population

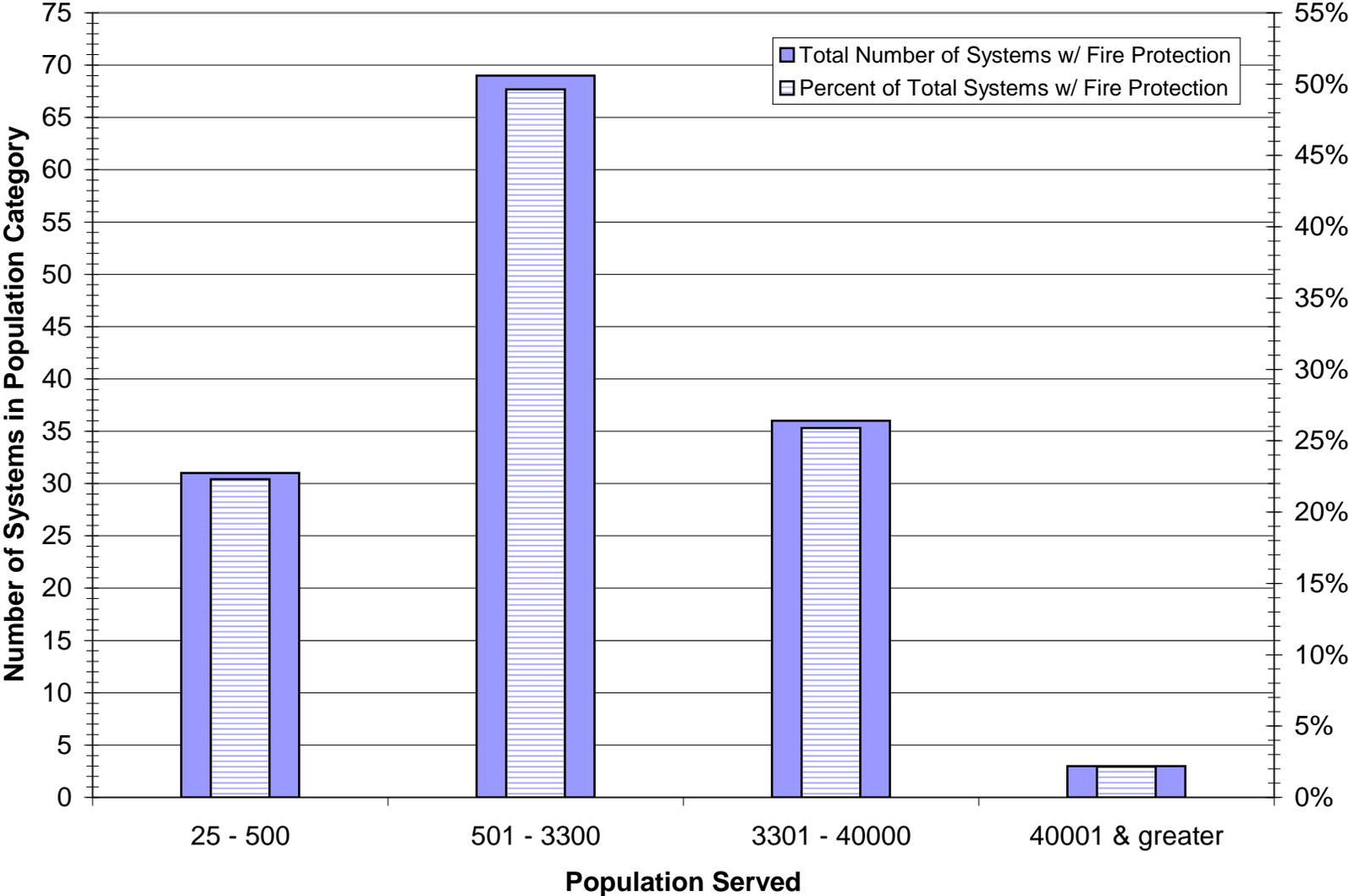


TABLE B-1
FIRE PROTECTED COMMUNITY WATER SYSTEMS

Population Range	Total Number of Systems	Percent Share of Total FP Systems	Tabulated Fire Protected Systems	Percent Share of Tabulated Sample
25 - 500	31	22%	5	14%
501-3,300	69	50%	15	43%
3301 - 40,000	36	26%	12	34%
40,001 & greater	3	2%	3	9%
Total	139	100%	35	100%

B.2 METHODOLOGY

B.2.1 Tabulating a Set With Known Pipe Lengths and Diameters

Because pipeline data are not always collected and maintained by water systems in New Hampshire, we sought to develop a mathematical model relating population to 34 systems for which pipe length was available. This model was applied to estimate total pipe lengths for the remaining 104 Fire Protected systems for which data was not available. This estimate could be used in combination with estimated construction costs and service life to calculate an estimated piping infrastructure value. The sample set of 34 fire protected water systems was collected to represent the ranges of population sizes served. Table B-2 shows the sample set collected. Sources of information included the Cities of Manchester, Concord, and the Pennichuck Water Works (for numerous systems), Wright-Pierce, and mapping available in the DES record-drawing database. The sample set included both distribution and transmission piping. Table B-3 shows the number of tabulated samples that were available for each EPA population category. An additional division was created for the largest systems in the state so that systems with a population range from 3301 to 40,000 persons could be considered separately from those serving more than 40,000 persons (of which there are only 3 in the state). These three very largest systems provided a breakout of total pipe lengths by diameter, and therefore a regression model was not required to estimate pipe lengths in order to estimate a year 2010 replacement cost.

Table B-2: Data for 34 Tabulated Fire Protected Systems for Which Pipe Lengths and Diameters are Known

EPA ID	Water System	Pop Served	Service Connec tions	Prod Cap, MGD	Tallied Totals	<2"	2" to 4"	6"	8"	10"	12'	14'-16"	18"-20"	≥ 24"	Unknown size or mat'l
1851020	PEU/WHISPERING WINDS	160	64		3,584	-	-	-	2,496	-	1,088	-	-	-	-
1392260	PEU/SPRINGWOOD HILLS	218	87		12,381	-	-	650	5,870	-	5,861	-	-	-	-
411020	NORTH CHARLESTOWN WATER DEPT	325	104		25,043	-	5,752	17,338	1,953	-	-	-	-	-	-
1211010	Jackson	500	203	0.2	24,125	-	-	1,854	19,736	2,535	-	-	-	-	-
2411010	WARNER VILLAGE WATER DISTRICT	500	198		37,713	-	2,656	3,883	23,930	496	6,748	-	-	-	-
262050	PEU/WHITE ROCK SENIOR LIVING	547	219		3,651	-	432	2,377	842	-	-	-	-	-	-
351010	Canaan	600	192	0.108	27,000	-	2,031	2,967	21,216	-	-	-	-	-	786
1851010	PEU/WILLIAMSBURG	615	246		53,017	4,600	11,617	6,849	11,257	18,547	-	147	-	-	-
1841010	Ossipee	850	325	0.245	48,748	-	11,047	13,590	6,683	-	17,428	-	-	-	-
2401020	N WALPOLE VILLAGE DISTRICT	950	360		34,050	1,200	1,650	23,400	6,500	1,300	-	-	-	-	-
1361010	LISBON WATER DEPARTMENT	1050	420		49,400	3,200	4,070	17,510	17,870	-	6,750	-	-	-	-
2361010	TROY WATER WORKS	1200	461		38,118	-	682	17,138	4,636	15,662	-	-	-	-	-
2391010	SANBORNVILLE WATER DEPARTMENT	1500	410		43,102	-	6,360	20,771	15,120	851	-	-	-	-	-
1911010	PITTSFIELD AQUEDUCT	1595	648		74,448	843	1,466	28,946	32,838	2,967	7,388	-	-	-	-
1151020	HINSDALE WATER DEPT /DOWNTOWN	1600	500		47,400	-	1,593	16,490	20,683	2,736	5,898	-	-	-	-
241010	BETHLEHEM VILLAGE DISTRICT	1700	500		177,257	3,877	12,808	21,736	138,836	-	-	-	-	-	-
1151010	NORTH HINSDALE WATER DEPT	1800	500		32,130	-	-	16,178	6,822	7,637	787	706	-	-	-
1291010	LANCASTER WATER DEPARTMENT	2450	975		141,000	1,769	6,797	72,845	10,261	48,494	834	-	-	-	-
411010	CHARLESTOWN WATER WORKS	2500	1200		98,626	-	2,231	62,293	3,700	2,536	24,021	3,845	-	-	-
1521010	Meredith	2635	1050	1.0	101,759	-	3,307	21,983	38,850	8,572	25,617	3,431	-	-	-
301010	BRISTOL WATER WORKS	3327	1331		114,230	-	13,490	30,250	48,030	1,450	13,440	7,570	-	-	-
1371010	PEU/LITCHFIELD	3608	1828		245,751	-	19,739	11,724	140,709	-	55,989	17,590	-	-	-
1221010	Jaffrey	3612	1445	1.2	198,750	7,571	3,565	68,564	31,746	8,327	74,815	4,162	-	-	-
2041010	Rye	3900	1546	0.3	210,646	652	2,262	20,404	93,534	27,311	66,103	-	-	-	380
2561010	Wolfeboro	5500	2300	2.0	313,490	18,274	45,961	104,736	56,118	22,893	65,020	488	-	-	-
1381010	LITTLETON WATER AND LIGHT DEPT	6010	1680		224,260	-	8,443	88,621	70,302	24,608	32,286	-	-	-	-
1321010	Lebanon	10050	3037	4.0	369,930	1,637	13,848	57,401	112,051	35,399	128,536	21,058	-	-	-
801010	Exeter	11000	3500	3.4	256,924	755	16,092	77,596	81,568	33,758	44,738	2,417	-	-	-
2151010	Somersworth	12000	3300	6.0	298,936	-	10,735	91,468	108,594	14,191	40,922	33,026	-	-	-
2051010	Salem	18000	7000	3.0	583,059	-	2,051	175,697	165,814	11,905	161,172	66,421	-	-	-
2001010	Rochester	20000	7000	4.5	736,655	-	-	254,068	105,246	33,859	198,768	37,116	66,218	41,380	-
1241010	Keene	25000	6000		508,205	-	2,158	230,798	140,651	27,324	88,779	17,457	1,039	-	-
501010	Concord	43000	12000	8.7	1,124,471	-	1,926	157,022	517,762	71,475	239,636	89,767	30,293	16,590	-
1621010	PENNICHUCK WATER WORKS	86630	23629		1,897,884	12,330	215,987	198,038	923,140	24,042	335,161	124,515	2,336	62,335	-
1471010	MANCHESTER WATER WORKS	133000	31000		2,056,351	5,300	28,927	652,210	563,976	127,806	337,626	156,379	98,170	85,957	-
	Potential Outliers for Modeling				Tallied Total										Modeled Total

TABLE B-3
TABULATED FIRE PROTECTED SYSTEMS AVAILABLE FOR MODELING

Population Category	Number of Tabulated Sets Available to Model
Small < 500	5
Medium, 501-3,300	15
Large, 3,301 - 40,000	12
Very Large, 40,000 - 133,000	3

Because there were so few data samples available (and when plotted, there was so much scatter), enough NH samples could not be obtained to ensure significance. As a source of comparison, the State of Maine Drinking Water Program was contacted for a listing of the EPA ID numbers for Maine community water systems with serving a population greater than 500. The EPA ID numbers were used to access pipe length data from the Maine Public Utilities Commission database to develop a sample set of approximately 100 water systems for total pipe lengths/diameters. Systems serving populations fewer than 500 were not required to submit detailed pipe information to MPUC. However, the information was useful in that the comparison with the NH sample set of 35 Fire-Protected systems suggested that the tabulated sample set was representative in the pipeline diameter distributions. When used as an overlay scatterplot and diameter histogram, it was useful for confirming NH results and for developing a workable model for the smallest systems for which only 5 samples were available..

B.2.2 Modeling Pipe Length Based on Population

The tabulated data sets, scatter plots were made of system populations (x axis) against the total pipe lengths (y axis) of all diameters (in feet).

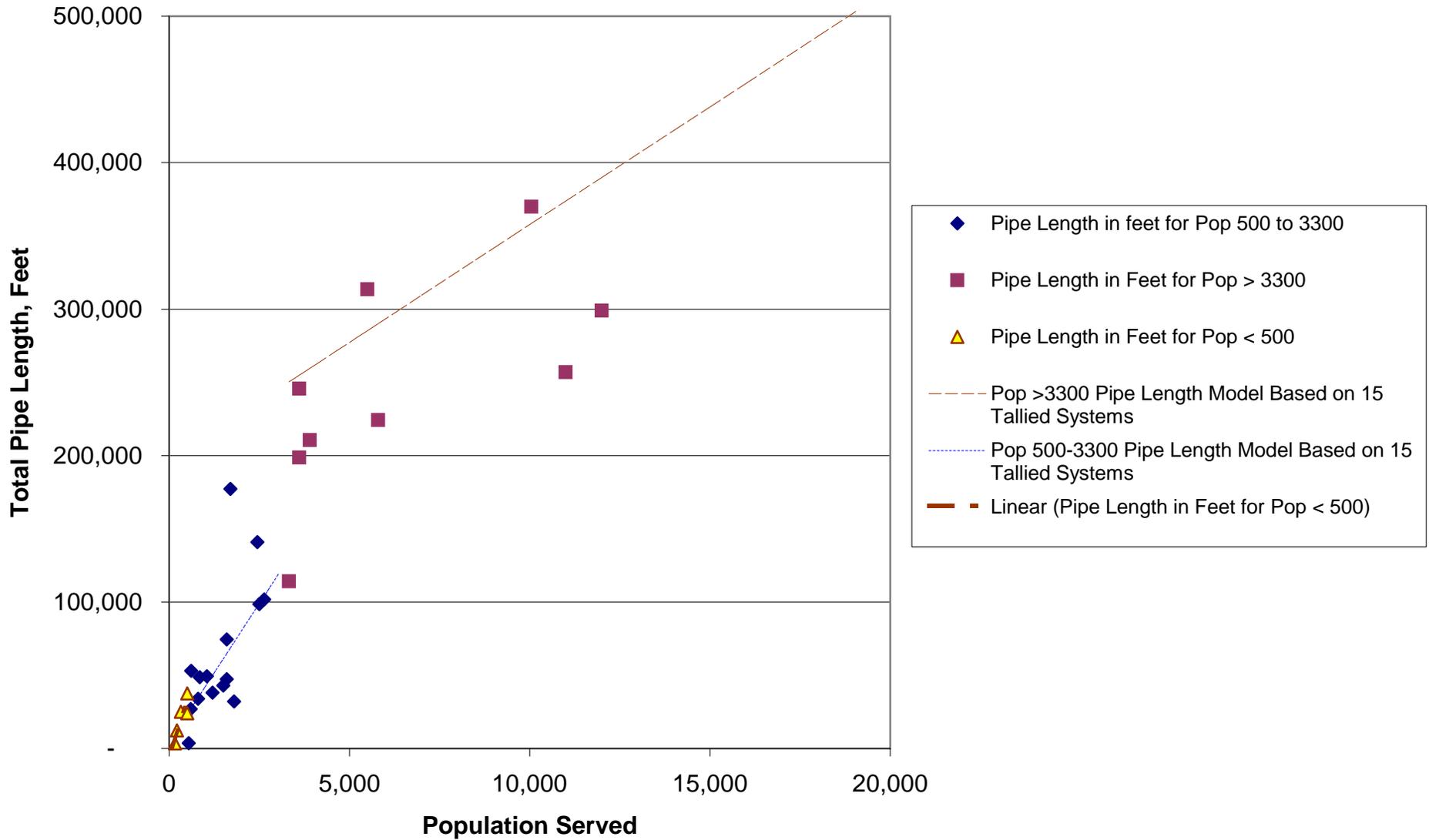
The scatter plot of the tabulated system populations (x axis) against the total pipe lengths (y axis) of all diameters (in feet) revealed that not only did the pipe lengths increase with increasing population, but also that systems with similar populations saw increasing differences in total pipe lengths as populations increased (increasing variance).

These differences may be explained by the diversity in water system formats determined by the demographic and economic characteristics of the communities served. For example, older communities would tend to have a more compact distribution system. Those communities experiencing intense residential and economic development would tend to see increased pipe length compared to population.

The scatterplot shown in Figure B-2 demonstrates the scatter and lack of trendline agreement between the different population categories. Although a good correlation could be obtained by including the entire range in one model, the increasing scatter with increasing population was too great to consider the model reliable (heteroscedasticity), particularly for modeling systems in the smaller populations. For this reason, a separate best fit linear model was developed for population subcategories.

Least squares analysis was applied to combinations of population vs. pipe length plots to examine the mathematical relationship (line of best fit) and scatter. Once a relationship was developed for each population set, it was applied to the database populations to estimate a total pipe length for each system in the NH dataset. Where actual pipe lengths were known for a dataset system, these were entered instead of being modeled, and the fact that it was a real pipe length was signified in Table B-6 by being outlined with a box. The resulting database list contained pipe lengths calculated by the model, interspersed with actual pipe lengths. An advantage of the list of calculated pipe lengths being interspersed with actual pipe lengths is that it allow "calibration" of the model by making it obvious when the model values were more or less "in line" with the actual values as populations increased. This approach showed that the models based on strict EPA population categories sometimes did not result in model pipe length results that would be expected between two known actual pipe lengths upper and lower values, especially at the transition areas between two EPA population categories. Table B-6 is color

**Figure B-2: NH Systems with Fire Protection
Tabulated System Population vs Total System Pipe Length**

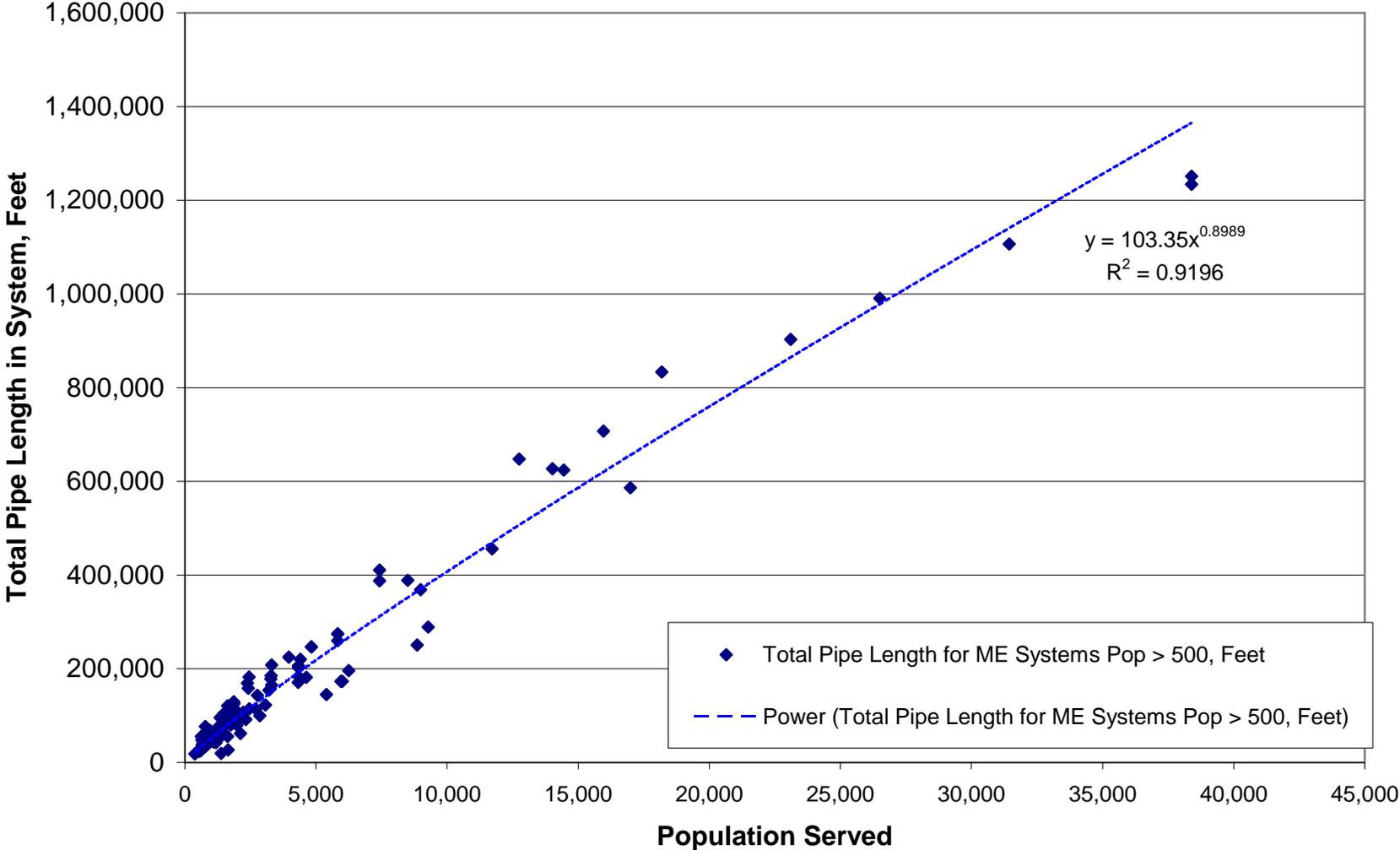


coded as to the model applied to each population (yellow <500, green 501-3,300, and melon from 3,300 - 40,000. Outliers not included in the model but entered as tabulated systems are color coded in purple. The population subcategories were relaxed in the case of the groupings from 501 to 3,300 and from 3,300 to 40,000 in order to obtain better pipe length values more in agreement with the known lengths around them in the dataset. This relaxation of categories was made in two different ways. In the way just discussed, where the model equation was allowed to move into the next population category up to allow better agreement between modeled pipe lengths and the nearby actual pipe lengths. In the other way, the groupings used for the regression analysis were adjusted to bring in data from a larger population grouping (as in the case for the "Large" grouping). These are discussed in more detail below.

Small Fire Protected Systems Serving 500 and fewer: There are approximately 31 fire protected water systems in New Hampshire classified as very small systems (serving 500 and fewer). These systems represent about 22% of the total number of fire-protected public water systems. The tallied sample set of 5 systems in this category represented 14% of the tabulated set, and were too few to have confidence that a line of best fit would adequately model the 31 systems of this size in NH. Although, the MPUC data (Figures B-3a and B3-b) did not include systems with populations less than 500, the 59 systems in the 500 to 3300 grouping, setting the intercept to zero defined a strong regression line that did a good job of including smaller populations (that was consistent even when divided by population groupings). When this line was applied to the entire NH data set for populations 500 and less, it resulted in a match up (line ends meeting) between the smaller pop set and the next population category in NH 500 to 3300, resulting in use of the overlay equation in this case (Figure B-3c). The final model applied was Total Pipe Length (ft) = 103.35 x (Population ^ 0.8989); $R^2 = 0.9196$.

Medium Fire Protected Systems Serving Populations from 501 to 3,300 persons: Table B-1 shows approximately 69 NH water systems which provide fire protection and are classified as medium-sized (serving a population of 501 to 3,300). These systems represent about 50% of the total number of public water systems which provide fire protection. The 13 tabulated systems

Figure B-3a: Total Pipe Length for 99 ME Sysys Pop > 500, Feet
(Full Scale except Portland Water District Removed as Outlier)



**Figure B-3b: Total Pipe Length for 99 ME Systs Pop > 500
(Smaller Scale)**

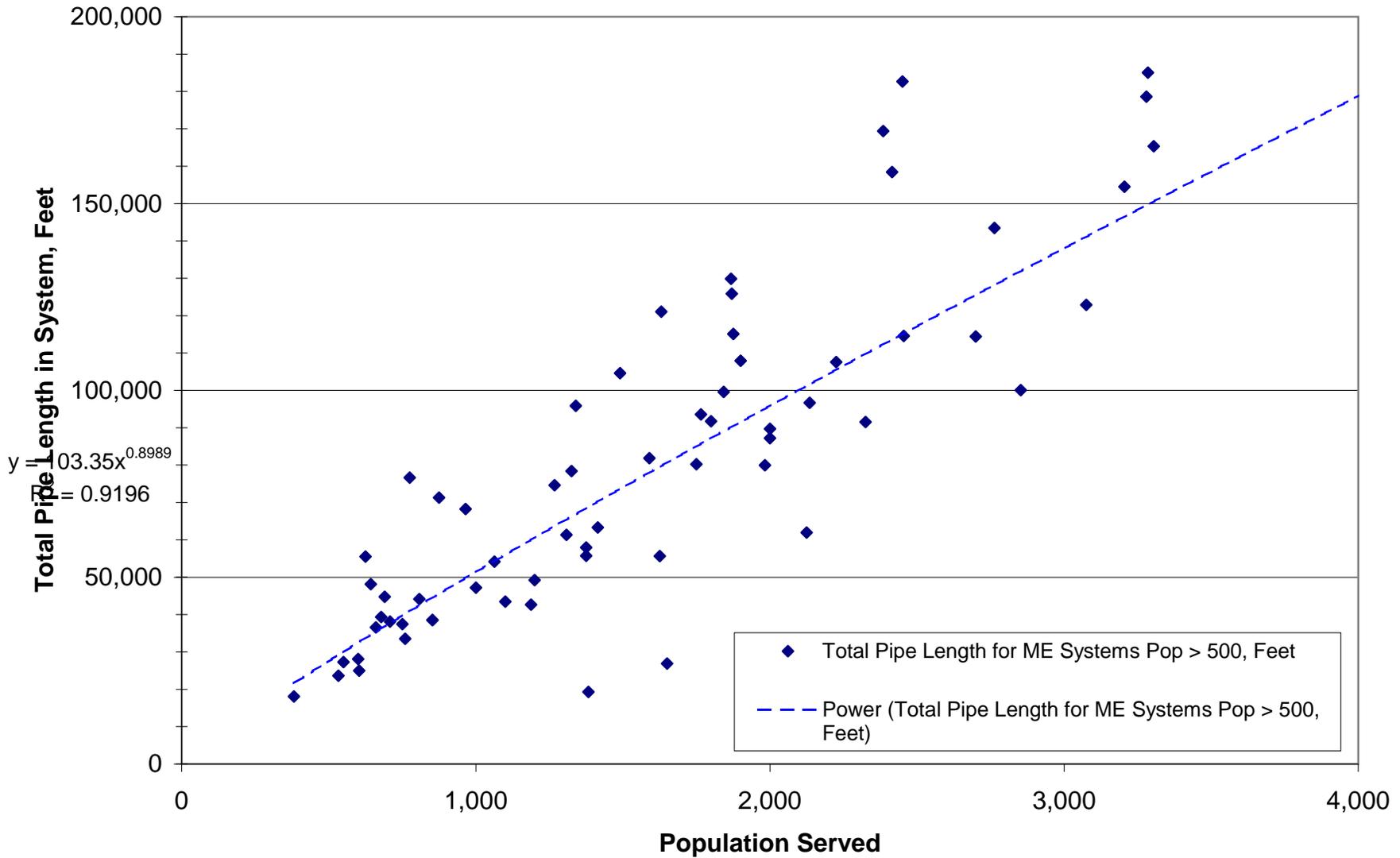
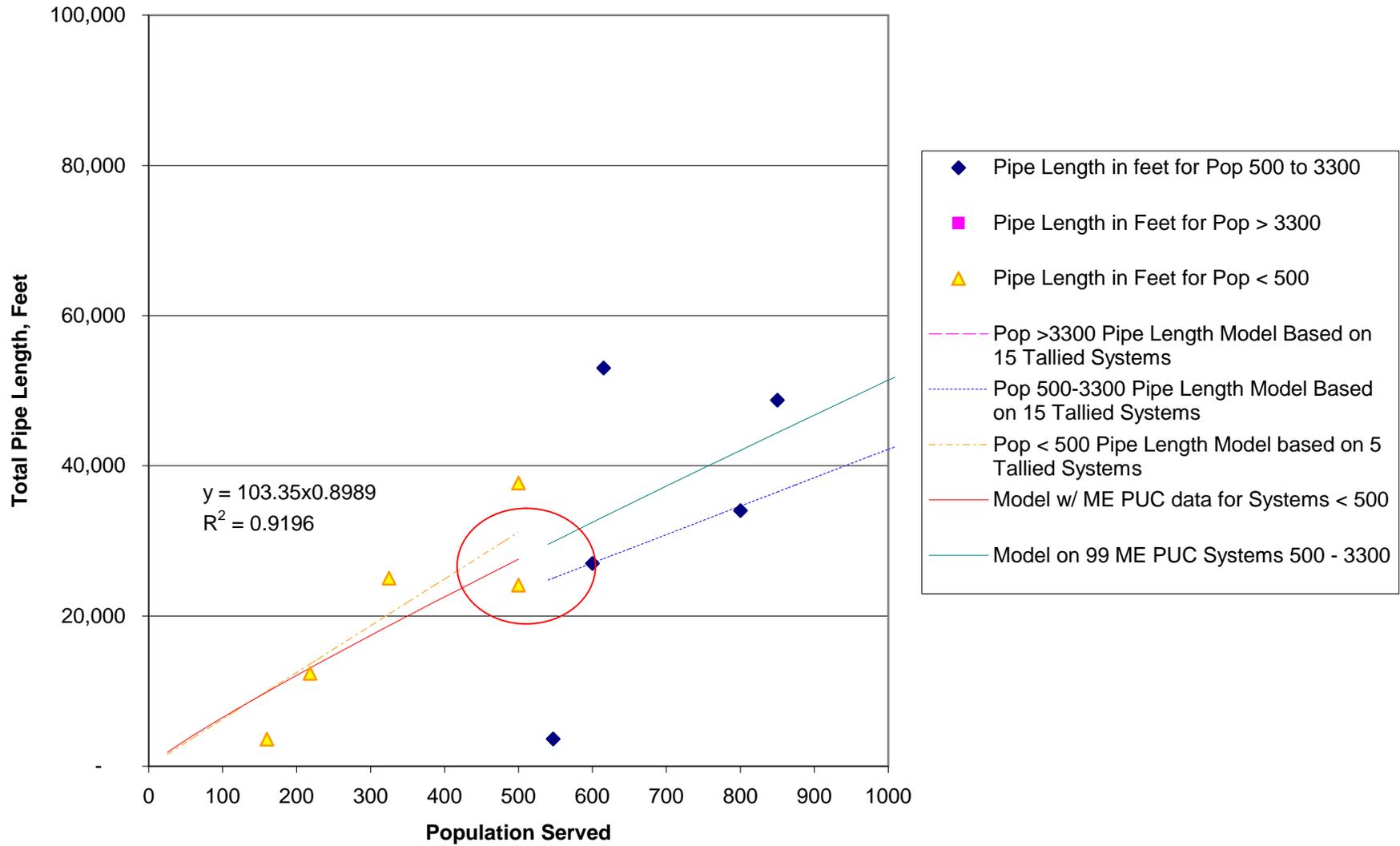


Figure B-3c: NH FP System Tallied Pipe Lengths



were scatterplotted and regression analysis applied to create a model (after removing outliers) made up 42% of the 31 tabulated systems. Figure B-4 shows the model developed relating population and pipe lengths for this population grouping. The final model applied was Total Pipe Length (ft) = (37.848 x Population) + 4356; $R^2 = 0.6156$. It was advantageous to apply this equation to the dataset with populations ranging from 3,300 to 4,000 as well because it resulted in values that more closely matched the actual pipe length values entered around them for tabulated systems.

Large Fire Protected Systems Serving Populations from 3,300 to 40,000: Table B-1 shows there are approximately 36 water systems in NH which are classified as large-sized systems (population 3,300 to 40,000) which provide fire protection. These systems represent about 26% of the total number of community water systems which provide fire protection. A model with better agreement with nearby actual pipe lengths could be obtained by having the regression include the sample set for Concord (pop 43,000). Figure B-5 shows the scatterplot and regression line for the model; Length (ft) = (21.332 x Population) + 121,514; $R^2 = 0.74$. This model was applied to the database populations from population 4,000 up to 43,000 (although Concord was tabulated, not modeled). The previous section's model was applied to the dataset populations from 3,300 to 4,000 as discussed in the previous section. So the actual population range encompassed by the model shown in Figure B-5 became 4,000 to 43,000. However, the diameter distributions were developed for those tabulated systems between 3,300 to 40,000.

Very Large Fire Protected Systems Serving Populations Greater than 40,000: For this grouping, an additional non-EPA size classification was used. There are approximately 3 water systems in New Hampshire which are range from 40,000 to 133,000. These systems represent about 2% of the total number of public water systems in New Hampshire which provide fire protection. The amount of piping serving Very Large Systems differs greatly from that serving the Large Systems with populations from 3,301 to 40,000. The three systems in the Very Large category were not statistically analyzed, but instead inventoried, and entered directly into the calculation without modeling based on population.

Figure B-4: NH Fire Protected Systems: Population vs Pipe Length
13 Tallied Systems w/ Pop 500-3300; (2 outliers removed)

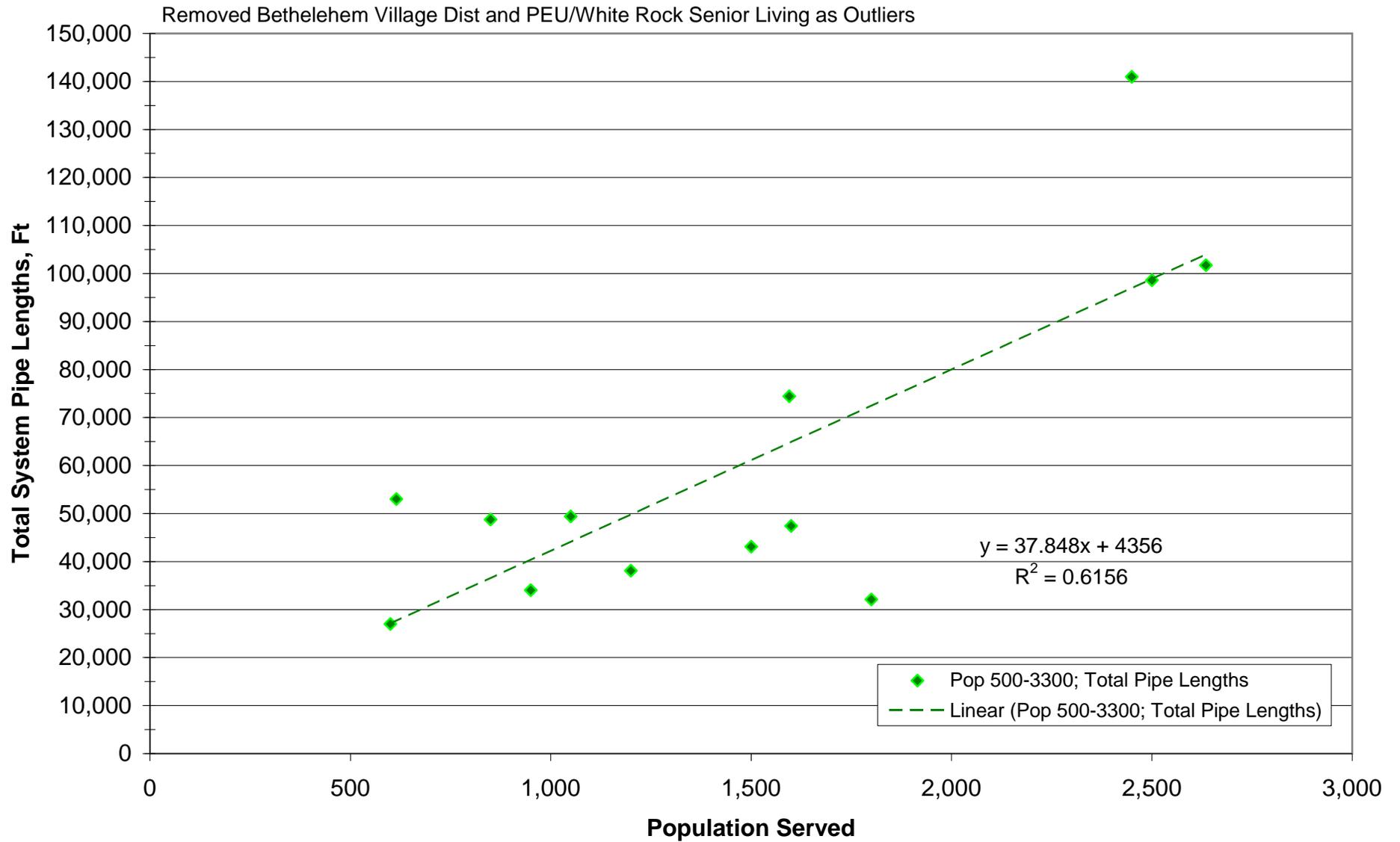


Figure B-5: Fire Protected Systems: Population vs Pipe Length
13 Tallied Systems w/ Pop \geq 3300 - 45,000

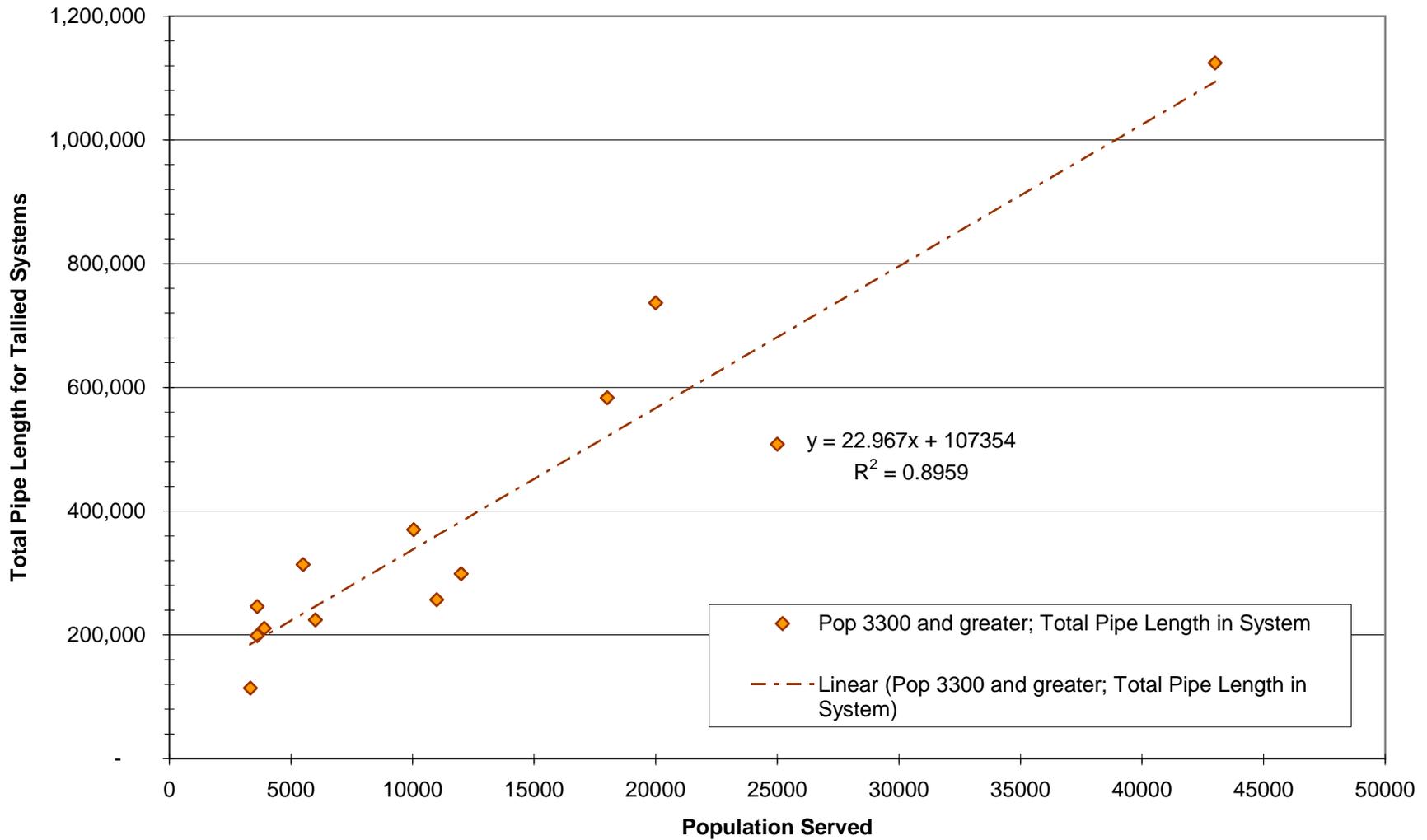


Table B-3A summarizes how the groupings were adjusted.

TABLE B-3A
TABULATED SYSTEMS ADJUSTED GROUPINGS FOR MODELING

Population Category	Number of Tabulated Sets Available to Model	Adjusted Model Pop Groupings	Tabulated Sets include in Revised Groupings
Small < 500	5	< 500	5
Medium, 501-3,300	15 (13)	501-3,300 (model) 501 - 4,000 (application to dataset)	13
Large, 3,301 - 40,000	12	3,300 -45,000 (model) 4,000 - 45,000 (application to dataset)	13
Very Large, 40,000 - 133,000 (not modeled)	3	Three values entered but not modeled as "Very Large System"; 43,000 pop value used to create "Large" model equation	2

Revisions for removing outliers and adjustments for regression modeling

B.2.3 Estimating the Amount of Pipe and 2010 Replacement Cost of Each Diameter

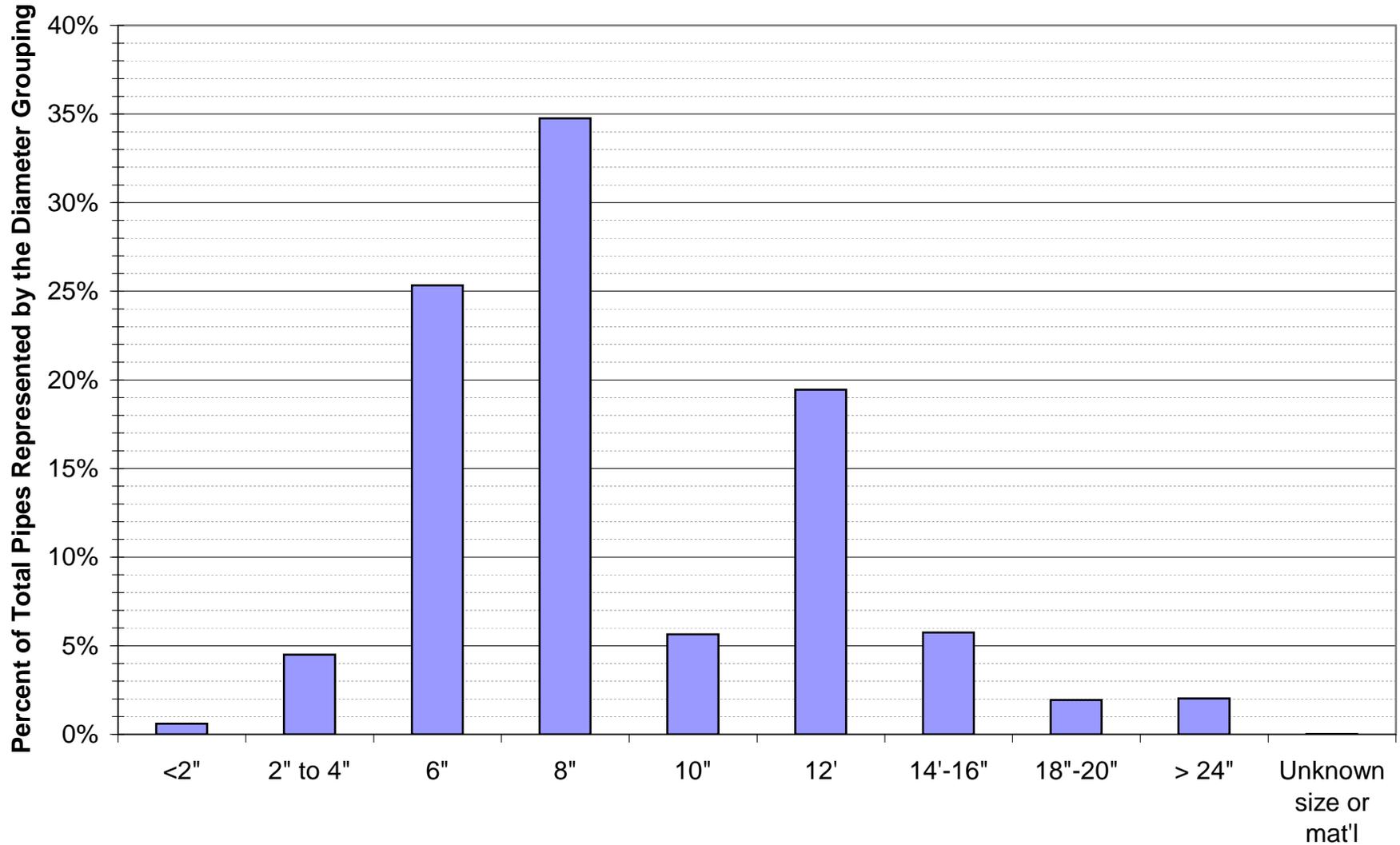
Pipe Diameter Distributions: The data included total pipe lengths and a breakout of pipe lengths according to pipe diameters so that a frequency distribution of the pipe diameters could be made for each size class as shown in Table B-4 and Figure B-6.

Table B-4 shows how these tabulated diameters were summed and plotted as frequency histograms of pipe sizes (Figure B-7), both overall and for each population breakout. The frequencies gave each subgroup's typical distribution of the pipe diameters that might be expected within an inventory of water mains. This information was useful because pipeline construction cost is related to the water main diameter (although many other factors contribute to costs). The percentages by diameter for each tabulated system were applied to the estimated total pipe lengths according to the population grouping (Table B-6).

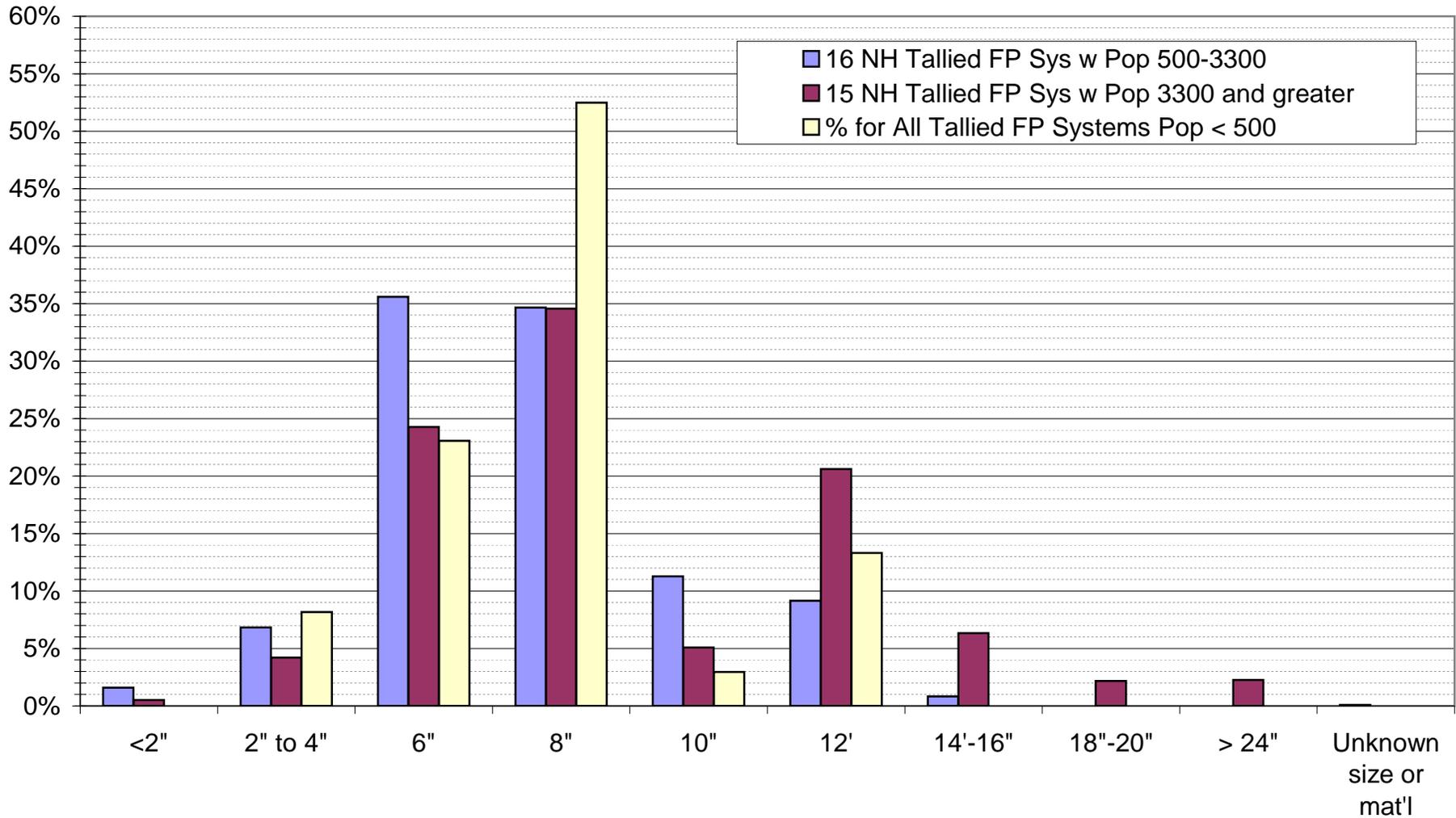
Table B-4: Tabulated Systems by Diameters

Distribution of All Tallied Pipe Sizes			Nominal Diameter Category										
			<2"	2" to 4"	6"	8"	10"	12'	14'-16"	18"-20"	> 24"	Unknown size or mat'l	
34	Tabulated Fire-Protected Systems all but 3 with pop > 500	% for All 34 Tallied NH FP Systems	1%	5%	25%	35%	6%	19%	6%	2%	2%	0%	
		Total for Each category	10,212,094	62,008	459,682	2,587,395	3,549,338	576,681	1,985,411	586,094	198,056	206,262	1,166
Distribution of Tallied Pop < 500 Pipe Sizes			Nominal Diameter Category										
count	5	Tabulated Fire-Protected Systems	% for 5 Tallied NH FP Systems w Pop <500	0.0%	8%	23%	52%	3%	13%	0.0%	0.0%	0.0%	
		Total for Each category	102,846	-	8,408	23,725	53,985	3,031	13,697	-	-	-	-
Distribution of Tallied Pipe Sizes for Systems Pop 500 - 3300			Nominal Diameter Category										
count	15	Tabulated Fire-Protected Systems removing Bethlehem outlier	% for 14 Tallied NH FP Systems w/ Pop 500-3300	1%	7%	41%	25%	14%	11%	1%	0%	0%	
		Total for Each category	792,449	11,612	53,283	323,337	197,278	109,302	88,723	8,129	-	-	786
Distribution of Tallied Pipe Sizes for Systems Pop 3300 to 40,000			Nominal Diameter Category										
count	12	Tabulated Fire-Protected Systems	% for 12 Tallied NH FP Systems w/ Pop 3300 to 40000	1%	3%	30%	28%	6%	24%	5%	2%	1%	0%
		Total for Each category	4,060,836	28,889	138,344	1,211,327	1,154,362	241,025	970,568	207,305	67,257	41,380	380
Distribution of Tallied Pipe Sizes for Systems Pop 40,000 to 133,000			Nominal Diameter Category										
count	3	Tabulated Fire-Protected Systems	% for 3 Tallied NH FP Systems w/ Pop 40,000 to 133,000	0%	5%	20%	39%	4%	18%	7%	3%	3%	0%
		Total for Each category	5,078,706	17,630	246,840	1,007,270	2,004,878	223,323	912,423	370,661	130,799	164,882	-
Distribution of Tallied Pipe Sizes for Systems Pop 3300 to 133,000			Nominal Diameter Category										
count	15	Tabulated Fire-Protected Systems	% for 15 Tallied NH FP Systems w/ Pop 3300 to 133,000	1%	4%	24%	35%	5%	21%	6%	2%	2%	0%
		Total for Each category	9,139,542	46,519	385,183	2,218,597	3,159,240	464,348	1,882,992	577,965	198,056	206,262	380
107	Distribution of ME Totaled Pipe Sizes	Nominal Diameter Category	<2"	2"-4"	6"	8"	10"	12"	14"-16"	18"-20"	>24"	Unknown size or mat'l	
		% for 107 Tallied ME Systems 500 to 186K persons	3%	9%	19%	33%	5%	20%	5%	2%	3%	1%	
		Totals for each category	31,561,733	783,333	2,910,925	6,153,580	10,474,433	1,571,301	6,161,653	1,511,865	724,899	1,121,182	327,165

Figure B-6: Pipe Diameter Distribution for 34 Tallied NH FP Systems



**Figure B-7: NH Tabulated Fire Protected Systems
Distribution of Lengths of Pipe Diameters by Population Category**



Replacement Costs: For extrapolating the need within the state, average unit construction costs (Table B-5) were used. These unit costs are understood to be averages based on a sampling of recent construction projects, normalized to the year 2010 using the Engineering News Record 20-City Average Construction Cost Index. Table B-6 shows the derivation in more detail.

TABLE B-5
UNIT CONSTRUCTION COSTS FOR DUCTILE IRON WATER MAIN
REPLACEMENT

Pipe Diameter	Unit Construction Cost*
2-4-inch	\$110/L.F.
6-8-inch	\$120/L.F.
10-12-inch	\$160/L.F.
14-16-inch	\$200/L.F.
18-24-inch	\$240/L.F.

* L.F. - lineal foot

Although pipes made of many different types of materials exist in the ground today, there have not been many recent construction projects in New Hampshire or New England to make a good determination of average cost for anything but ductile iron pipe. The unit costs also assume a 35% factor for professional services to design, bid and construct a project in accordance with current NHDES standards using funds from the State Revolving Loan Fund (SRF). It should be noted that 6-inch and 10-inch mains are generally understood to be uncommon and obsolete in most circumstances, so a common replacement cost was assumed for 8-inch and 12-inch mains, respectively. Traffic control, whether there is ledge removal, utility interference, pavement restoration and a variety of other factors affect the overall costs from project to project.

Table B-6: Actual Pipeline Project Costs

Proj #	Project Date	Project Location/client	ENR	nominal diameter, inches									Total LF	Enter Date To Which to Index Costs		Total Actual Construction	Total Actual Development	Development Indexed	\$/LF for 12-inch projects	
				24	20	18	14	12	10	8	6	4		2	Jul-10					8865
10476	6/29/2005	Caribou,ME Main and Transmission Main	7415							10800					11000	\$1,393,688	84.6%	\$1,543,356	\$1,845,158	\$168
11019	9/27/2007	Kingfield, ME	8090							8500					8860	\$1,080,395	90.3%	\$1,268,958	\$1,390,521	\$157
11524	9/11/2009	Sanford, ME; High St	8586							5200					5300	\$569,503	85.1%	\$754,000	\$778,501	\$147
11522	3/3/2010	Fort Kent, ME; West Main Replacement& Recon	8671							2500				20	2580	\$596,517	75.5%	\$723,617	\$739,807	\$287
11302	3/5/2010	Rochester, NH; Cochecho Est **	8671		300					9700					10000	\$1,793,385	82.4%	\$1,927,685	\$1,970,814	\$197
10989	2/5/20089	Madawaska, ME; US Rte One	8094							9100					9120	\$955,214	93.0%	\$1,176,183	\$1,288,221	\$141
11439	4/230/2009	Bath, ME: Oak Grove	8528							3750				30	3880	\$488,958	81.2%	\$576,401	\$599,179	\$154
10177B	7/28/2010	Bow contract 4 & 6	8864							11600				200	11900	\$845,122	84.8%	\$1,183,122	\$1,183,255	\$99
10708A	3/15/2007	Rochester, NH Old Dover Rd	7856							4300					4350	\$922,500	71.4%	\$1,199,550	\$1,353,616	\$276
10530	9/8/2005	Rochester Whitehall Rd	7520		65					6675					6765	\$1,087,793	76.9%	\$1,231,293	\$1,451,518	\$182
10811	8/1/2006	Auburn Lewiston Empire Roads	7723							16800					17100	\$797,180	88.3%	\$837,180	\$960,974	\$49
F	6/24/2003	Hinsdale Main Replacement	6695							9200					10550	\$684,857	95.2%	\$821,828	\$0	\$78
F	6/24/2003	Hinsdale Proposed Main Extenstions	6695							7000					11900	\$1,092,142	83.3%	\$1,310,570	\$0	\$110
F	2009	Milford-Ashley Commons Interconnection	8566							3780				270	4600	\$429,217	83.3%	\$515,060	\$0	\$112
F	2009	Jaffrey-Jaffrey WW-Cathedral/Prescott Rd	8566							3975					3975	\$477,832	80.7%	\$591,823	\$0	\$149
F	2009	Peterborough-Peterborough WW-Rte. 101/Old St	8566							3125					3125	\$642,512	93.7%	\$686,012	\$0	\$220
F	2009	Tilton-TNWD-West Main	8566							3600					3600	\$533,025	76.0%	\$701,670	\$0	\$195
F	2006	Rochester-Rochester WD-Washington St. Ph.1	7751							5000					5000	\$993,665	80.0%	\$1,241,665	\$0	\$248
N	7/29/2010	Derry-Drew Woods-East Derry Interconnection	8743							6800				4200	12920	\$1,070,849	83.3%	\$1,285,019	\$0	\$99
Average Total Developed Cost per Linear Foot																			\$161	
Proj #	Project Date	Project Location/client	ENR	24	20	18	14	12	10	8	6	4	2	Total LF	Total Actual Construction	Total Actual Development	Development Indexed	\$/LF for 8-inch projects		
11360	10/14/2009	Jay, ME; Jay Hill Improvements	8596							2366				40	2406	\$183,295	76.4%	\$240,050	\$247,562	\$103
11366	5/26/2010	Grafton, MA: Deermolm Rd	8761							950				20	970	\$89,955	84.2%	\$106,855	\$108,123	\$111
12088	8/24/2010	Bath, ME: Gerald St and Beacon Rd								1200				25	1245	\$264,241	106.9%	\$247,260		\$199
10282D	8/24/2004	Rangeley Water District; Cottage Ave Main Replacement	7187							950					950	\$90,000	70.2%	\$128,200	\$158,132	\$135
10578	12/14/2006	Jackson, NH Green Hill Rd	7888							940					940	\$109,217	87.9%	\$124,217	\$139,602	\$132
10652	1/22/2007	Westbrook, ME; Myrtle St	7879							7185				10	7445	\$728,000	93.5%	\$778,700	\$876,149	\$105
10384D	3/8/2005	BBRWD Murray Hill Water Main Ext	7415							2765				60	4559	\$75,900	65.5%	\$115,900	\$138,564	\$25
F	12/1/2006	Hill WW- New Chester Road Main Replacement	7751							3200				1734	3200	\$338,150	77.5%	\$436,250	\$0	\$136
F	9/1/2005	Lancaster Water Dept Main Exetensions	7448							7150				3450	11010	\$1,077,900	83.3%	\$1,293,480	\$0	\$117
F	9/1/2005	Lancaster Water Dept Main Reconstrction	7448							1500				90	1590	\$178,300	83.3%	\$213,960	\$0	\$135
F	2009	Epping-Old Stagecoach-Interconnection	8566							3160					3160	\$197,532	90.5%	\$218,232	\$0	\$69
F	2009	Milford-Ashley Commons-Interconnection	8566							4600					4600	\$429,217	83.3%	\$515,060	\$0	\$112
F	2010	Franklin-Franklin WW-Hill Road Main Repl	8566							2600					2600	\$390,000	88.6%	\$440,000	\$0	\$169
F	2010	Colebrook-Colebrook WD-Water main Ext.	8743							5485					5485	\$652,915	80.7%	\$808,957	\$0	\$147
N	2008	Derry-Maple Hill Interconnection-Dist. Improv.	8362							1725					1725	\$191,986	83.3%	\$230,383	\$0	\$134
Average Total Developed Cost per Linear Foot																			\$122	
Proj #	Project Date	Project Location/client	ENR	24	20	18	14	12	10	8	6	4	2	Total LF	Total Actual Construction	Total Actual Development	Development Indexed	\$/LF for 6-inch projects		
F	2009	ashua-PWW-Haines Street Water Main Improvemen	8566											210	2585	\$335,665	83.3%	\$402,798	\$0	\$156
F	2009	Nashua-PWW-Water Main Improvements	8566												975	\$289,190	83.3%	\$347,028	\$0	\$356
F	2009	Nashua-PWW-French Hill Restoration/Replacement	8566											355	7850	\$1,157,000	83.3%	\$1,388,400	\$0	\$177
F	2009	Milton-Milton WD-Charles St	8566												1470	\$314,290	76.6%	\$410,290	\$0	\$279
F	2010	Franconia-Franconia WD-Replacement mains	8743											18800	18800	\$1,878,300	75.5%	\$2,489,300	\$0	\$132
F	2009	Keene-Keene WD-Replacement mains	8566											6525	6525	\$1,056,729	88.5%	\$1,193,489	\$0	\$183
F	2010	Keene-Keene WD-Replacement mains	8743											5190	5190	\$1,102,000	83.4%	\$1,321,286	\$0	\$255
N	2008	Barnstead-Locke Lake Interconnection-Dist. Improv.	8362											1655	1655	\$175,230	83.3%	\$210,276	\$0	\$127
Average Total Developed Cost per Linear Foot																			\$208	
Proj #	Project Date	Project Location/client	ENR	24	20	18	14	12	10	8	6	4	2	Total LF	Total Actual Construction	Total Actual Development	Development Indexed	\$/LF for One 4-inch project		
N	2009	Charlestown-Windy Acres Coop-Water line repl.	8566											1700	1700	\$161,286	86.6%	\$186,286	\$0	\$110
Outlier Removed from Data Set																				
Proj #	Project Date	Project Location/client	ENR	24	20	18	14	12	10	8	6	4	2	Total LF	Total Actual Construction	Total Actual Development	Development Indexed	\$/LF for outlier projects		
10494	7/12/2005	Portsmouth Rte 155 in Madbury	7421	700										700	\$568,245	47.3%	\$1,201,198	\$1,434,931	\$1,716	
F	5/1/2000	Charlestown Main Replacement	6221											12650	\$3,539,721	81.3%	\$4,352,665	\$0	\$79	
F	2009	Greenville-Greenville Estates-Interconnection	8566											14300	\$1,860,200	80.6%	\$2,308,200	\$0	\$161	
Average Total Developed Cost per Linear Foot																			\$159	

B.2.4 Estimated Service Life

After application of the unit construction cost to each pipe diameter length to achieve an estimated 2010 replacement cost for each diameter, the annualized cost was then determined based on an estimated useful life of pipeline assets. For fire protected systems, service life of all mains was assumed to be 100 years. It is recognized, that some pipe line materials may have longer useful lives than other materials, but an average life of 100 years was assumed to represent an average performance life for a water main for small, medium and large water systems with fire protection. In this step of the model, the 2010 construction cost was divided by the estimated service life of the pipe to achieve an annual replacement cost for each diameter, which were then summed back together to achieve an annual replacement cost for the water system datapoint.

B.2.5 Determining the Aggregated Fire Protected System Estimated Replacement Cost

The service life adjusted costs by diameter were then summed to obtain an estimated yearly need for each water system in the database. This value was multiplied by 20 to find the 20-year need. The final model incorporating all the steps listed above are displayed in the Excel spreadsheet Table B-7. For breaking replacement costs according to system size, the original EPA ID population groupings are used for the summation (as opposed to the model groupings). This is because the EPA ID number groupings are often used as cut-off points in other planning areas and for this reason, reporting the results in conformance with the EPA groupings may make use of the results easier.

Table B-7: Fire-Protected Systems Pipe Cost Model

		Length of Diameter Distribution for FP Systems																																										
		< 2" Lengths	2" - 4" Lengths	6" Lengths	8" Lengths	10 and 12-inch Lengths	14"-16"	18"-20"	> 24"									Total Value for 2010	Average Annual Expenditures for 2010 to 2030	Total Collected Over 20 Years	For Population Subcategories																							
		< 2" Lengths	2" - 4" Lengths	6" Lengths	8" Lengths	10 and 12-inch Lengths	14"-16"	18"-20"	> 24"									2-inch Value	3 to 4-in Value	6-in Value	8-in Value	10 and 12-in Value	14"-16"	18"-20"	> 24"	Total 2010	20 Yr Need																	
SYSTEM NAME	EPA ID	POPULATION SERVED	System Pipe Length, Feet (see above cells)																																									
For systems w/ Pop < 500		Length (ft) = 103.35x (pop ^{0.8989})	≤ 500	1	1%	8%	23%	52%	16%	0%	0%	0%	Average 2010 Cost per Linear Foot								\$110	\$110	\$120	\$120	\$160	\$200	\$240	\$240																
For systems w/ Pop 501 -3,300 (model equ also applied to systems from 3300 to 4000)		Length (ft) = 37.848x + 4356	501-3300	2	1%	7%	41%	25%	25%	1%	0%	0%	Average 2010 Cost per Linear Foot								\$110	\$110	\$120	\$120	\$160	\$200	\$240	\$240																
Linear Equation model for systems w/ Pop > 4000 - 45000		Length (ft) = (21.332 x Population)+ 121514	3,301-40,000	3	1%	3%	30%	28%	30%	5%	2%	1%	Average 2010 Cost per Linear Foot								\$110	\$110	\$120	\$120	\$160	\$200	\$240	\$240																
Systems > 45,000		Not modeled because inventory available	40,001 - 133,000	4	0%	5%	20%	39%	22%	7%	3%	3%	Average 2010 Cost per Linear Foot								2-inch Value	3 to 4-in Value	6-in Value	8-in Value	10 and 12-in Value	14"-16"	18"-20"	> 24"	Total Value for 2010	Average Annual Expenditures for 2010 to 2030	Total Collected Over 20 Years	For Population Subcategories												
																							Total 2010 Estimated Replacement Cost of Fire Protected System Distribution and Transmission Main Piping		\$	3,358,179,815	\$	33,581,798	\$	671,635,963	Total 2010		20 Yr Need											
																							Estimated 2010 Replacement Cost by Diameter Segment																					
SILVER LAKE LANDING SR HOUSING	1462040	25	1,866	1	19	149	429	970	299	0	0	0	\$	2,053	\$	16,421	\$	51,502	\$	116,440	\$	47,770	\$	-	\$	-	\$	234,187	\$	2,342	\$	46,837												
GORHAM HILL SPRING	0921020	55	3,791	1	38	303	872	1,971	607	0	0	0	\$	4,170	\$	33,358	\$	104,624	\$	236,541	\$	97,043	\$	-	\$	-	\$	475,736	\$	4,757	\$	95,147												
18 HUGHES LANE EFFINGHAM	0732040	60	4,099	1	41	328	943	2,132	656	0	0	0	\$	4,509	\$	36,072	\$	113,136	\$	255,785	\$	104,937	\$	-	\$	-	\$	514,440	\$	5,144	\$	102,888												
GRASMERE WP/LANDMARK	911030	90	5,902	1	59	472	1,357	3,069	944	0	0	0	\$	6,492	\$	51,935	\$	162,888	\$	368,288	\$	151,084	\$	-	\$	-	\$	740,667	\$	7,407	\$	148,133												
HADLEIGH WOODS	2542160	109	7,011	1	70	561	1,612	3,645	1,122	0	0	0	\$	7,712	\$	61,693	\$	193,492	\$	437,459	\$	179,471	\$	-	\$	-	\$	879,826	\$	8,798	\$	175,965												
GREEN VALLEY MOBILE HOME PARK	2533020	115	7,357	1	74	589	1,692	3,825	1,177	0	0	0	\$	8,092	\$	64,737	\$	203,040	\$	459,046	\$	188,327	\$	-	\$	-	\$	923,242	\$	9,232	\$	184,648												
LITTLE POND ESTATES	192080	118	7,529	1	75	602	1,732	3,915	1,205	0	0	0	\$	8,282	\$	66,253	\$	207,795	\$	469,797	\$	192,737	\$	-	\$	-	\$	944,863	\$	9,449	\$	188,973												
BELMONT WATER DEPT/NORTH	201020	150	9,341	1	93	747	2,148	4,857	1,495	0	0	0	\$	10,275	\$	82,202	\$	257,815	\$	582,886	\$	239,133	\$	-	\$	-	\$	1,172,310	\$	11,723	\$	234,462												
PEU/WHISPERING WINDS	1851020	160	10,066	1	96	787	2,214	5,004	1,611	0	0	0	\$	11,072	\$	88,579	\$	277,815	\$	628,102	\$	257,683	\$	-	\$	-	\$	1,263,251	\$	12,633	\$	252,650												
FREEDOM WATER PRECINCT	0861010	163	10,066	1	101	805	2,315	5,234	1,611	0	0	0	\$	11,072	\$	88,579	\$	277,815	\$	628,102	\$	257,683	\$	-	\$	-	\$	1,263,251	\$	12,633	\$	252,650												
GOODRICH PROPERTY	0162350	175	10,729	1	107	858	2,468	5,579	1,717	0	0	0	\$	11,802	\$	94,419	\$	296,133	\$	669,518	\$	274,674	\$	-	\$	-	\$	1,346,546	\$	13,465	\$	269,309												
HOPKINTON VILLAGE PRECINCT	1191020	215	12,910	1	129	1,033	2,969	6,713	2,066	0	0	0	\$	14,201	\$	113,611	\$	356,327	\$	805,608	\$	330,506	\$	-	\$	-	\$	1,620,254	\$	16,203	\$	324,051												
PEU/SPRINGWOOD HILLS	1382260	218	12,981	1	124	990	2,848	6,438	1,981	0	0	0	\$	13,619	\$	108,953	\$	341,716	\$	772,574	\$	316,954	\$	-	\$	-	\$	1,553,816	\$	15,538	\$	310,763												
TENNEY BROOK II	1942010	228	13,610	1	136	1,089	3,130	7,077	2,178	0	0	0	\$	14,971	\$	119,768	\$	375,636	\$	849,264	\$	348,416	\$	-	\$	-	\$	1,708,055	\$	17,081	\$	341,611												
PLAINFIELD VILLAGE WATER DIST	1921010	248	14,679	1	147	1,174	3,376	7,633	2,349	0	0	0	\$	16,146	\$	129,171	\$	405,128	\$	915,941	\$	375,771	\$	-	\$	-	\$	1,842,158	\$	18,422	\$	368,432												
CARDIGAN MOUNTAIN SCH	0354010	300	17,418	1	174	1,393	4,006	9,057	2,787	0	0	0	\$	19,160	\$	153,277	\$	480,733	\$	1,086,874	\$	445,897	\$	-	\$	-	\$	2,185,941	\$	21,859	\$	437,188												
MONROE WATER DEPARTMENT	1591010	300	17,418	1	174	1,393	4,006	9,057	2,787	0	0	0	\$	19,160	\$	153,277	\$	480,733	\$	1,086,874	\$	445,897	\$	-	\$	-	\$	2,185,941	\$	21,859	\$	437,188												
NORTH STRATFORD WATER DEPT	2221010	300	17,418	1	174	1,393	4,006	9,057	2,787	0	0	0	\$	19,160	\$	153,277	\$	480,733	\$	1,086,874	\$	445,897	\$	-	\$	-	\$	2,185,941	\$	21,859	\$	437,188												
GEORGES MILLS WATER WORKS	2271020	315	18,199	1	182	1,456	4,198	9,463	2,912	0	0	0	\$	20,019	\$	160,149	\$	502,286	\$	1,135,603	\$	465,888	\$	-	\$	-	\$	2,283,945	\$	22,839	\$	456,789												
NORTH CHARLESTOWN WATER DEPT	0411020	325	25,043	1	250	2,003	5,760	13,022	4,007	0	0	0	\$	27,547	\$	220,378	\$	691,187	\$	1,562,683	\$	641,101	\$	-	\$	-	\$	3,142,897	\$	31,429	\$	628,579												
HILL WATER WORKS	1131010	350	20,007	1	200	1,601	4,602	10,403	3,201	0	0	0	\$	22,007	\$	176,058	\$	552,182	\$	1,248,412	\$	512,169	\$	-	\$	-	\$	2,510,828	\$	25,108	\$	502,166												
HOLDERNESS SCH	1164010	350	20,007	1	200	1,601	4,602	10,403	3,201	0	0	0	\$	22,007	\$	176,058	\$	552,182	\$	1,248,412	\$	512,169	\$	-	\$	-	\$	2,510,828	\$	25,108	\$	502,166												
HALES LOCATION	1021010	385	21,796	1	218	1,744	5,013	11,334	3,487	0	0	0	\$	23,976	\$	191,807	\$	601,576	\$	1,360,084	\$	557,983	\$	-	\$	-	\$	2,735,425	\$	27,354	\$	547,085												
HILLSBORO COUNTY COMPLEX	911040	385	21,796	1	218	1,744	5,013	11,334	3,487	0	0	0	\$	23,976	\$	191,807	\$	601,576	\$	1,360,084	\$	557,983	\$	-	\$	-	\$	2,735,425	\$	27,354	\$	547,085												
LACONIA CORRECTIONAL FACILITY	1281020	400	22,558	1	226	1,805	5,188	11,730	3,609	0	0	0	\$	24,814	\$	198,511	\$	622,603	\$	1,407,624	\$	577,487	\$	-	\$	-	\$	2,831,040	\$	28,310	\$	566,208												
HANCOCK WATER WORKS	1061010	413	23,216	1	232	1,857	5,340	12,072	3,715	0	0	0	\$	25,538	\$	204,301	\$	640,762	\$	1,448,680	\$	594,330	\$	-	\$	-	\$	2,913,612	\$	29,136	\$	582,722												
MITTERSILL WATER DEPARTMENT	0841020	475	26,326	1	263	2,106	6,055	13,690	4,212	0	0	0	\$	28,959	\$	231,672	\$	726,607	\$	1,642,763	\$	673,954	\$	-	\$	-	\$	3,303,955	\$	33,040	\$	660,791												
CHESHIRE COUNTY COMPLEX	2494010	480	26,575	1	266	2,126	6,112	13,919	4,252	0	0	0	\$	29,233	\$	233,863	\$	733,478	\$	1,658,299	\$	680,328	\$	-	\$	-	\$	3,335,201	\$	33,352	\$	667,040												
NEWFIELDS VIL WATER AND SEWER	1581010	500	27,569	1	276	2,205	6,341	14,336	4,411	0	0	0	\$	30,325	\$	242,604	\$	760,893	\$	1,720,280	\$	705,758	\$	-	\$	-	\$	3,459,859	\$	34,599	\$	691,972												
WARNER VILLAGE WATER DISTRICT	2411010	500	27,569	1	276	2,205	6,341	14,336	4,411	0	0	0	\$	30,325	\$	242,604	\$	760,893	\$	1,720,280	\$	705,758	\$	-	\$	-	\$	3,459,859	\$	34,599	\$	691,972												
JACKSON WATER PRECINCT	1211010	500	27,569	1	276	2,205	6,341	14,336	4,411	0	0	0	\$	30,325	\$	242,604	\$	760,893	\$	1,720,280	\$	705,758	\$	-	\$	-	\$	3,459,859	\$	34,599	\$	691,972												
PRECINCT OF HAVERHILL CORNER	1101010	540	24,794	2	248	1,736	5,016	11,334	3,487	0	0	0	\$	27,273	\$	190,913	\$	1,219,861	\$	743,818	\$	991,757	\$	49,588	\$	-	\$	3,223,210	\$	32,232	\$	644,642												
PEU /WHITE ROCK SENIOR LIVING	0262050	547	24,794	2	248	1,736	5,016	11,334	3,487	0	0	0	\$	27,273	\$	190,913	\$	1,219,861	\$	743,818	\$	991,757	\$	49,588	\$	-	\$	3,223,210	\$	32,232	\$	644,642												
CAMPTON VILLAGE PCT	0341010	550	25,172	2	252	1,762	5,013	11,334	3,487	0	0	0	\$	27,690	\$	193,827	\$	1,238,482	\$	75																								

Length of Diameter Distribution for FP Systems																									
			< 2" Lengths	2" - 4" Lengths	6" Lengths	8" Lengths	10 and 12-inch Lengths	14"-16"	18"-20"	≥24"															
For systems w/ Pop < 500			Length (ft) = 103.35x (pop^0.8989)	≤ 500	1	1%	8%	23%	52%	16%	0%	0%	Average 2010 Cost per Linear Foot												
For systems w/ Pop 501 -3,300 (model equ also applied to systems from 3300 to 4000)			Length (ft) = 37.848x + 4356	501-3300	2	1%	7%	41%	25%	25%	1%	0%													
Linear Equation model for systems w/ Pop > 4000 - 45000			Length (ft) = (21.332 x Population)+ 121514	3,301-40,000	3	1%	3%	30%	28%	30%	5%	2%	\$110	\$110	\$120	\$120	\$160	\$200	\$240	\$240					
Systems > 45,000			Not modeled because inventory available	40,001 - 133,000	4	0%	5%	20%	39%	22%	7%	3%	2-inch Value	3 to 4-in Value	6-in Value	8-in Value	10 and 12-in Value	14'-16"	18'-20"	≥24"	Total Value for 2010	Average Annual Expenditures for 2010 to 2030	Total Collected Over 20 Years	For Population Subcategories	
WHITEFIELD WATER	2501010	1450	59,236	2	592	4,146	24,287	14,809	14,809	592	0	0	\$ 65,159	\$ 456,114	\$ 2,914,302	\$ 1,777,068	\$ 2,389,424	\$ 118,471	\$ -	\$ -	\$ -	\$ 7,700,628	\$ 77,006	\$ 1,540,126	
ASHLAND WATER DEPARTMENT	0101010	1500	61,128	2	611	4,279	25,062	15,282	15,282	611	0	0	\$ 67,241	\$ 470,686	\$ 3,007,498	\$ 1,833,840	\$ 2,445,120	\$ 122,256	\$ -	\$ -	\$ -	\$ 7,946,640	\$ 79,466	\$ 1,589,328	
SANBORNVILLE WATER DEPARTMENT	2391010	1500	43,102	2	431	3,017	17,672	10,776	10,776	431	0	0	\$ 47,412	\$ 331,885	\$ 2,120,618	\$ 1,293,060	\$ 1,724,080	\$ 86,204	\$ -	\$ -	\$ -	\$ 5,603,260	\$ 56,033	\$ 1,120,652	
PITTSFIELD AQUEDUCT	1910100	1595	74,448	2	744	5,211	30,524	18,612	18,612	744	0	0	\$ 81,893	\$ 573,250	\$ 3,662,842	\$ 2,233,440	\$ 2,977,920	\$ 148,896	\$ -	\$ -	\$ -	\$ 9,678,240	\$ 96,782	\$ 1,935,648	
HINSDALE WATER DEPT DOWNTOWN	1151020	1600	47,400	2	474	3,318	19,434	11,850	11,850	474	0	0	\$ 52,140	\$ 364,980	\$ 2,332,080	\$ 1,422,000	\$ 1,896,000	\$ 94,800	\$ -	\$ -	\$ -	\$ 6,162,000	\$ 61,620	\$ 1,232,400	
FRANKLIN PIERCE UNIVERSITY	1994010	1600	64,913	2	649	4,544	26,614	16,228	16,228	649	0	0	\$ 71,404	\$ 499,829	\$ 3,193,710	\$ 1,947,384	\$ 2,596,512	\$ 129,826	\$ -	\$ -	\$ -	\$ 8,438,664	\$ 84,387	\$ 1,687,733	
CONTOCOOK VILLAGE PRECINCT	1191010	1600	64,913	2	649	4,544	26,614	16,228	16,228	649	0	0	\$ 71,404	\$ 499,829	\$ 3,193,710	\$ 1,947,384	\$ 2,596,512	\$ 129,826	\$ -	\$ -	\$ -	\$ 8,438,664	\$ 84,387	\$ 1,687,733	
WILTON WATER WORKS	2521010	1665	67,373	2	674	4,716	27,623	16,843	16,843	674	0	0	\$ 74,110	\$ 518,771	\$ 3,314,748	\$ 2,021,188	\$ 2,694,917	\$ 134,746	\$ -	\$ -	\$ -	\$ 8,758,480	\$ 87,585	\$ 1,751,696	
ROLLINSFORD WATER AND SEWER	2011010	1688	68,243	2	682	4,777	27,980	17,061	17,061	682	0	0	\$ 75,068	\$ 525,474	\$ 3,357,576	\$ 2,047,303	\$ 2,729,737	\$ 136,487	\$ -	\$ -	\$ -	\$ 8,871,645	\$ 88,716	\$ 1,774,329	
BETHELEHEM VILLAGE DISTRICT	1700	1730	177,257	2	1,773	12,408	72,675	44,314	44,314	1,773	0	0	\$ 194,983	\$ 1,364,879	\$ 8,721,044	\$ 5,317,710	\$ 7,080,280	\$ 354,514	\$ -	\$ -	\$ -	\$ 23,043,410	\$ 230,434	\$ 4,608,682	
ALTON WATER WORKS	0061010	1750	70,590	2	706	4,941	28,942	17,648	17,648	706	0	0	\$ 77,649	\$ 543,543	\$ 3,473,028	\$ 2,117,700	\$ 2,833,600	\$ 141,180	\$ -	\$ -	\$ -	\$ 9,176,700	\$ 91,767	\$ 1,835,340	
NORTH HINSDALE WATER DEPT	1151010	1800	32,130	2	321	2,249	13,173	8,033	8,033	321	0	0	\$ 35,343	\$ 247,401	\$ 1,580,796	\$ 963,900	\$ 1,285,200	\$ 64,260	\$ -	\$ -	\$ -	\$ 4,176,900	\$ 41,769	\$ 835,380	
CONWAY VILLAGE FIRE DISTRICT	0510100	1937	77,668	2	777	5,437	31,844	19,417	19,417	777	0	0	\$ 85,434	\$ 598,040	\$ 3,821,245	\$ 2,330,027	\$ 3,106,703	\$ 155,335	\$ -	\$ -	\$ -	\$ 10,096,785	\$ 100,968	\$ 2,019,357	
WOODSVILLE WATER AND LIGHT	1101040	2000	80,052	2	801	5,604	32,821	20,013	20,013	801	0	0	\$ 88,057	\$ 616,400	\$ 3,938,558	\$ 2,401,560	\$ 3,202,080	\$ 160,104	\$ -	\$ -	\$ -	\$ 10,406,760	\$ 104,068	\$ 2,081,352	
HILLSBOROUGH WATER WORKS	1141010	2000	80,052	2	801	5,604	32,821	20,013	20,013	801	0	0	\$ 88,057	\$ 616,400	\$ 3,938,558	\$ 2,401,560	\$ 3,202,080	\$ 160,104	\$ -	\$ -	\$ -	\$ 10,406,760	\$ 104,068	\$ 2,081,352	
SUNAPEE WATER WORKS	2271010	2082	83,156	2	832	5,821	34,094	20,789	20,789	832	0	0	\$ 91,471	\$ 640,298	\$ 4,091,252	\$ 2,494,666	\$ 3,326,221	\$ 166,311	\$ -	\$ -	\$ -	\$ 10,810,220	\$ 108,102	\$ 2,162,044	
HOOKSETT VILLAGE WATER PRCT	1181020	2250	89,514	2	895	6,266	36,701	22,379	22,379	895	0	0	\$ 98,465	\$ 689,258	\$ 4,404,089	\$ 2,685,420	\$ 3,580,560	\$ 179,028	\$ -	\$ -	\$ -	\$ 11,636,820	\$ 116,368	\$ 2,327,364	
LANCASTER WATER DEPARTMENT	1291010	2450	141,000	2	1,410	9,870	57,810	35,250	35,250	1,410	0	0	\$ 155,100	\$ 1,085,700	\$ 6,937,200	\$ 4,230,000	\$ 5,640,000	\$ 282,000	\$ -	\$ -	\$ -	\$ 18,330,000	\$ 183,300	\$ 3,666,000	
CHARLESTOWN WATER WORKS	0410100	2500	96,626	2	966	6,904	40,437	24,657	24,657	966	0	0	\$ 108,489	\$ 759,420	\$ 4,852,399	\$ 2,958,780	\$ 3,945,040	\$ 197,252	\$ -	\$ -	\$ -	\$ 12,821,380	\$ 128,214	\$ 2,564,276	
COOSWELL SPRINGS WATER WORKS	1121010	2500	98,976	2	990	6,928	40,580	24,744	24,744	990	0	0	\$ 108,874	\$ 762,115	\$ 4,869,619	\$ 2,969,280	\$ 3,959,040	\$ 197,952	\$ -	\$ -	\$ -	\$ 12,866,880	\$ 128,669	\$ 2,573,376	
TILTON NORTHFIELD WATER DIST	2351010	2500	98,976	2	990	6,928	40,580	24,744	24,744	990	0	0	\$ 108,874	\$ 762,115	\$ 4,869,619	\$ 2,969,280	\$ 3,959,040	\$ 197,952	\$ -	\$ -	\$ -	\$ 12,866,880	\$ 128,669	\$ 2,573,376	
SAINT ANSELM COLLEGE	1472020	2500	98,976	2	990	6,928	40,580	24,744	24,744	990	0	0	\$ 108,874	\$ 762,115	\$ 4,869,619	\$ 2,969,280	\$ 3,959,040	\$ 197,952	\$ -	\$ -	\$ -	\$ 12,866,880	\$ 128,669	\$ 2,573,376	
GORHAM WATER AND SEWER DEPT	0921010	2630	103,896	2	1,039	7,273	42,597	25,974	25,974	1,039	0	0	\$ 114,286	\$ 800,001	\$ 5,111,695	\$ 3,116,887	\$ 4,155,850	\$ 207,792	\$ -	\$ -	\$ -	\$ 13,506,511	\$ 135,065	\$ 2,701,302	
MEREDITH WATER DEPARTMENT	1521010	2635	101,759	2	1,018	7,123	41,721	25,440	25,440	1,018	0	0	\$ 111,935	\$ 783,544	\$ 5,006,538	\$ 3,052,767	\$ 4,070,356	\$ 203,518	\$ -	\$ -	\$ -	\$ 13,228,657	\$ 132,287	\$ 2,645,731	
GROVETON WATER SYSTEM	1781010	2650	104,653	2	1,047	7,326	42,908	26,163	26,163	1,047	0	0	\$ 115,119	\$ 805,830	\$ 5,148,937	\$ 3,139,596	\$ 4,186,128	\$ 209,306	\$ -	\$ -	\$ -	\$ 13,604,916	\$ 136,049	\$ 2,720,983	
RAYMOND WATER DEPARTMENT	1971010	2682	105,864	2	1,059	7,411	43,404	26,466	26,466	1,059	0	0	\$ 116,451	\$ 815,155	\$ 5,208,525	\$ 3,175,930	\$ 4,234,573	\$ 211,729	\$ -	\$ -	\$ -	\$ 13,762,364	\$ 137,624	\$ 2,752,473	
HAMPSTEAD AREA WATER	1031010	2723	107,416	2	1,074	7,519	44,041	26,854	26,854	1,074	0	0	\$ 118,158	\$ 827,104	\$ 5,284,872	\$ 3,222,483	\$ 4,286,644	\$ 214,832	\$ -	\$ -	\$ -	\$ 13,964,094	\$ 139,641	\$ 2,792,819	
NEW LONDON SPRINGFIELD WATER	1721010	2750	108,438	2	1,084	7,591	44,460	27,110	27,110	1,084	0	0	\$ 119,282	\$ 834,973	\$ 5,335,150	\$ 3,253,140	\$ 4,337,520	\$ 216,876	\$ -	\$ -	\$ -	\$ 14,096,940	\$ 140,969	\$ 2,819,388	
LINCOLN WATER WORKS	1351010	2750	108,438	2	1,084	7,591	44,460	27,110	27,110	1,084	0	0	\$ 119,282	\$ 834,973	\$ 5,335,150	\$ 3,253,140	\$ 4,337,520	\$ 216,876	\$ -	\$ -	\$ -	\$ 14,096,940	\$ 140,969	\$ 2,819,388	
WINCHESTER WATER DEPARTMENT	2531010	2800	110,330	2	1,103	7,723	45,235	27,583	27,583	1,103	0	0	\$ 121,363	\$ 849,544	\$ 5,428,256	\$ 3,309,912	\$ 4,413,216	\$ 220,661	\$ -	\$ -	\$ -	\$ 14,342,952	\$ 143,430	\$ 2,868,580	
FARMINGTON WATER DEPARTMENT	0810100	3000	117,900	2	1,179	8,253	48,339	29,475	29,475	1,179	0	0	\$ 129,690	\$ 907,830	\$ 5,800,680	\$ 3,537,000	\$ 4,716,000	\$ 235,800	\$ -	\$ -	\$ -	\$ 15,327,000	\$ 153,270	\$ 3,065,400	
GOFFSTOWN VILLAGE PRECINCT	0910100	3000	117,900	2	1,179	8,253	48,339	29,475	29,475	1,179	0	0	\$ 129,690	\$ 907,830	\$ 5,800,680	\$ 3,537,000	\$ 4,716,000	\$ 235,800	\$ -	\$ -	\$ -	\$ 15,327,000	\$ 153,270	\$ 3,065,400	pop 501 - 3,300
WATERVILLE VALLEY WATER DIST	2441010	3050	119,792	2	1,198	8,385	49,115	29,948	29,948	1,198	0	0	\$ 131,772	\$ 922,401	\$ 5,893,786	\$ 3,593,772	\$ 4,791,696	\$ 239,585	\$ -	\$ -	\$ -	\$ 15,573,012	\$ 155,730	\$ 3,114,602	\$ 567,466.166 \$ 113,493.233
BRISTOL WATER WORKS	0301010	3327	114,230	3	1,142	8,347	49,115	30,269	30,269	1,142	2,285	1,142	\$ 125,653	\$ 873,569	\$ 5,412,280	\$ 3,898,128	\$ 5,483,040	\$ 1,142,300	\$ 548,304	\$ 274,152	\$ -	\$ 15,900,816	\$ 159,008	\$ 3,180,163	
CENTRAL HOOKSETT WATER PCT	1181010	3500	136,624	3	1,368	9,405	51,047	38,311	38,311	1,368	2,736	1,368	\$ 150,506	\$ 1,047,519	\$ 6,925,664	\$ 4,925,664	\$ 6,567,552	\$ 1,368,240	\$ 656,755	\$ 328,378	\$ -	\$ 19,045,901	\$ 190,459	\$ 3,809,180	
LOWER BARTLETT WATER PCT	0161020	3506	137,051	3	1,371	9,412	51,115	38,374	38,374	1,371	2,741	1,371	\$ 150,756	\$ 1,052,289	\$ 6,933,839	\$ 4,604,917	\$ 6,578,452	\$ 1,370,511	\$ 657,845	\$ 328,923	\$ -	\$ 19,077,511	\$ 190,775	\$ 3,815,502	
PEULUTCHFIELD	1371010	3608	245,751	3	2,458	17,373	73,725	68,810	73,725	2,458	4,915	2,458	\$ 270,326	\$ 1,910,978	\$ 12,847,036	\$ 8,257,234	\$ 11,796,048	\$ 2,457							

B.3 SUMMARY OF THE METHOD

The following summarizes the steps taken to complete the pipe analysis:

- Separate all water systems into two major categories: Fire-Protected and Non-Fire Protected (based on the assumption that for any given population, a fire protected system would have more and larger pipe than a non-fire protected system). Non-Fire protected systems are discussed in Appendix A of this report.
- Developed a cost set, adjusted to 2010 costs, for actual water main installations classified by main size.
- Compile a sample set of 34 water systems, and tabulate according to main diameters and lengths.
- Frequencies of pipe diameters were determined for sample set. Compared to set of 100 Maine system diameter frequencies as a check.
- A scatter plot was generated for population and pipe lengths for each population category. Outliers were removed from model construction.
- Least squares (regression) analysis (within MS Excel) for each sample's scatter plot (population vs. pipe length) to find the equation that best related population to pipe length.
- Applied the least squares (best fit) equations to each system's population to estimate each an estimated total pipe length for each system.
- Applied diameter frequencies to total pipe length to estimate a length for each diameter in the system.
- Apply cost per linear foot for each diameter,
- Divide cost for each diameter by service life
- Sum across to total annual cost to replace over 100 years.
- Multiply by 20 years for the 20-year need.

B.4 PROJECTIONS OF CAPITAL NEEDS

B.4.1 Systems with Fire Protection

Table B-8 gives the estimated 2010 replacement cost for all water main within fire protected systems with 20 year and annual estimated funding need included.

TABLE B-8
PROJECTED FIRE PROTECTED PIPE SYSTEMS NEEDS IN NEW HAMPSHIRE

Water System Asset Category	Est'd Number of Water Systems in New Hampshire	Est'd Replacement Cost of Distribution Systems (2010)	Est'd Avg Useful Life of Distribution System	Avg Annual Expenditures for years 2010 through 2030 (\$M/year)	Total Collected over 20 Years
Small Systems	31	\$62M	100	\$0.6	\$12.4M
Medium Systems	69	\$568M	100	\$5.7	\$113.5M
Large Systems	36	\$2,018M	100	\$20.2	\$403.7M
Very Large Systems	3	\$710M	100	\$7.1	\$142.1M
Total Needs	139	\$3,358 M		\$33.6M	\$671.7M

APPENDIX C
Atmospheric Storage Tanks

APPENDIX C

ATMOSPHERIC STORAGE TANKS

C.1 METHODOLOGY FOR LARGE STORAGE TANKS SERVING FIRE PROTECTED SYSTEMS

Larger storage tanks for fire protection are not numerous in New Hampshire. Over time, NHDES personnel have developed a good listing for this asset. For these reasons, a simple inventory of the storage tanks in the State of New Hampshire was deemed the best way to accurately determine financial need for this asset over the next 20 years.

A sample set of construction costs with dates for various types of tanks was compiled from several sources according to the materials of construction of the tanks (Table C-1). These included actual bid results for twelve projects from the NHDES database, and twenty-five tanks over the past 20 years from Wright-Pierce project bid results. Of the actual projects for which total developed costs were available, 22 were for prestressed concrete tanks (these tended to be the more recent projects with the best cost detail), 12 were for welded steel (these were available from the decade of the late 1980's through the 1990's), two were for elevated composite tanks, two were for bolted glass-lined tanks, and two were for cast-in-place rectangular tanks constructed during the 1990's. These are listed according to style in Table C-1. A prestressed concrete tank manufacturer and glass-lined bolted steel manufacturer each assisted with additional equipment and project costs. For professional services and development costs for projects, the NHDES database contained a historical factor of approximately 11% of total developed cost, on average.

Storage tank unit costs vary from tank to tank for reasons including the materials of construction and the physical configuration of the tank (diameter and height). Storage tanks were first segregated into the following primary categories for the costs analysis:

Table C-1: Large Atmospheric Storage Tanks for Fire Protected Systems: Tabulated Constructed Cost Set by Tank Style

ENR Index for **November** **8951**

EPA ID #	System Name	Town	Tank Material	Year Built	ENR 20-city index	Capacity (Mg)	Construction Cost	Engineering Cost	development multiplier	TOTAL COST	Adjusted to ENR Construction Index (Top of Page)	Composite Elevated \$/gal	Tank Shape
1951010	PORTSMOUTH WATER WORKS	Portsmouth	Composite	2000	6222	1.000	\$1,049,500	\$100,000	1.10	\$ 1,149,500	\$ 1,653,676	\$1.65	Elevated
801010	EXETER WATER DEPT	Exeter	Composite(Steel)	2008	8550	1.500	\$3,200,000	\$339,639	1.11	\$ 3,539,639	\$ 3,705,650	\$2.47	Elevated
		number in sample	2										
EPA ID #	System Name	Town	Tank Material	Year Built	ENR 20-city index	Capacity (Mg)	Construction Cost	Engineering Cost	development multiplier	TOTAL COST	Adjusted to ENR Construction Index (Top of Page)	Prestressed Concrete \$/gal	Tank Shape
231010	BERLIN WATER WORKS	Berlin	Prestressed Concrete	2000	6222	2.000	\$1,484,504	\$120,000	1.08	\$ 1,604,504	\$ 2,308,247	\$1.15	Cylinder
1071010	HANOVER WATER DEPT	Hanover	Prestressed Concrete	2001	6343	0.800	\$685,926	\$7,200	1.01	\$ 693,126	\$ 978,113	\$1.22	Cylinder
612150	DREW WOODS	Derry	Prestressed Concrete	2001	6343	0.225	\$408,994	\$20,000	1.05	\$ 428,994	\$ 605,380	\$2.69	Cylinder
1741010	NEWPORT WATER WORKS	Newport	Prestressed Concrete	2001	6343	1.350	\$861,482	\$63,550	1.07	\$ 925,042	\$ 1,305,384	\$0.97	Cylinder
2361010	TROY WATER WORKS	Troy	Prestressed Concrete	2006	7888	0.500	\$628,830	\$125,651	1.20	\$ 754,481	\$ 856,156	\$1.71	Cylinder
1291010	LANCASTER WATER DEPT	Lancaster	Prestressed Concrete	2007	8090	1.000	\$1,040,588	\$173,740	1.17	\$ 1,214,328	\$ 1,343,566	\$1.34	Cylinder
1581010	MILTON WATER DIST	Milton	Prestressed Concrete	2007	8090	0.300	\$599,651	\$71,500	1.12	\$ 671,151	\$ 742,580	\$2.48	Cylinder
461010	CLAREMONT WATER DEPT	Claremont	Prestressed Concrete	2007	8090	0.500	\$643,360	\$51,210	1.08	\$ 694,570	\$ 768,491	\$1.54	Cylinder
1871010	PETERBOROUGH WATER WORKS	Peterborough	Prestressed Concrete	2009	8641	0.750	\$701,711	\$95,634	1.14	\$ 797,345	\$ 825,950	\$1.10	Cylinder
	Bow, NH		Prestressed Concrete	2010	8864	1.00	\$1,326,008	\$159,121	1.12	\$ 1,485,129	\$ 1,499,705	\$1.50	Cylinder
	PlainvilleMA		Prestressed Concrete	2003	6635	0.50	\$493,592	\$57,838	1.10	\$ 551,430	\$ 743,912	\$1.49	Cylinder
	Norfolk MA		Prestressed Concrete	2002	6538	1.10	\$1,020,074	\$119,530	1.10	\$ 1,139,604	\$ 1,560,201	\$1.42	Cylinder
	Plainville MA		Prestressed Concrete	2001	6343	1.50	\$1,020,745	\$119,609	1.10	\$ 1,140,353	\$ 1,609,223	\$1.07	Cylinder
	Brunswick, ME		Prestressed Concrete	2005	7398	4.00	\$1,762,842	\$63,044	1.04	\$ 1,825,887	\$ 2,209,180	\$0.55	Cylinder
	Bath, ME		Prestressed Concrete	2007	7879	1.28	\$1,531,472	\$170,475	1.11	\$ 1,701,947	\$ 1,933,510	\$1.51	Cylinder
	Bangor		Prestressed Concrete	2009	8578	3.43	\$1,561,049	\$147,019	1.09	\$ 1,708,068	\$ 1,782,340	\$0.52	Cylinder
	Paris		Prestressed Concrete	2007	7856	0.80	\$916,621	\$193,611	1.21	\$ 1,110,232	\$ 1,264,981	\$1.58	Cylinder
	HANOVER WATER DEPT*	Hanover	Prestressed Concrete	2006	7888	1.00	\$868,724	\$171,519	1.20	\$ 1,040,243	\$ 1,180,428	\$1.18	Cylinder
	Boothbay		Prestressed Concrete	2004	6862	0.50	\$925,166	\$185,557	1.20	\$ 1,110,723	\$ 1,448,860	\$2.90	Cylinder
	Bowdoinham		Prestressed Concrete	2005	7355	0.43	\$910,217	\$73,994	1.08	\$ 984,211	\$ 1,197,780	\$2.82	Cylinder
	Lake Arrowhead		Prestressed Concrete	2003	6733	0.40	\$588,267	\$96,224	1.16	\$ 684,491	\$ 909,978	\$2.27	Cylinder
	Waldoboro		Prestressed Concrete	2003	6640	0.50	\$746,697	\$112,500	1.15	\$ 859,197	\$ 1,158,234	\$2.32	Cylinder
		number in sample	22			Average devel multiplier		1.12					
EPA ID #	System Name	Town	Tank Material	Year Built	ENR 20-city index	Capacity (Mg)	Construction Cost	Engineering Cost	development multiplier	TOTAL COST	Adjusted to ENR Construction Index (Top of Page)	Welded Steel Standpipe \$/gal	Tank Shape
991010	GREENVILLE WATER DEPT	Greenville	Welded Steel	2000	6222	0.600	\$456,500	\$91,400	1.20	\$ 547,900	\$ 788,212	\$1.31	Cylinder
	Richmond Utilities District		Welded Steel	1979	3003	0.500	\$375,200	\$75,040	1.17	\$ 450,240	\$ 1,342,024	\$2.68	Cylinder
	Belfast Water District		Welded Steel	1997	5826	0.756	\$395,300	\$47,436	1.17	\$ 442,736	\$ 680,214	\$0.90	Cylinder
	Belfast Water District		Welded Steel	1988	4519	1.241	\$360,200	\$43,224	1.17	\$ 403,424	\$ 799,081	\$0.64	Cylinder
	Boothbay Region Water District		Welded Steel	1997	5826	0.591	\$297,306	\$35,677	1.17	\$ 332,983	\$ 511,591	\$0.87	Cylinder
	Town of North Haven, Maine		Welded Steel	1993	5210	0.286	\$318,150	\$38,178	1.17	\$ 356,328	\$ 612,187	\$2.14	Cylinder
	Pittsfield, ME, Pittsfield Water Department		Welded Steel	1997	5826	0.397	\$330,650	\$39,678	1.17	\$ 370,328	\$ 568,968	\$1.43	Cylinder
	Gardiner Water District		Welded Steel	1988	4519	0.899	\$321,563	\$38,588	1.17	\$ 360,151	\$ 713,368	\$0.79	Cylinder
	Presque Isle Water District		Welded Steel	1990	4732	0.797	\$532,400	\$63,888	1.17	\$ 596,288	\$ 1,127,932	\$1.42	Cylinder
	Rye Water District	Rye	Welded Steel	1996	5620	1.190	\$212,199	\$25,464	1.17	\$ 237,663	\$ 378,479	\$0.32	Cylinder
	Stonington Water Company, Stonington, ME		Welded Steel	1992	4985	0.494	\$246,075	\$29,529	1.17	\$ 275,604	\$ 494,871	\$1.00	Cylinder
	Waterboro Water District, Waterboro, ME		Welded Steel	1992	4985	0.339	\$191,000	\$22,920	1.17	\$ 213,920	\$ 384,112	\$1.13	Cylinder
	Poland Springs, Hollis, ME		Welded Steel	1999	6060	0.293	\$496,000	\$59,520	1.17	\$ 555,520	\$ 820,538	\$2.80	Cylinder
		number in sample	13										
EPA ID #	System Name	Town	Tank Material	Year Built	ENR 20-city index	Capacity (Mg)	Construction Cost	Engineering Cost	development multiplier	TOTAL EST OR ACTUAL COST	Adjusted to ENR Construction Index (Top of Page)	Glass-Lined Bolted Steel Standpipe \$/gal	Tank Shape
	25x74		Glass-lined Bolted Steel	*	2010	0.27	\$390,000		1.26	\$491,400		\$1.82	Cylinder
	25x94		Glass-lined Bolted Steel	*	2010	0.35	\$500,000		1.26	\$630,000		\$1.83	Cylinder
	31x93		Glass-lined Bolted Steel	*	2010	0.50	\$640,000		1.26	\$806,400		\$1.61	Cylinder
	42x82		Glass-lined Bolted Steel	*	2010	0.84	\$725,000		1.26	\$913,500		\$1.09	Cylinder
	20x67 - Welton Tank, GSBSD, Damariscotta, ME		Glass-lined Bolted Steel	2009	8574	0.15	\$371,342		1.26	\$467,891	\$ 488,464	\$3.23	Cylinder
	Based on a quote for BBRWD Mt Pisgah		Glass-lined Bolted Steel	1997	5825	0.30	\$387,032			\$487,660	\$ 749,365	\$2.51	Cylinder
		number in sample	6										
EPA ID #	System Name	Town	Tank Material	Year Built	ENR 20-city index	Capacity (Mg)	Construction Cost	Engineering Cost	development multiplier	TOTAL EST OR ACTUAL COST	Adjusted to ENR Construction Index (Top of Page)	Cast in place Concrete Reservoir	Tank Shape
	Dixfield Water District	Dixfield	Cast-in-Place Concrete	1998	5920	1.03	\$675,000		1.26	\$ 850,500	\$ 1,285,950	\$1.25	rectangular
	Kingfield Water	Kingfield	Cast-in-Place Concrete	1992	4985	0.52	\$345,000		1.26	\$ 434,700	\$ 780,542	\$1.50	rectangular
	Rangleley Water District	Rangleley	Cast-in-Place Concrete	1997	5826	0.50	\$482,000		1.26	\$ 607,320	\$ 933,080	\$1.87	rectangular
		number in sample	3										

- Pre-stressed, Wire-Wound Concrete Tanks
- Elevated Storage Tanks
- Bolted, Glass-Coated Steel Tanks
- Welded Steel Tanks
- Other types of tanks such as cast-in-place buried tanks

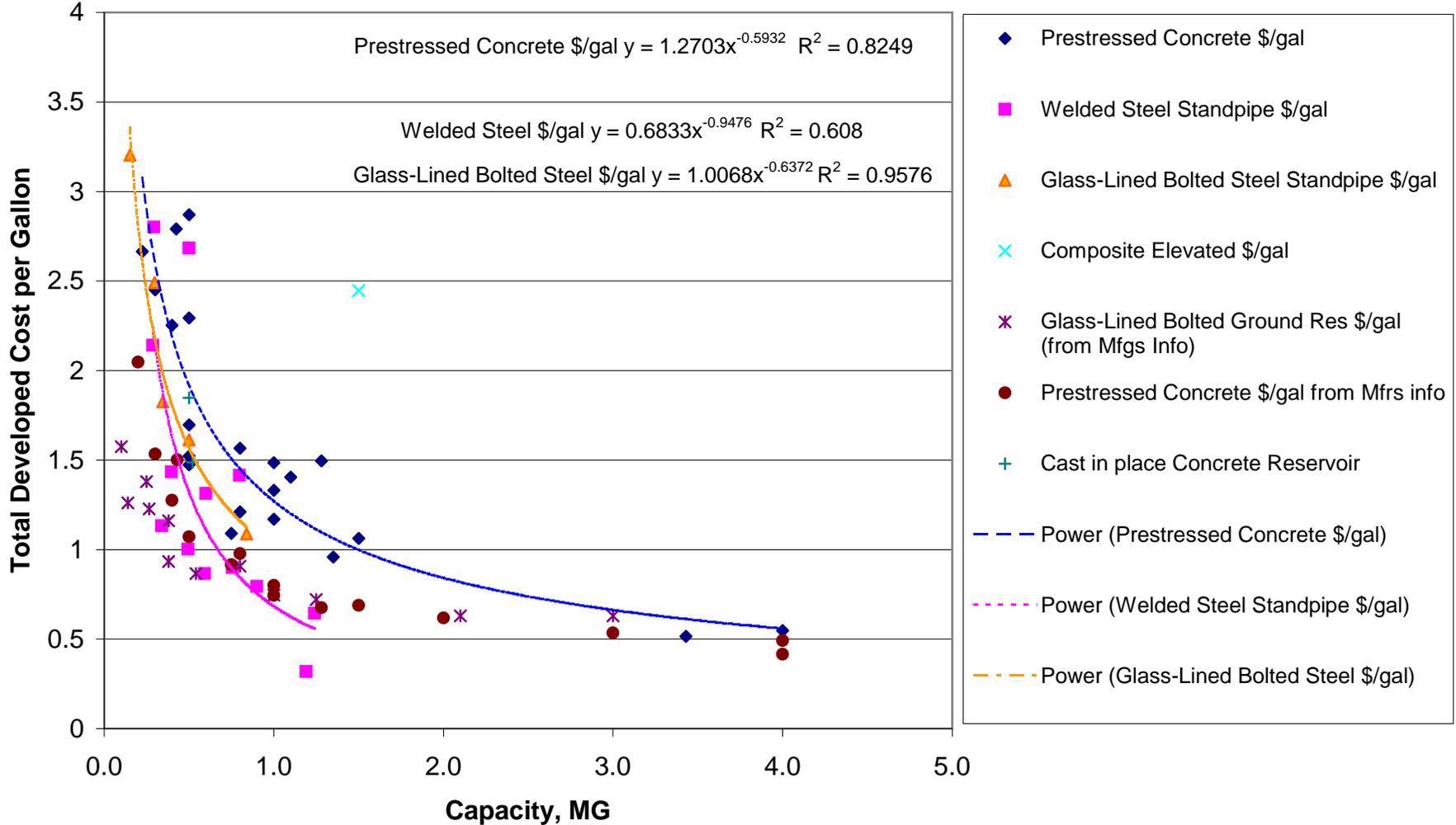
Each total developed cost for the sample set was normalized to year 2010 using the Engineering News Record (ENR) 20-City Construction Cost index. The normalized total developed cost was divided by the volume storage capacity to give a developed cost per gallon. The developed costs per gallon (ordinate) was plotted against the tank capacities (abscissa) in millions of gallons. The data from each subset of tanks suggested that a significant curvilinear statistical relationship was present between storage tank volume (Tank capacity in million gallons (MG)) and cost per gallon.

The statistical relationship was initially investigated for small sample subsets according to materials of construction: prestressed concrete, welded steel and glass-lined bolted steel tanks (Figure C-1). The welded tank information was older and may not have indexed up as accurately as the more recent prestressed concrete tanks. The number of constructed glass-lined bolted steel tank cost examples in the set was very limited, and was therefore supplemented by manufacturer's equipment costs adjusted by factors. Ultimately the indexed developed costs for all styles of tank were grouped together (Figure C-2). This single grouping regression equation ($\$/\text{gal } y = 1.1716 x (\text{Storage Capacity})^{-0.502}$; $R^2 = 0.4751$) was applied to the complete tank inventory in the NHDES database where tank capacity was known.

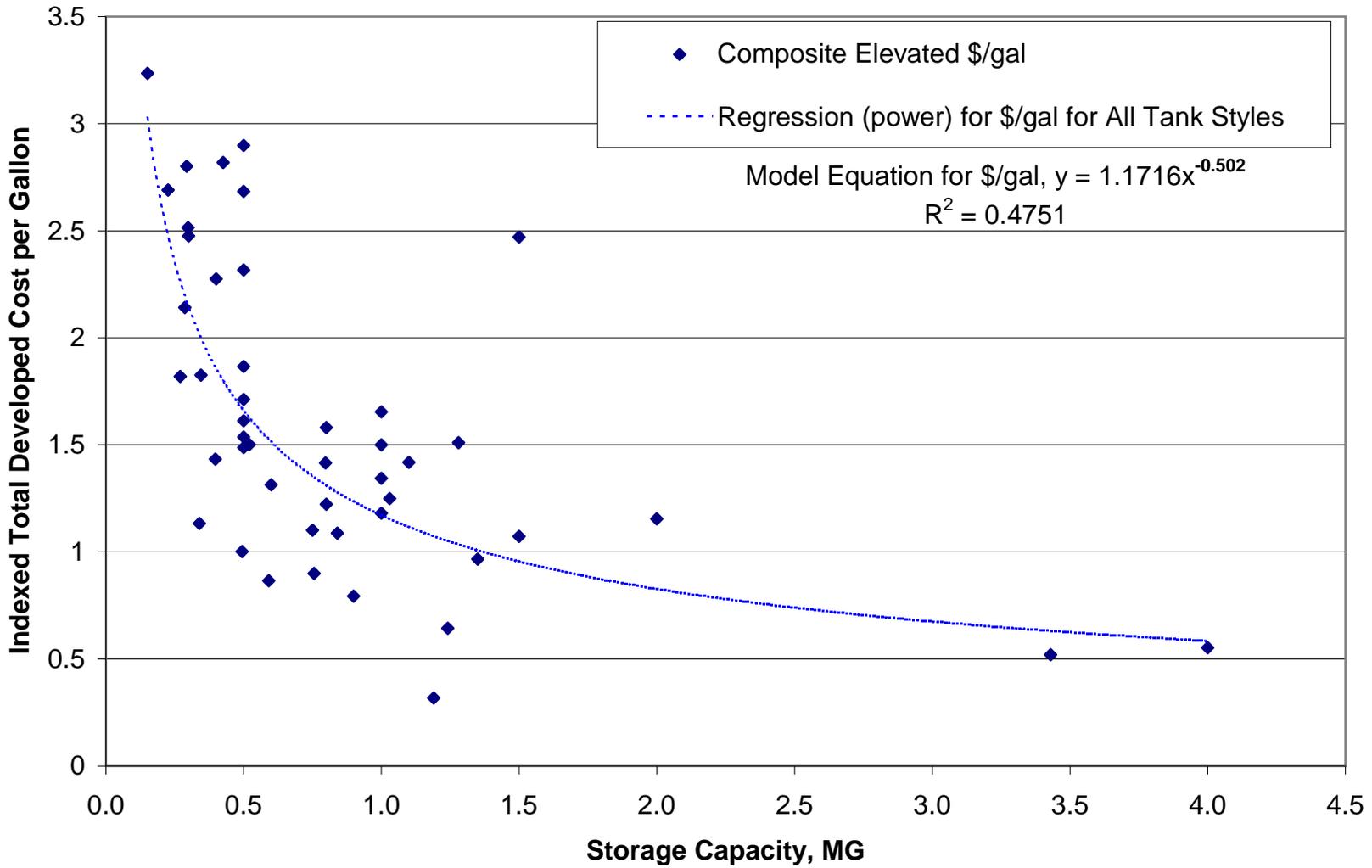
The line of best fit was determined from the plot, giving an equation that could be used to estimate a 2010 replacement value of each tank on the NH inventory of tanks.

Figure C-1: Large Atmospheric Tanks for Fire Protected Systems
All Tank Styles, Developed \$ per Gallon (indexed)

Includes both actual and manufacturer's costs (adjusted to developed cost); highlighted to show trends for different tank styles



**Figure C-2: Large Atmospheric Storage Tanks for Fire Protected Systems:
Developed Cost for Projects of All Styles of Tank: Indexed to 2010**



C.2 CAPITAL NEEDS PROJECTIONS FOR LARGE STORAGE TANKS SERVING FIRE PROTECTED SYSTEMS IN THE STATE OF NEW HAMPSHIRE

There are approximately 280 storage tanks serving fire protected water systems in the State of New Hampshire. This asset inventory was constructed between the late 19th century up through year 2010. Of these, approximately 261 contained enough information on which to project replacement costs. Most tanks in the inventory contained the capacity in gallons, and materials of construction. The listing of tanks is included in Table C-2.

The total cost to replace these structures in 2010 dollars was estimated to be \$251.2M. As discussed, the useful life of a tank was assumed to be 75 years, regardless of the material of construction. It is recognized that some of the categories of tanks, such as bolted steel tanks, require significantly more maintenance to keep the asset viable for this duration of time. However, only the capital cost to replace the asset was considered in this analysis.

On an annual basis, approximately \$3.5M annually would be required to fully replace all storage tanks for these systems assuming a 75-year useful life for this asset. For the 20-year period between 2010-2030, the State of New Hampshire would require approximately \$67 M, based in 2010 funds, to replace these assets on a sustainable 75 year life cycle period. It should be noted, because many of these tanks are already exceeding their useful lives, that the analysis assumes only a linear replacement cycle regardless of the age or progressive point towards obsolescence. It should also be noted that an assumed 75-year useful life for a storage tank is typical of values used in other New England states by cost accountants for private sector water utilities. The results are summarized in Table 3-1 in Section 3 of this Report.

Table C-2 Atmospheric Storage Tank Cost Model for Large Fire-Protected Water Systems

Number of Tanks		261																							
EPA ID #	System Name (NHDES Database)	Municipal Location	Tank Name	Date	ENR	Shape	Capacity (MG)	Hgt (ft)	Dia (ft)	Const Materials	Capacity (MG)	Cost = 1.1716(MG Capacity) ^{1.5} - 0.502	Total Developed Cost Indexed to 2010	Avg Annual Expenditures	Collected over 20 years										
1471010	MANCHESTER WATER WORKS	MANCHESTER	Low Press	1876		175x12	20.00	12		Earth/Granite Bl.*	20.00	\$ 0.26	\$ 5,208,256	\$ 69,443											
1471010	MANCHESTER WATER WORKS	MANCHESTER	Hackett Hill	2007	8090	Cylinder	1.00			Composite (St&C)	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
1471010	MANCHESTER WATER WORKS	MANCHESTER	Hillsboro Country Home			Cylinder	0.50	35	50	Riveted Steel	0.50	\$ 1.66	\$ 829,596	\$ 11,061											
1471010	MANCHESTER WATER WORKS	MANCHESTER	Veterans Hospital			Elevated	0.20				0.20	\$ 2.63	\$ 525,645	\$ 7,009											
1481010	MARLBOROUGH WATER WORKS	MARLBOROUGH	Public works				0.24	12	60	Cast Concrete	0.24	\$ 2.40	\$ 575,605	\$ 7,675											
1521010	MEREDITH WATER DEPARTMENT	MEREDITH	Upper Ladd H	1989	4615	Cylinder	1.50	30	96	Stressed Concrete	1.50	\$ 0.96	\$ 1,433,748	\$ 19,117											
1531010	MERRIMACK VILLAGE DISTRICT	MERRIMACK	Babossic	1987	4406	Elevated	0.75	40	64	Welded steel	0.75	\$ 1.35	\$ 1,015,219	\$ 13,536											
1531010	MERRIMACK VILLAGE DISTRICT	MERRIMACK	Hutchinson	1987	4406	Cylinder	1.00	54	58	Welded steel	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
1531010	MERRIMACK VILLAGE DISTRICT	MERRIMACK	Turkey Hill	1978	2776	Cylinder	4.00	34	150	Stressed Concrete	4.00	\$ 0.58	\$ 2,336,712	\$ 31,156											
1561010	MILFORD WATER UTILITIES DEPT	MILFORD	Mayflower	1939		Cylinder	0.50	35	50	Welded Steel	0.50	\$ 1.66	\$ 829,596	\$ 11,061											
1561010	MILFORD WATER UTILITIES DEPT	MILFORD	Dram Cup	1960		Cylinder	0.50	25	58	Stressed Concrete	0.50	\$ 1.66	\$ 829,596	\$ 11,061											
1561010	MILFORD WATER UTILITIES DEPT	MILFORD	Holland	2004	7308	Cylinder	1.38	29	90	Stressed Concrete	1.38	\$ 1.00	\$ 1,375,425	\$ 18,339											
1561010	MILFORD WATER UTILITIES DEPT	MILFORD	Prospect	1889		Cylinder	0.25	70	25	Riveted Iron	0.25	\$ 2.35	\$ 587,426	\$ 7,832											
1581010	MILTON WATER DISTRICT	MILTON	Silver st	2007	8090	Cylinder	0.30	33	39	Stressed Concrete	0.30	\$ 2.14	\$ 643,259	\$ 8,577											
1612010	PARADISE SHORES	MOULTONBOROUGH		2008			0.30			Cast Concrete	0.30	\$ 2.14	\$ 643,259	\$ 8,577											
1591010	MONROE WATER DEPARTMENT	MONROE		1964		Cylinder	0.25	32	30	Welded Steel	0.25	\$ 2.35	\$ 587,426	\$ 7,832											
1621010	PENNICHUCK WATER WORKS	NASHUA	Kessler Farm	1987	4406	Cylinder	4.50	54	120	Welded Steel	4.50	\$ 0.55	\$ 2,477,874	\$ 33,038											
1621010	PENNICHUCK WATER WORKS	NASHUA		1984	4146	Cylinder	0.90	100	40	Welded Steel	0.90	\$ 1.24	\$ 1,111,712	\$ 14,823											
1621010	PENNICHUCK WATER WORKS	NASHUA		2001	6343	Cylinder	0.20	56	26	Bolted Steel	0.20	\$ 2.63	\$ 525,645	\$ 7,009											
1621010	PENNICHUCK WATER WORKS	NASHUA	Shakespeare I	1968	1155	Cylinder	1.00	42	65	Stressed Concrete	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
1621010	PENNICHUCK WATER WORKS	NASHUA	Shakespeare II	1993	5210	Cylinder	1.70	42	85	Stressed Concrete	1.70	\$ 0.90	\$ 1,525,959	\$ 20,346											
1621010	PENNICHUCK WATER WORKS	NASHUA	Field 2	1997	5825	Cylinder	6.55	40	168	Stressed Concrete	6.55	\$ 0.46	\$ 2,987,222	\$ 39,830											
1621010	PENNICHUCK WATER WORKS	NASHUA	Field 1	2008	8550	Cylinder	5.90	35	168	Stressed Concrete	5.90	\$ 0.48	\$ 2,835,722	\$ 37,810											
1621010	PENNICHUCK WATER WORKS	NASHUA	Treatment Plant	2006	7888	Cylinder	6.50	30	192	Stressed Concrete	6.50	\$ 0.46	\$ 2,975,844	\$ 39,678											
1621010	PENNICHUCK WATER WORKS	NASHUA	Kessler Farm	1987	4406	Cylinder	4.50	54	120	Welded Steel	4.50	\$ 0.55	\$ 2,477,874	\$ 33,038											
1691010	NEW HAMPTON VILLAGE PRECINCT	NEW HAMPTON		1995		Cylinder	0.25			Bolted Steel	0.25	\$ 2.35	\$ 587,426	\$ 7,832											
1721010	NEW LONDON SPRINGFIELD WATER	NEW LONDON		1995	5471	Cylinder	1.00	26	80	Stressed Concrete	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
1721010	NEW LONDON SPRINGFIELD WATER	NEW LONDON	Colby College ???	2005	7646	Cylinder	0.50	13.3	80	Stressed Concrete	0.50	\$ 1.66	\$ 829,596	\$ 11,061											
1681010	NEWFIELDS VIL WATER AND SEWER	NEWFIELDS		1954		Cylinder	0.20	70		Welded Steel	0.20	\$ 2.63	\$ 525,645	\$ 7,009											
1731010	NEWMARKET WATER WORKS	NEWMARKET	Great Hill	1978	2776	Cylinder	0.75	60	46.5	Welded Steel	0.75	\$ 1.35	\$ 1,015,219	\$ 13,536											
1741010	NEWPORT WATER WORKS	NEWPORT	Summer St	2001	6343	Cylinder	1.35	36	80	Stressed Concrete	1.35	\$ 1.01	\$ 1,360,459	\$ 18,139											
1741010	NEWPORT WATER WORKS	NEWPORT	Cleanwell	1994	5408	Cylinder	0.30	20	50	Stressed Concrete	0.30	\$ 2.14	\$ 643,259	\$ 8,577											
2351010	TILTON NORTHFIELD WATER DIST	NORTHFIELD	Reservoir Rd 2 cells	1998	5920	Rectangle	1.00	19+		Cast Concrete	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
1781010	GROVETON WATER SYSTEM	NORTHUMBERLAND	Beech Hill	1994	5408	Cylinder	0.68	23	30	Bolted Steel	0.68	\$ 1.42	\$ 966,872	\$ 12,892											
1781010	GROVETON WATER SYSTEM	NORTHUMBERLAND	Tank	1994	5408	Cylinder	0.13	24	70	Bolted Steel	0.13	\$ 3.26	\$ 424,154	\$ 5,655											
1841010	OSSIPEE WATER DEPARTMENT	OSSIPEE	Valley Road	1995	5471	Cylinder	0.30	30	41	Stressed Concrete	0.30	\$ 2.14	\$ 643,259	\$ 8,577											
1841010	CARROLL COUNTY COMPLEX	OSSIPEE	more westerly			Rectangle	0.10	107		Cast Concrete	0.10	\$ 3.72	\$ 372,203	\$ 4,963											
1841010	CARROLL COUNTY COMPLEX	OSSIPEE	more easterly	1986	4295	Rectangle	0.20	10		Cast Concrete	0.20	\$ 2.63	\$ 525,645	\$ 7,009											
1851010	PEU /WILLIAMSBURG	PELHAM	Stonegate			Cylinder	0.35			Stressed Concrete	0.35	\$ 1.98	\$ 694,585	\$ 9,261											
1851010	PEU /WILLIAMSBURG	PELHAM	at Pump Station				many 10,000 gallons			Steel	0.06	\$ 4.81	\$ 288,602	\$ 3,848											
1861010	PEMBROKE WATER WORKS	PEMBROKE	Bricketts Hill	1950		Cylinder	1.00	40	66	Welded Steel	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
1861010	PEMBROKE WATER WORKS	PEMBROKE	Parker-Bailey	1988	4519	Cylinder	0.94	33	70	Bolted Steel	0.94	\$ 1.21	\$ 1,136,049	\$ 15,147											
1871010	PETERBOROUGH WATER WORKS	PETERBOROUGH	Sandhill	1965	971	Cylinder	0.75	38	57	Welded Steel	0.75	\$ 1.35	\$ 1,015,219	\$ 13,536											
1871010	PETERBOROUGH WATER WORKS	PETERBOROUGH	May St (to be abandoned)	1953		Cylinder	0.30	23	47	Welded Steel	0.30	\$ 2.14	\$ 643,259	\$ 8,577											
1871010	PETERBOROUGH WATER WORKS	PETERBOROUGH	Cheney	1953		Cylinder	0.60	30	60	Welded Steel	0.60	\$ 1.51	\$ 908,445	\$ 12,113											
1871010	PETERBOROUGH WATER WORKS	PETERBOROUGH	West Peterboro2002	2002	6538	Cylinder	0.30	43	36	Bolted Steel	0.30	\$ 2.14	\$ 643,259	\$ 8,577											
1871010	PETERBOROUGH WATER WORKS	PETERBOROUGH	Mt. Tank	1976	2401	Cylinder	0.50	24	60	Stressed Concrete	0.50	\$ 1.66	\$ 829,596	\$ 11,061											
1911010	PITTSFIELD AQUEDUCT	PITTSFIELD	Clerwell	1998	5920	Rect	0.50	15		Cast in Place	0.50	\$ 1.66	\$ 829,596	\$ 11,061											
1921010	PLAINFIELD VILLAGE WATER DIST	PLAINFIELD	Chellis Road	2001	6343	Cylinder	0.13	23	31	Bolted Steel	0.13	\$ 3.24	\$ 421,391	\$ 5,699											
1921020	MERIDEN VILLAGE WATER DISTRICT	PLAINFIELD				Cylinder	0.20	15	50	Bolted steel	0.20	\$ 2.63	\$ 525,645	\$ 7,009											
1942010	TENNEY BROOK II	PLYMOUTH	Eagle's N. NE			Cylinder	0.26	477		Welded steel ?	0.26	\$ 2.30	\$ 599,013	\$ 7,987											
1941010	PLYMOUTH VIL WATER AND SEWER	PLYMOUTH		1973	1895	Cylinder	2.50	39	1.5	Stressed Concrete	2.50	\$ 0.74	\$ 1,849,071	\$ 24,654											
1941010	PLYMOUTH VIL WATER AND SEWER	PLYMOUTH		1951		Cylinder	0.50	21	50	Stressed Concrete	0.50	\$ 1.66	\$ 829,596	\$ 11,061											
1951010	PORTSMOUTH WATER WORKS	PORTSMOUTH	Seacrest	1941		Elevated	0.20		Hwl 70; Bot	Welded Steel	0.20	\$ 2.63	\$ 525,645	\$ 7,009											
1951010	PORTSMOUTH WATER WORKS	PORTSMOUTH	Merrimack	1956		Cylinder	1.50	40	80	Welded steel	1.50	\$ 0.96	\$ 1,433,748	\$ 19,117											
1951010	PORTSMOUTH WATER WORKS	PORTSMOUTH	Lafayette Rd	1995	5471	Cylinder	7.33	96	114	Welded Steel	7.33	\$ 0.43	\$ 3,159,260	\$ 42,123											
1951020	PEASE TRADE PORT	PORTSMOUTH	Civil Eng	1955?		Elevated	0.41			Welded Steel 230	0.41	\$ 1.83	\$ 751,529	\$ 10,020											
1951010	PORTSMOUTH WATER WORKS	PORTSMOUTH	Spinney Road	1999	6060	Elevated 1	1.00			Composite (Con/st) 171	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
1951010	PORTSMOUTH WATER WORKS	PORTSMOUTH	Islington Road	1892/1941		Cylinder	0.52	66	31	Riveted Steel	0.52	\$ 1.63	\$ 845,958	\$ 11,279											
1951020	PEASE TRADE PORT	PORTSMOUTH	Knob Hill	1955?		Elevated	0.41			Welded Steel 230	0.41	\$ 1.83	\$ 751,529	\$ 10,020											
1971010	RAYMOND WATER DEPARTMENT	RAYMOND	Rte 156	1957		Cylinder	0.60	45?	50?	Welded Steel	0.60	\$ 1.51	\$ 908,445	\$ 12,113											
1971010	RAYMOND WATER DEPARTMENT	RAYMOND	Long Hill Road	2005	7646	Cylinder	0.57	27	59	Stressed Concrete	0.57	\$ 1.55	\$ 885,534	\$ 11,807											
1971010	RAYMOND WATER DEPARTMENT	RAYMOND	Main St/Orchard	1896		Cylinder	0.12	90	15	Riveted Steel	0.12	\$ 3.40	\$ 407,579	\$ 5,434											
1994010	FRANKLIN PIERCE UNIVERSITY	RINDGE	Tank			Cylinder	0.50			Welded Steel	0.50	\$ 1.66	\$ 829,596	\$ 11,061											
2001010	ROCHESTER WATER DEPARTMENT	ROCHESTER	Chesley Hill	1985	4195	Cylinder	1.00	38	70	Welded Steel	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
2001010	ROCHESTER WATER DEPARTMENT	ROCHESTER	Airport, R. Hill	1985	4195	Cylinder	1.00	70	50?	Welded Steel	1.00	\$ 1.17	\$ 1,171,600	\$ 15,621											
2001010	ROCHESTER WATER DEPARTMENT	ROCHESTER	Salmon Falls	1985	4195	Cylinder	2.00	38	97	Welded Steel	2.00	\$ 0.83	\$ 1,654,597	\$ 22,061											
2001010	ROCHESTER WATER DEPARTMENT	ROCHESTER	Salmon Falls	1985	4195	Cylinder	0.35	78	40?	Welded Steel	0.35	\$ 1.98	\$ 694,585	\$ 9,261											
2011010	ROLLINSFORD WATER AND SEWER	ROLLINSFORD	Transfer Station	1996	5620	Cylinder	0.75	50	50.5?	Stressed Concrete	0.75	\$ 1.35	\$ 1,015,219	\$ 13,536											
2041010	RYE WATER DISTRICT	RYE	Breakfast Hill	1996	5620	Cylinder	1.20	100	45	Welded Steel??? 257	1.20	\$ 1.07	\$ 1,282,956	\$ 17,106											

C.3 METHODOLOGY FOR SMALL ATMOSPHERIC STORAGE TANKS SERVING SMALL, PREDOMINANTLY GROUNDWATER SYSTEMS WITH NO FIRE PROTECTION

DES does not maintain an inventory of each of the smaller storage tanks in non-fire protected groundwater community systems, but does collect data as to the totaled volume of stored water for each community water system. The NHDES database listed the water systems, the number of sources (1 surface water system was counted in this grouping and two systems with fire protection not provided by such tanks) along with the total atmospheric volume stored. It was unknown whether the totaled atmospheric volume for listed each system existed as a single tank or was divided amongst several tanks of unknown volume.

In general, the total gallons of storage for each community water system was used to estimate a "count" of tanks for each community. The total stored volume for each community was divided by an assumed "model volume" of 10,000 gallons to give a rough estimate of the number of 10,000 gallon tanks (an integer and a fraction) that may hypothetically be present in a system. Each integer was multiplied by the estimated developed cost of a 10,000 gallon tank (from suppliers and installers provided costs). Each left over fraction of 10,000 was calculated using a linear cost equation developed for all tank sizes provided by the manufacturers.. The integer and fractional estimates were then summed to the total tank estimated replacement cost for each system's total volume of storage.

C.3.1 Source of Costs

A sample set of construction costs were created from manufacturers' equipment and delivery cost information. Two manufacturers supplied costs for buried coated steel tanks which are common in NH systems. The manufacturer supplied costs were for sizes including 1000, 5000, 10,000, 25,000, and 50,000 gallons. A local engineer supplied costs for a 120,000 gallon tank.

These costs were adjusted for installation and contractor's markups (no instrumentation). No professional development fees were included in this case, because many small systems may often obtain tanks directly from a contractor. Costs were not indexed because estimates were

generated during October 2010 rather than extrapolated from historical projects. Table C-3 shows the development of the cost model, with Figure C-4 showing the regression line and equation.

C.3.2 "Straw man" Tanks for cost modeling

An estimate of the number of tanks in a system was generated from the total atmospheric volume stored by dividing by a standard 10,000 gallons. The resulting quotient was a combination of an integer and a fraction. The integer was taken to represent the number of 10,000 gallon tanks installed, and the fraction to represent a smaller tank with a volume equal to the fraction x 10,000 gallons. This resulted in 867 "straw man" tanks that may or may not exist, but which can be used to represent the tankage for each system so that an estimate of value may be made.

C.3.3 Calculating the Tankage Costs for Each System

Table C-4 shows how the model was applied to inventoried database systems (which had information only as to the total stored volume). The integer portions of each quotient were multiplied by the cost of a 10,000 gallon tank installed (~\$54k). The fraction portions of each quotient were modeled using the equation of the line segments created by the estimated costs for the 1000 and 5000 gallon tank, and for the 5000 and 10,000 gallon tank. When the fraction was 0.5, representing a 5000 gallon tank, the estimated cost for the 5000 gallon tank was entered directly rather than modeled. The integer costs and fraction costs were summed to a total 2010 stored volume cost. Table C-4 projects and sums the estimated 2010 replacement value as well as the annual and 20-year need.

Table C-3: Cost Model Development for Total Small Atmospheric Storage Tanks for Non Fire Protected GW Systems in New Hampshire

Total Count 447

assumed bury depth **5.0** assumed bury depth, feet
 Assume excavate # feet out from and around tank **4.0** feet

10/27/2010

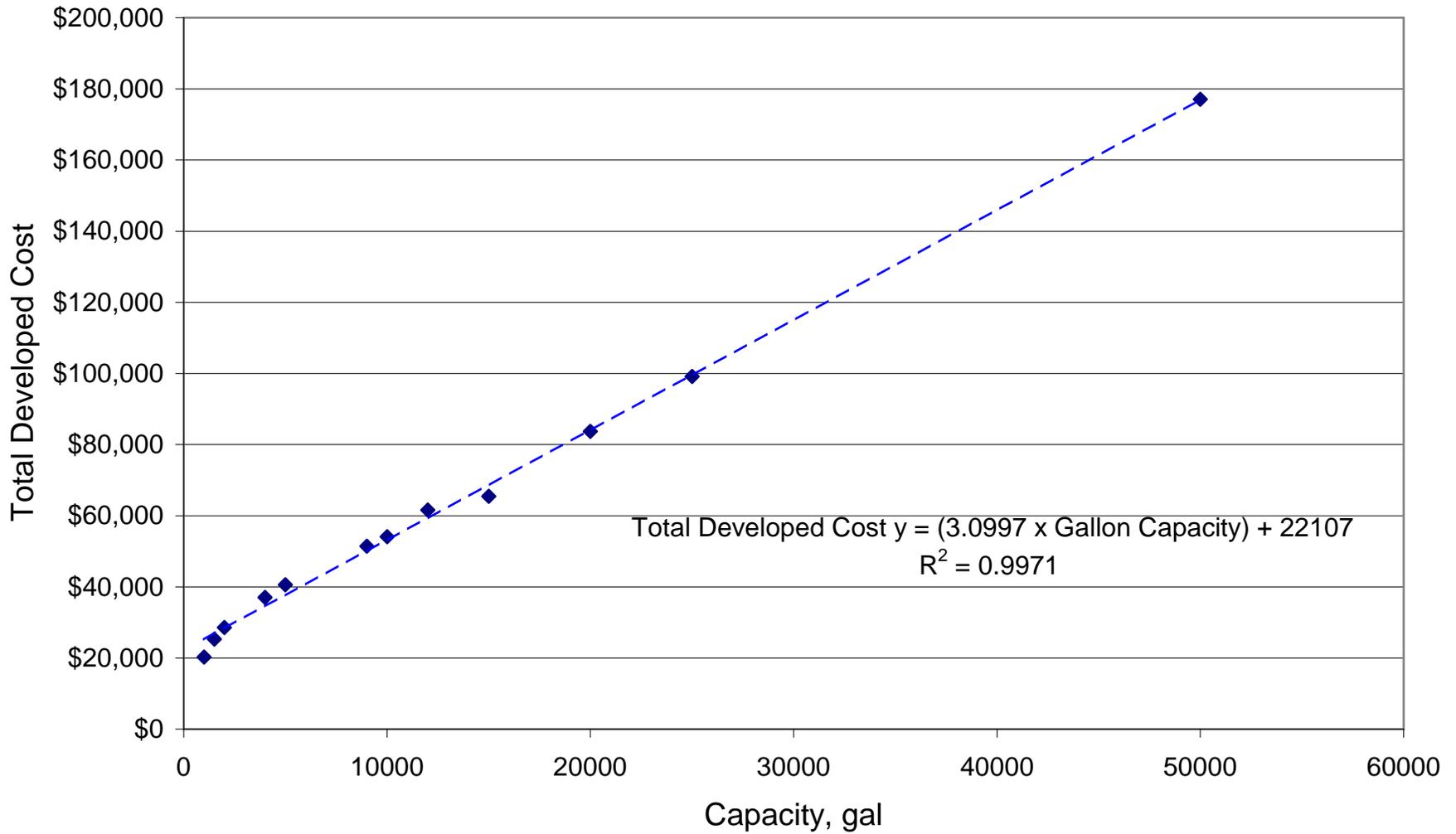
cost model
 $y = 3.0997x + 22107$
 $R^2 = 0.9971$

Size Grouping of Tanks in Gallons	Counts for Size	Gal capacity	L, feet	Dia	Coated Steel Equipment Cost Est.*	10% for Delivery	Cost for Straps per mfr	Riser	Equipment & Delivery	projected area, ft^2	Tank Vol, ft^3	Exc Vol CY	Excavate \$/CY	Vol Backfill, CY	Backfill Unit Cost \$/CY	Earthwork cost	Concrete tie down weights	Shoring when depth > 10'	Tank Equipment Total	Installation factor, 0.4	OH&P, 0.15	Construction	Development, 15%	Total Developed Cost	Gal capacity	excluding 120k value
1000 to 1500	10	1,000	10.7	4.0	\$4,000	\$400	\$1,000	\$1,750	\$7,150	43	134	83	\$16	78	\$32	\$3,791	\$517		\$10,941	\$4,376	\$2,298	\$17,615	\$2,642	\$20,257	1,000	\$25,207
1501 to 2000	9	1,500	9.2	5.3	\$6,000	\$600	\$1,000	\$1,750	\$9,350	49	205	96	\$16	88	\$32	\$4,323	\$443	\$14,492	\$13,673	\$5,469	\$2,871	\$22,014	\$3,302	\$25,316	1,500	\$26,757
2,001 - 3,000	12	2,000	12.0	5.3	\$7,000	\$700	\$1,000	\$1,750	\$10,450	64	265	111	\$16	102	\$32	\$4,979	\$580	\$15,781	\$15,429	\$6,172	\$3,240	\$24,841	\$3,726	\$28,567	2,000	\$28,306
3001- 4000	27	4,000	19.0	6.0	\$9,000	\$900	\$1,000	\$1,750	\$12,650	114	537	168	\$16	148	\$32	\$7,353	\$918	\$20,633	\$20,003	\$8,001	\$4,201	\$32,205	\$4,831	\$37,036	4,000	\$34,506
4001-5000	38	5,000	13.3	8.0	\$10,500	\$1,050	\$1,000	\$1,750	\$14,300	107	670	177	\$16	152	\$32	\$7,624	\$644	\$21,918	\$21,924	\$8,770	\$4,604	\$35,297	\$5,295	\$40,592	5,000	\$37,606
5001-6000	16	6,000			\$11,000	\$1,100	\$1,000	\$1,750	\$14,850																6,000	\$40,705
6001-7000	11	7,000			\$11,500	\$1,150	\$1,000	\$1,750	\$15,400																7,000	\$43,805
7001-8000	29	8,000			\$12,000	\$1,200	\$1,000	\$1,750	\$15,950																8,000	\$46,905
8001-9000	16	9,000	24.2	8.0	\$12,500	\$1,250	\$1,000	\$1,750	\$16,500	193	1215	267	\$16	222	\$32	\$11,260	\$1,168	\$28,282	\$27,760	\$11,104	\$5,830	\$44,694	\$6,704	\$51,398	9,000	\$50,004
9001-10000	51	10,000	26.8	8.0	\$13,000	\$1,300	\$1,000	\$1,750	\$17,050	215	1349	289	\$16	239	\$32	\$12,152	\$1,297	\$29,844	\$29,202	\$11,681	\$6,132	\$47,016	\$7,052	\$54,068	10,000	\$53,104
10001-11000	7	11,000			\$13,500	\$1,350	\$2,000	\$1,750	\$18,600																11,000	\$56,204
11001-12000	17	12,000	32.7	8.0	\$14,000	\$1,400	\$2,000	\$1,750	\$19,150	262	1644	338	\$16	277	\$32	\$14,121	\$1,581	\$33,290	\$33,271	\$13,308	\$6,987	\$53,567	\$8,035	\$61,602	12,000	\$59,303
12001-13000	1	13,000			\$14,500	\$1,450	\$2,000	\$1,750	\$19,700																13,000	\$62,403
13001-14000	3	14,000			\$15,000	\$1,500	\$2,000	\$1,750	\$20,250																14,000	\$65,503
14000-15000	34	15,000	23.5	10.5	\$15,500	\$1,550	\$2,000	\$1,750	\$20,800	247	2035	356	\$16	281	\$32	\$14,542	\$1,136	\$34,599	\$35,342	\$14,137	\$7,422	\$56,900	\$8,535	\$65,436	15,000	\$68,603
15001-16000	13	16,000			\$17,000	\$1,700	\$2,000	\$1,750	\$22,450																16,000	\$71,702
16001-17000	2	17,000			\$18,000	\$1,800	\$2,000	\$1,750	\$23,550																17,000	\$74,802
17001-18000	1	18,000			\$19,000	\$1,900	\$2,000	\$1,750	\$24,650																18,000	\$77,902
18001-19000	0	19,000			\$20,000	\$2,000	\$2,000	\$1,750	\$25,750																19,000	\$81,001
19001-20000	54	20,000	34.5	10.0	\$21,000	\$2,100	\$2,000	\$1,750	\$26,850	345	2710	453	\$16	353	\$32	\$18,372	\$1,668	\$40,596	\$45,222	\$18,089	\$9,497	\$72,808	\$10,921	\$83,729	20,000	\$84,101
20001-21000	4	22,000			\$22,000	\$2,200	\$2,000	\$1,750	\$27,950																22,000	\$91,131
21001-25000	26	25,000	38.8	10.5	\$26,000	\$2,600	\$2,000	\$1,750	\$32,350	407	3355	529	\$16	404	\$32	\$21,191	\$1,873	\$45,151	\$53,541	\$21,416	\$11,244	\$86,201	\$12,930	\$99,131	25,000	\$99,600
25001-30000	22	30,000			\$30,000	\$3,000	\$2,000	\$1,750	\$36,750																30,000	\$117,062
30001-40000	21	40,000			\$36,000	\$3,600	\$2,000	\$1,750	\$43,350																40,000	\$177,092
40001-50000	16	50,000			\$45,000	\$4,500	\$2,000	\$1,750	\$53,250	814	6711	1057	\$16	809	\$32	\$42,382	\$3,000	\$75,000	\$95,632	\$38,253	\$20,083	\$153,967	\$23,095	\$177,062	50,000	\$177,092
50001-60000	8	60,000			\$54,000	\$5,400	\$4,000	\$1,750	\$65,150																60,000	\$217,062
65000	1	65,000			\$58,000	\$5,800	\$4,000	\$1,750	\$69,550																65,000	\$227,062
85000	1	85,000			\$72,000	\$7,200	\$4,000	\$1,750	\$84,950																85,000	\$257,062
120000	1	120,000			\$95,000	\$9,500	\$4,000	\$1,750	\$110,250													\$170,000	\$25,500	\$195,500	120,000	\$215,500

* provided courtesy of MassTank, Middleboro, MA
 also by TanksUnlimited, Westbrook, ME
 w/ NSF 61 approved internal lining, standard openings, external paint
 120,000 gallon tank modeled from a cost for an unspecified vol tank for 80
 services courtesy Steven LaFrance, Horizon Engineering
 C. Lanza suggested a \$15,000 basic cost for a 12,000 gal tank

Excavation **\$16** per Cubic Yard of Concrete
 Backfill unit cost between \$28/CY and \$35/CY, use avg **\$32** per Cubic Yard of Concrete
 for deadman weight, used **\$290** per cubic yard before markups (after markups \$450)
 \$25/SF total for shoring (rot 2/3total shoring H for excavation depth and 1/3 Has piling into ground) **\$16** per Square Foot before markups

Figure C-4: Small Atmospheric Tanks for GW Systems:
Capacity vs Total Developed Cost; 1000 to 50,000 gallons



C.4 CAPITAL NEEDS PROJECTIONS FOR SMALL STORAGE TANKS SERVING GROUNDWATER SYSTEMS IN THE STATE OF NEW HAMPSHIRE

Small Tanks Serving Non-Fire Protected Groundwater Systems: The total 2010 cost to replace these structures was estimated to be \$41.5M. The useful life of such tanks was assumed to be 30 years, regardless of the material of construction. It is recognized that some tanks may be located within buildings and may have a longer service life than buried tanks, however, the situation of tanks for each system in NH was not known.

On an annual basis, approximately \$1.4M annually would be required to fully replace all storage tanks for these systems assuming a 30-year useful life for this asset. For the 20-year period between 2010-2030, the State of New Hampshire would require approximately \$ 27.7 M based in 2010 funds to replace these assets on a sustainable 30 year life cycle period. It should be noted, because many of these tanks are already exceeding their useful lives, that the analysis assumes only a linear replacement cycle regardless of the age or progressive point towards obsolescence.

The inventory of tanks with their estimated costs is shown in Table C-4. The results are summarized in Table 3-1 in Section 3 of this Report.

APPENDIX D
Well Sources of Supply

APPENDIX D

WELL SOURCES OF SUPPLY

D.1 METHODOLOGY

Water wells are classified by NHDES according to their rate of production and the type of geological formation in which they are located (bedrock vs. gravel). For convenience of handling the large amount of data, subcategories were included under the main categories that would be most likely to replace them in the future. Springs were included under bedrock wells. Included under the Gravel Well category were gravel-packed wells, gravel wells, dug wells, vacuum points, and infiltration wells.

Each category was further divided according to their NHDES Permitting Category: Level 1 for yields under 40 gpm, and Level II for yields equal to or greater than or over 40 gallons per minute (gpm). Such a division made sense because the large number of very small systems would tend to have bedrock wells permitted for yields under 40 gpm.

A median service life was estimated for each well type, Bedrock or Gravel, to adjust an estimated 2010 replacement cost to the 20 year horizon. Well service life depends to a great extent on water chemistry and how effectively the well screen responds to cleaning and redevelopment (in the case of gravel wells). For Bedrock and Gravel wells, assumed median service lives were 25 and 40 years, respectively.

It was assumed that smaller community water systems would require Level 1 replacement wells (permitting for under 40 gpm), that the time to obtain a permit averaged about 4 ½ months, and a similar amount of professional development and cost would be required to design and construct whether they were bedrock or gravel wells. Of the Level 1 wells in the DES dataset, 903 were bedrock wells and 134 were gravel wells.

For larger community water systems, a replacement well would most likely require a Level 2 permit (for over or equal to 40 gpm). The Level 2 permitting time averaged about 9 months. Level 2 gravel wells tend to be more costly to construct because specialized heavy drilling equipment is often required, which is supported only by a limited number of firms in New England. Level 2 wells costs were averaged for both bedrock and gravel, although for larger systems more wells were gravel than bedrock. For Level 2 wells, 68 were bedrock compared to 202 gravel wells. Table D-1 displays the assumed median costs for replacement wells by Permitting Level.

TABLE D-1
MEDIAN WELL COSTS

	Level 1 Permit (< 40 gpm)	Level 2 Permit ≥ 40 gpm)
Permitting	\$15,000	\$40,000
Well Construction	\$25,000	\$100,000
Professional Services	\$5,000	\$20,000
Total	\$45,000	\$160,000

These 2010 median replacement costs were applied to each well in the database according to whether the well was bedrock or overburden type and then according to permit level. These are shown in Table D-2, D-3, D-4, and D-5. This cost was adjusted by a factor derived by dividing the 20-year time horizon by the estimated service lives of 25 years for bedrock wells, and 40 years for gravel wells. In addition to the service life factors, Gravel Well 20 year cost needs were also modified for screen redevelopment, assumed to occur twice over the 20 year period (\$10,000 for Level 1, and \$18,500 for Level II). This may be argued to be a maintenance cost rather than a capital cost. However, the inclusion acts as an adjustment factor for the maintenance occurring which modifies the service life expected. Table D-6 shows the estimated replacement values for 2010, and annual and 20-year projected funding needs.

Table D-2: Level 1 Permitted Bedrock Wells Cost Model

Generalized Costs for Small Replacement Bedrock Wells Permitted for < 40 gpm (Level I)

Level I (permitted for less than 40 gpm) Bedrock Wells*

903 number of sources**
 assumed re-drilled in vicinity of original well
 permitting assumed to take ~4.5 mos
 * may also include springs in this group

**8 three non CWS systems removed (7 wells) from inventory
 costs do not include exploration because these are replacement wells
 Generally, BRW are not cleaned and redeveloped

Assumed median depth	420	Estimated	\$15,000
Assumed Service Life	25	Well Construction	\$25,000
Service Life Factor for 20 yr period	0.8	Engineering	\$5,000 +
		Total	\$45,000

Date **Oct-10**
 ENR **8921**

Divide Total by Median Depth, 420 ft = \$107 per ft

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
						TOTAL		\$ 40,635,000		\$ 32,508,000	\$ 1,625,400
\$NULL	CHOCORUA WOODS	1	2312060	16	15	BRW /300' W OF PH	575	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGE AT MEAD FIELD	1	1792040	20	13	BRW /173' S OF SW REAR CNR PH	363	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PAPERMILL VILLAGE	1	52010	24	20	BRW 1 /180' SW OF SW CNR BLDG	1003	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STEELE POND DEV	1	92010	25	10	BRW 1 /1N PH	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DEARBORN RIDGE	1	112090	25	11	BRW 1 /660' NW OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BECKET HOUSE AT CAMPTON	1	342060	25	2	BRW 2 /150' SE OF SCHOOL	393	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VALLEY VIEW CONDOS	2	342080	25	10	BRW 1 /5' S OF PH	814	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VALLEY VIEW CONDOS	2	342080	25	10	BRW 2 /105' N OF PH	814	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CANTERBURY SPRUCES HOUSINC	1	374010	25	16	BRW 2 /34' NW OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREYSTONE COMMONS	1	1332030	25	10	BRW 1 /12' NW OF PS	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OLD LAWRENCE ROAD	1	1852080	25	22	BRW 2 /40' N OF PH	575	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MCAULEY COMMONS	1	2542130	25	24	BRW 1 /240' SW OF BLDG	445	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NEWFOUND ACRES MHP	1	293010	26	15	BRW 1 /20' N OF PH	385	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROBINSONS MHP/UPPER	1	453020	26	11	BRW 2 /55' E OF UPPER PH	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MILL POND CROSSING	2	282010	28	17	BRW 1 /405' SE OF PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MILL POND CROSSING	2	282010	28	17	BRW 2 /122' S OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PICKPOCKET WOODS	1	802010	28	11	BRW 1 /50' N OF PS	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BIRCH BEND	1	2342090	28	11	BRW 1 /57' E OF PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GLEN ACRES	2	162060	30	12	BRW 1 /30' NE OF PH	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GLEN ACRES	2	162060	30	12	BRW 2 /25' NW OF PH	375	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHISPERING BROOK	1	162310	30	12	BRW 1 /1' E OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BEAR VILLAGE SOUTH	1	162340	30	12	BRW 1 /14' S OF PS		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GOVERNORS FOREST	2	872010	30	16	BRW 2 /290' S OF PUMPHOUSE	320	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GOVERNORS FOREST	2	872010	30	16	BRW 3 /390' SW OF PUMPHOUSE	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CEDAR WOOD ESTATES	1	1332040	30	12	BRW 1 /100' SE OF PUMPHOUSE	515	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOUTHVIEW CONDOS	1	1392300	30	15	BRW /9' NW OF UNIT 1	620	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FLINTLOCK APTS	1	1402010	30	12	BRW 1 /10' N OF N BLDG 802	145	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RUTLEDGE PLACE	1	1932140	30	12	BRW 1 /16' E OF PUMP HOUSE		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HOWARD MANOR CONDOS	1	1932160	30	12	BRW 1 /193' SE OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHANDLER TERRACE	1	1932190	30	12	BRW 1 /500' S OF BLDG	342	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GRANDVIEW ESTATES	2	2002050	30	12	BRW 1 /27' SE OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GRANDVIEW ESTATES	2	2002050	30	12	BRW 2 /12' S OF PH	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/BEAVER HOLLOW	1	2082010	30	11	BRW 2 /20' SE OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WATERFORD VILLAGE ESTATES	2	2082090	30	13	BRW 2 /38' E OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WATERFORD VILLAGE ESTATES	2	2082090	30	13	BRW 1 /185' SE OF PH	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CONE RIDGE APTS	1	2342100	30	12	ART /5' W OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WAKEFIELD ACRES	1	2392020	30	18	BRW /250' NW OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDEMERE RIDGE	2	1282050	31	13	BRW 1 /36' SE OF SW CNR OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDEMERE RIDGE	2	1282050	31	13	BRW 2 /76' SW OS SW CNR OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	THE MEADOW AT NORTHWOOD	1	1792050	31	1	BRW /150' SE OF PARKING LOT	580	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BLUEBERRY KNOLL ESTATES	1	1932150	32	13	BRW 1 /120' N OF PH	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RED SLEIGH CONDOS	1	342090	33	13	BRW 1 /10' W OF OFFICE BLDG	156	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	26 CHANDLER AVE CONDOS	1	1932130	33	15	BRW 1 /230' SSE OF CONDOMINIUMS	365	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BREEZY POINT CONDOS	1	98070	35	14	BRW /18' SE OF PH	580	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHALET VILLAGE	1	882010	35	15	BRW 1 /IN PS	105	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTWIND CONDOS	1	1162020	35	14	BRW 3 /180' NE OF PS	513	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ELLIS RIVER VILLAGE	1	1212060	35	14	BRW 2 /390' NE OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGES AT LOUDON	2	1402020	35	20	BRW 1 /28' NE OF PH	1006	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGES AT LOUDON	2	1402020	35	20	BRW 2 /166' SW OF PH	1210	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CANTERBURY CROSSINGS	1	1767020	35	14	BRW 1 /206' NE OF PH	605	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEETING HOUSE WATER	1	1862010	35	14	BRW /WITHIN VAULT /294 WOODLAWN	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SHADY LANE APARTMENTS	1	1932220	35	14	BRW /42' NW OF BLDG 3		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DUNTRY RIDGE MOBILE HOME PAI	1	2001020	35	14	BRW 1 /27' NE OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAMINGTON HILL	2	2232170	35	14	BRW 1 /125' E OF PH	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAMINGTON HILL	2	2232170	35	14	BRW 2 /135' E OF PH	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOW BROOK AT SUNAPEE	1	2272020	35	14	BRW 1 /30' W OF PS	510	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN VIEW ESTATES	1	2312020	35	14	BRW	22	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OLD STAGE COACH ARMS	1	152020	38	15	BRW 1 /40' SE OF APT BLDG	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BARRINGTON HILLS APTS/LOWER	1	152030	38	15	BRW 1 /22' SW OF REAR CNR PS	523	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/STONE SLED FARM	2	262060	38	25	BRW 1 /85' E OF PH	425	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/STONE SLED FARM	2	262060	38	25	BRW 2 /30' E OF PH	425	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SUNSET VILLA PARK	1	823010	38	15	BRW /IN PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JEFFERSON/WASHINGTON COND	1	1212050	38	15	BRW 1 /IN PIT IN FRONT OF UT 5		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	POND VIEW APARTMENTS	1	1432010	38	15	BRW 1 /15' S OF APT BLDG	192	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE GROVE APARTMENTS	1	1842070	38	15	BRW /18' NE OF PH	325	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RAINBOW RIDGE	2	1932170	38	15	BRW 1 /100' E OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RAINBOW RIDGE	2	1932170	38	15	BRW 2 /80' SE OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PAWTUCKAWAY FARMS	2	1972050	38	15	BRW 2E /430' SE OF PS	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PAWTUCKAWAY FARMS	2	1972050	38	15	BRW 3W /420' ESE OF PS	610	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SAWMILL DORMITORY	1	1992060	38	15	BRW 1 /IN PH PIT	235	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FAIRFIELD	1	2082020	38	15	BRW 1 /125' SE OF PH	185	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STRATHAM WOODS	2	2232090	38	15	BRW 1 /180' E OF PH	620	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STRATHAM WOODS	2	2232090	38	15	BRW 2 /185' SE OF PH	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BLUEBERRY VILLAGE CONDOS	1	162180	40	16	BRW 1 /40' SW OF PH /IN PRKNG LOT UNDR MHK	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FISHERFIELD TOWNHOUSES	1	272010	40	16	BRW 1 /34' S OF PH	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BROOK VIEW VILLAGE	1	512190	40	16	BRW /15' S OF PH	220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HAMPSHIRE VILLAGE	1	882410	40	16	BRW 1 /57' W OF PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIGH PASTURES AT BLACK MTN	1	1212090	40	16	BRW 1 /10' W OF PS	490	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LYMPIC MOBILE HOME VILL/LOWE	1	1323050	40	16	BRW 1 /5' N OF PH	345	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ARBOURSIDE ON WINNIPESAUKE	2	1612220	40	16	BRW 1 /700' NNE OF PH	790	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ARBOURSIDE ON WINNIPESAUKE	2	1612220	40	16	BRW 3 /150' NNW OF PH	790	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WADE FARM CONDOS	2	1732020	40	16	BRW 1 /20' S OF PH	362	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WADE FARM CONDOS	2	1732020	40	16	BRW 2 /10' N OF PH	268	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOWBROOK VILLAGE	2	2002040	40	16	BRW 1 /10' W OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOWBROOK VILLAGE	2	2002040	40	16	BRW 2 /15' S OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTWIND ESTATES II	1	2003090	40	17	BRW 1 /100' E OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	REEDS CROSSING	1	2082030	40	16	BRW 1 /90' W OF PH	230	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN VIEW PARK	1	63030	41	16	BRW 2 /IN MANBOW RD PH /UG VAULT		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROLLING MEADOWS CONDOS IV	1	1392230	42	15	BRW 1 /80' SW OF BLDG 8	148	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINNISQUAM RESORT CONDOS	1	2352010	42	17	BRW 2 /180' SE OF PS	436	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WELL HILL	3	53010	43	17	BRW 1 /150' E OF ATMOS TANK	608	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	WELL HILL	3	53010	43	17	BRW 2 /100'NE OF ATMOS TANK	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WELL HILL	3	53010	43	17	BRW 3 /25'NW OF UT AT 346 GILSUM MINE RD	720	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BARRINGTON HILLS APTS/UPPER	1	152050	43	18	BRW 1 /75' SW OF SW REAR CNR OF BLDG A	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FITZWILLIAM VILLAGE/PRIGGE	1	821010	43	12	BRW 1 /IN PH PRIGGE PROPERTY	150	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ACK MOUNTAIN MEADOW COND N	1	1212080	43	17	BRW /15' SW OF PS	110	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
	TYROL WELL A	1	1212140	43	17	BRW 1 /IN PH	506	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	POLAND BROOK WOODS	1	1842050	43	17	BRW 1 /175' SW OF PH	110	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CARRIAGE APTS	1	1992050	43	17	BRW 1 /30' S OF PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LITTLE MILL WOODS	2	2082080	43	17	BRW 1 /102' N OF PH	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LITTLE MILL WOODS	2	2082080	43	17	BRW 2 /72' NE OF PH	340	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ELLISON FARM APTS	1	152010	45	18	BRW 1 /350' N OF N BLDG 3	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHIP O WILL CONDOS	1	297020	45	18	BRW 1 /100' SW OF BLDG 3 IN PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGE POND	1	342070	45	18	BRW /294' SE OF PH	1050	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CURRIERS MHP	1	1323040	45	18	BRW 2 /225' N OF UNIT 20	525	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EVERGREEN TERRACE	1	1333030	45	22	BRW /WITHIN LOWER PUMPHOUSE	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STONEHENGE APT TRUST	1	1372020	45	18	BRW /24' SW OF PH	255	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WILDER VILLAGE CLUSTER	1	1712040	45	17	BRW 1 /320' E OF PS	525	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CAMELOT COURT	1	1802020	45	19	BRW 1 /160' SE OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINMIIR CONDOS	2	2372050	45	18	BRW 2 /77' WSW OF PH	358	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINMIIR CONDOS	2	2372050	45	18	BRW 1 /200' W OF PH	750	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SMITH FARM WATER	2	2232120	46	12	BRW 1 /152' S OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SMITH FARM WATER	2	2232120	46	12	BRW 2 /138' S OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ABERDEEN/WEST	2	2232150	46	23	BRW 1 /N 380' W OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ABERDEEN/WEST	2	2232150	46	23	BRW 2 /S 380' W OF PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	INN AT DEERFIELD	1	594020	47	1	BRW 1 /315' SE OF BLDG	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDY HILL/NORTH	2	2353020	47	19	BRW 2 /28' NE OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDY HILL/NORTH	2	2353020	47	19	BRW 3 /27' E OF PH	670	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RIVERSBEND	1	162100	48	19	BRW 2 /40' S OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREENFIELD COMMONS	1	974010	48	24	BRW 1 /257'E OF COMMONS 250' N OF FIRE ST	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	AZY PINES MOBILE HOME PK/LW	1	1403040	48	19	BRW /8' E OF LOWER PH	165	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EASTBLUFF HIGHLANDS CONDOS	1	1522020	48	19	BRW /IN PS	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EASTBLUFF VILLAGE CONDOS	1	1522030	48	19	BRW /275' E OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MILLVILLE CIRCLE/SOUTH	1	2052010	48	20	BRW 2 /IN PH /AT 100 MILLVILLE CIR	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FROST RESIDENTS	1	613050	49	30	BRW 3 /320' SW OF PH	365	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREEN HILLS MHP	1	153010	50	20	BRW 1 /IN BASEMENT OF LOT 20	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ENGLISH WOODS	2	192060	50	19	BRW /90' S OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ENGLISH WOODS	2	192060	50	19	BRW 2 /122' SE OF PH	1200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BELA BROOK WATER	1	262030	50	20	BRW 1 /IN PH	270	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COACHMAN CONDOS	2	342100	50	20	BRW 1 /120' E OF PS	480	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COACHMAN CONDOS	2	342100	50	20	BRW 2 /30' S OF PS	485	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COUNTRY VILLAGE MHP	2	353010	50	20	BRW 2 /20' S OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COUNTRY VILLAGE MHP	2	353010	50	20	BRW 1 /6 1/2' N OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OAKWOOD HEIGHTS	2	512170	50	20	BRW 1 /25' E OF PH	683	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SACO PINES	2	512180	50	20	BRW 3 /129' SE OF PS		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SACO PINES	2	512180	50	20	BRW 4 /52' SE OF PS		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SHERBURN WOODS	1	594030	50	20	BRW 1 /450' NW OF UT 9	960	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OLD COACH VILLAGE	2	612210	50	20	BRW 1 /150' N OF PS	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OLD COACH VILLAGE	2	612210	50	20	BRW 2 /150' NE OF PS	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JOHNSON CREEK	2	692010	50	24	BRW 1 /12' W OF PH	310	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JOHNSON CREEK	2	692010	50	24	BRW 2 /100' SW OF PH	390	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EVANS TRAILER PARK	1	763010	50	20	BRW 1 /20' W OF PH	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EXETER HIGHLANDS	1	802020	50	20	BRW 1 /250' ESE OF PH	425	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	PINE LANDING CONDOS	2	862020	50	20	BRW 1 /200' N OF CONDOMINIUM UNITS	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LIBERTY HIGHLANDS WATER	1	882040	50	21	BRW 2 /85' S OF PS	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GRAY LEDGES	2	952020	50	28	BRW 1 /203' S OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GRAY LEDGES	2	952020	50	28	BRW 2 /161' SW OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GLENWOOD NORTH	1	1032090	50	20	BRW 1 /370' SW OF UT 19	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROLLING MEADOWS CONDOS III	1	1392220	50	20	BRW 1 /20' NW OF BLDG 16 CARPORT	278	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VOA/NE SENIOR HOUSING	1	1402030	50	33	BRW /385' SW OF BLDG/ALONG ACCESS RD	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BROOKWOOD PARK	1	1463010	50	20	BRW 1 /IN PH	330	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LANDS END	3	1612200	50	20	BRW 2 /80' WNW OF PS	630	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LANDS END	3	1612200	50	20	BRW 3 /100' SW OF PS	524	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LANDS END	3	1612200	50	20	BRW 4 /240' S OF S CNR OF 4 BAY GARAGE	546	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STRAWBERRY HILL	1	1932100	50	20	BRW 1 /200' SE OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HAMPSHIRE COURT WATER	1	1992040	50	20	BRW 2 /140' NE OF PH	365	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MAB REALTY	1	2052040	50	20	BRW /IN CENTER COURTYARD	155	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTHERN VIEW APARTMENTS	1	2192020	50	20	BRW /240' S OF PS	515	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTH STRATFORD MHP	1	2223020	50	20	ART /500' ENE OF AMST BLDG /PH	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JEWETT HILL	2	2232140	50	19	BRW 1 /130' S OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JEWETT HILL	2	2232140	50	19	BRW 2 /145' S OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHOCORUA MEADOWS	2	2312070	50	20	BRW 1 /39' E OF PH	680	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHOCORUA MEADOWS	2	2312070	50	20	BRW 2 /60' W OF PH	680	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WATERVILLE ACRES CONDOS	1	2342070	50	20	BRW /40' SE OF PH	1100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GLENCLIFF IMPROVEMENT	1	2421010	50	20	BRW /19' SW OF PH CNR	365	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WENTWORTH ESTATES	1	2562010	50	23	BRW /5' NW OF NEW PH /2002/	226	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SURRY VILLAGE WATER	1	2281010	50	16	SPRING /2000' W OF FIREHOUSE ON HILL	3	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BIRCHES OF BENNINGTON	2	212030	52	21	ART 1 /340' W OF BIRCH GLEN DR	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BIRCHES OF BENNINGTON	2	212030	52	21	ART 2 /520' W OF BIRCH GLEN DR	220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GOWING WOODS	1	72080	53	21	BRW 1 /14' NE OF PH	920	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FITZWILLIAM VILLAGE/MASSIN	1	821030	53	18	BRW 4 /82' N OF MASSIN HOUSE	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OYSTER RIVER CONDOS	1	1332010	53	21	BRW /200' S OF PS	440	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TAME	1	2342050	53	21	BRW /IN PH	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TIOGA RIVER WATER	1	202030	55	22	BRW 1 /8' N OF PH	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/SHAKER HEIGHTS	1	432040	55	22	BRW 1 /35' SE OF PH	780	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RUNNING BROOK	1	613030	55	24	BRW 1 /IN PH S OF OFFICE	175	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOUISBURG CIRCLE	2	802030	55	22	BRW 1 /E 60' S OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOUISBURG CIRCLE	2	802030	55	22	BRW 2 /W 65' S OF PH	490	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	GORHAM HILL SPRING	2	921020	55	22	BRW 1 /WELL		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JUR SEASONS MOBILE HOME PAF	1	1053010	55	22	BRW 2 /15' N OF PH	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BOBS MOBILE HOME PARK	1	1553010	55	22	BRW 1 /15' SE OF PS	385	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SHORTRIDGE ACADEMY	1	1582010	55	6	BRW 1 /400' SW OF PUMP ROOM	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	KILNWOOD ON KANASATKA	1	1612230	55	22	BRW 1 /10' W OF PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TOWER VIEW	1	1793010	55	22	BRW 1 /IN PS 1	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRYANT BROOK	1	1932110	55	22	BRW 1 /180' N OF PH	510	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SHERWOOD FOREST	1	2562050	55	22	BRW 2 /6' N OF PH	142	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	GORHAM HILL SPRING	2	921020	55	22	SPRING		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WILLOW BEND	1	612240	57	23	BRW 1 /125' SE OF PH	1005	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MANITOOS SHORES	1	1672010	57	15	WELL 1 /IN PS	65	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	APPLETON GARDENS	1	1712010	57	23	BRW 1 /15' SW OF BLDG	185	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MILLVILLE CIRCLE/NORTH	1	2052060	57	23	BRW 1 /IN PH /27 MILLVILLE CIR	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HALCYON HILL	2	153020	58	24	BRW /150' SE OF PS	330	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGGIO BIANCO	1	162260	58	23	BRW 1 /30' S OF PH	100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTVIEW MEADOWS	2	202040	58	23	BRW 1 /250' N OF PH WEST	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTVIEW MEADOWS	2	202040	58	23	BRW 2 /250' N OF PH EAST	610	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	MEADOWVIEW APTS	2	412010	58	23	BRW 1 /177' SE OF APT 1 FRONT	440	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOWVIEW APTS	2	412010	58	23	BRW 2 /120' SW OF APT 1 BACK		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WILSONS MHP	1	753010	58	23	BRW /76' NW OF PS UNDER WINDMILL	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HADOW LAKE MOBILE HOME PAR	1	2053030	58	23	BRW 1 /60' WNW OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WYNRIDGE CONDOS	2	2542080	58	23	BRW 1 /500' SE OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WYNRIDGE CONDOS	2	2542080	58	23	BRW 3 /550' SSE OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OYSTER RIVER APTS EAST/WEST	1	152060	60	24	BRW 3 /380' S OF EAST APT BLDG	403	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOUTH FACE CONDOS	1	212010	60	30	BRW /84' NW OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TRIPPLEWOOD RESORT CONDOS	1	342020	60	24	BRW /15' E OF PH	413	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHESLEYS MHP	2	343010	60	24	BRW 1 /200' NW OF PS	536	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHESLEYS MHP	2	343010	60	24	BRW 2 /130' SE OF PS	526	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	18 HUGHES LN/EFFINGHAM	2	732040	60	24	BRW 2 /90' W OF PH	120	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BELKNAP HEIGHTS WATER	1	882100	60	24	BRW 1 /30' SW OF NEW PUMPHOUSE	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COACH RUN CONDOS	2	1032070	60	24	BRW 1E /203' N OF PS	180	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COACH RUN CONDOS	2	1032070	60	24	BRW 2 /W 200' NNW OF PS	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LYMPIC MOBILE HOME VILL/UPPE	1	1323030	60	24	BRW 2 /3' N OF PS	575	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PACKERS FALLS VILLAGE	1	1333060	60	24	BRW 1 /80' SE OF UT 4	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STONEBRIDGE VILLAGE	2	1932080	60	24	BRW 3 /110' S OF PS	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STONEBRIDGE VILLAGE	2	1932080	60	24	BRW 1 /90' SW OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEST PINE CONDOS	4	1932210	60	24	BRW 1 /155' SE OF PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEST PINE CONDOS	4	1932210	60	24	BRW 2 /155' SW OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEST PINE CONDOS	4	1932210	60	24	BRW 3 /160' S OF PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEST PINE CONDOS	4	1932210	60	24	BRW 4 /175' S OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HASBROUCK APARTMENTS	1	1992020	60	24	BRW 6 /2000' SW OF APTS	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN RIVER CONDOS	1	2342030	60	24	BRW /30' E OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STAR RIDGE	3	2342080	60	48	BRW 2 /225' NW OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STAR RIDGE	3	2342080	60	48	BRW 3 /190' NNW OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STAR RIDGE	3	2342080	60	48	BRW 4 /160' NNE OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRAEMAR WOODS CONDOS	1	2542040	60	24	BRW 4 /315' SE OF PH	405	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DEER RUN	2	342050	62	58	BRW 4 /LOT P8 35' NE OF PH	850	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DEER RUN	2	342050	62	58	BRW 5 /LOT P8 200' NE OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROWELL ESTATES	2	1272040	62	40	BRW 1 /30' E OF PH	565	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROWELL ESTATES	2	1272040	62	40	BRW 2 /112' E OF PH	465	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SODA BROOK	1	1763010	62	25	BRW 1 /40' SW OF NEW PH	330	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RIVERSIDE COBB FARM	2	162140	63	25	BRW 3 /170' NNE OF PH	301	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RIVERSIDE COBB FARM	2	162140	63	25	BRW 2 /200' E OF PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BEEBE RIVER	1	342010	63	25	ART /GRAVEL WELL 24' NE OF PH	34	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STONEGATE ACRES	1	1112010	63	25	BRW 2 /30' SW OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TERRACE CONDOS	3	1202020	63	25	BRW 1 /12' SE OF BLDG 1 /IN WELLHOUSE VLT	100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TERRACE CONDOS	3	1202020	63	25	BRW 2 /12' W OF BLDG 2		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TERRACE CONDOS	3	1202020	63	25	BRW 3 /105' N OF BLDG 5	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FAIRHAVEN MOBILE HOME PARK	1	1563020	63	25	BRW 1 /700' WSW OF PS IN WOODS	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOST NATION WATER	2	1781030	63	25	BRW 1 /35 1/2' S OF PH	405	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOST NATION WATER	2	1781030	63	25	BRW 2 /36' SW OF PH BACK-UP	450	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PLEASANT LAKE MHP/UPPER	1	2413010	63	25	BRW 2 /5' S OF PH	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MUIRFIELD CLUSTER	2	2232130	64	23	BRW 1 /S 28' S OF WELL 2	320	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MUIRFIELD CLUSTER	2	2232130	64	23	BRW 2 /N 260' W OF PH	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HILLCREST MANOR APTS	3	362010	65	25	BRW 3 /15' W OF TENNIS COURT	1493	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HILLCREST MANOR APTS	3	362010	65	25	BRW 1 /IN PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HILLCREST MANOR APTS	3	362010	65	25	BRW 2 /15' SSW OF PH	375	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SACO RIVER FOREST	1	512120	65	24	BRW 1 /15' W OF PS	210	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FITZWILLIAM VILLAGE/LAUGHNER	2	821020	65	25	BRW 2 /180' NE OF MOULTON HOUSE	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	FITZWILLIAM VILLAGE/LAUGHNER	2	821020	65	25	3RW 3 /FRONT OF BLOCK HOUSE AT ENTRANCE	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/GAGE HILL	1	1852020	65	26	BRW /3' E OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PLEASANT VALLEY PARK ESTATE	1	2223010	65	26	3RW 1 /235' N OF INTERS MASON RD /KADDY LN	145	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MILLSBROOK VILLAGE	2	2342110	68	27	BRW 1 /107' WNW OF PH	385	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROLLING RIDGE	1	162130	70	28	BRW 1 /25' SE OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOUTH PINES	1	512140	70	28	BRW 2 /10'WNW OF PH	375	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BEECH HILL MHP	1	803040	70	28	BRW /IN PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DARBY FIELD COMMONS	2	1332020	70	28	BRW 1 /80' S OF PH	365	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DARBY FIELD COMMONS	2	1332020	70	28	BRW 2 /120' S OF PH	405	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FORREST STREET CONDOS	1	1932040	70	28	BRW 1 /70' NW OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PHEASANT RUN CONDOS	2	2232080	70	28	BRW 1 /240' SE OF PH	107	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PHEASANT RUN CONDOS	2	2232080	70	28	BRW 2 /360' ESE OF PH	102	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHISHOLM FARM	2	2232200	70	28	BRW 1 /50' N OF PH	440	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHISHOLM FARM	2	2232200	70	28	BRW 2 /60' NNE OF PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FOREST VIEW ESTATES	2	2302050	70	28	BRW 2 /35' NNW OF PH	485	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FOREST VIEW ESTATES	2	2302050	70	28	BRW 1 /61' NW OF PH	385	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTHERN SHORES WATER	1	2352020	70	28	ART /IN PH	185	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SISTERS OF MERCY	1	2544010	70	1	BRW 1 /IN PIT IN PUMPROOM	990	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	KINGS GRANT	2	771020	71	47	BRW 1 /136' SE OF PH NORTH WELL	290	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	KINGS GRANT	2	771020	71	47	BRW 2 /137' SE OF PH SOUTH WELL /PRIMARY	235	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BARTLETT PLACE	2	162250	72	29	BRW 1 /26' NNE OF PH	363	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BARTLETT PLACE	2	162250	72	29	BRW 2 /16' S OF PH	\$	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PLEASANT VALLEY MHP	1	353020	73	29	BRW /130' NE OF PS	335	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	AUTUMN WOODS	2	612220	73	29	BRW 1 /265' SE OF PH	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	AUTUMN WOODS	2	612220	73	29	BRW 2 /270' SE OF PH	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FROST TRAILER PARK	2	993030	73	30	BRW 1 /1000' S OF PH	181	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FROST TRAILER PARK	2	993030	73	30	BRW 2 /34' SE OF PH	275	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CROSSWINDS	2	1612260	73	29	BRW 1 /145' NW OF PS	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CROSSWINDS	2	1612260	73	29	BRW 2 /60' SW OF PS	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GRIGGS MOBILE HOMES	1	1913010	73	29	BRW /30' S OF UGPH /BTW LOTS 9/10	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CROSS RIDGE ESTATES	1	1932120	73	29	BRW /75' NNW OF PH	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDY HILL/SOUTH	1	2353090	73	29	BRW /15' NW OF PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RUNNELLS LANDING	2	1172020	74	49	BRW 2 /285' SE OF PH	605	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RUNNELLS LANDING	2	1172020	74	49	BRW 1 /300' SE OF PH	705	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOON ESTATES	1	1793020	74	30	BRW 2 /6' S OF PH	1220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	INN AT SECRETARIAT ESTATES	2	2004010	74	33	BRW 1 /400' E OF PH	805	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	INN AT SECRETARIAT ESTATES	2	2004010	74	33	BRW 2 /400' SE OF PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COTTAGES AT WINDCHIMES	1	262040	75	30	BRW 1 /40' SE OF PH	460	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BLUEBERRY HILL MHP	3	413010	75	30	BRW 1 /15' NE OF PH	435	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BLUEBERRY HILL MHP	3	413010	75	30	BRW 2 /70' NE OF PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BLUEBERRY HILL MHP	3	413010	75	30	BRW 3 /175' NE OF PH	435	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DAVIS HILL	2	512260	75	30	BRW 2 /235' WNW OF PS	478	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DAVIS HILL	2	512260	75	30	BRW 4 /225' WSW OF PS	1025	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOW BROOK	2	774030	75	50	BRW 1 /40' N OF PH	263	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOW BROOK	2	774030	75	50	BRW 2 /32' NE OF PH	303	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GILFORD MEADOWS	2	882210	75	40	BRW 1 /75' W OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GILFORD MEADOWS	2	882210	75	40	BRW 2 /195' N OF PH	680	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BOUMIL GROVE CONDOS	1	1392050	75	30	BRW 2 /35' SW OF PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE HILL ESTATES	2	1522070	75	30	BRW 1 /115' WSW OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE HILL ESTATES	2	1522070	75	30	BRW 2 /5' N OF PH	645	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TUXBURY MEADOWS	2	1932180	75	24	BRW 1S /310' SW OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TUXBURY MEADOWS	2	1932180	75	24	BRW 2N /260' SW OF PH	220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	SWEET HILL ESTATES	2	1932200	75	30	BRW 2 /400' E OF PH	705	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SWEET HILL ESTATES	2	1932200	75	30	BRW 1 /280' S OF PH	780	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OLIVERIAN SCH	1	1107030	76	6	BRW /6' NE OF WELLHOUSE	212	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COLONIAL POPLIN NURSING HOME	1	874020	78	1	BRW 1 /325' SW OF BLDG ENTRANCE	330	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LITCHFIELD LANDING	1	1373010	78	44	BRW /36' N OF PH DOOR IN VAULT	35	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LADD HILL MHP	1	203020	80	32	BRW /75' W OF PS	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EVERGREEN DRIVE WATER	2	262010	80	29	BRW 1 /290' NE OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DEERBROOK CONDOS	1	512150	80	32	BRW /15' N OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BARKLAND ACRES	2	612040	80	27	BRW 1 /15' W OF PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BARKLAND ACRES	2	612040	80	27	BRW 2 /45' NE OF PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MORNINGSIDE DRIVE	2	612050	80	32	BRW 2 /6' SE OF ENTRANCE TO PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MORNINGSIDE DRIVE	2	612050	80	32	BRW 1 /30' NE OF ENTRANCE TO PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HUBBARD HILL	1	612090	80	32	BRW 2, 75' NORTH OF PUMP HOUSE	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROLLING MEADOWS CONDOS I	1	1392200	80	32	BRW 1 /97' SW OF BLDG 22 CARPORT	196	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SANDS OF BROOKHURST	1	1522040	80	26	BRW 1 /33' E OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	APPLE CROWN VILLAGE DISTRICT	1	1672020	80	32	BRW 1 /245' E OF PH	828	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREENFIELD HILL ESTATES	5	1932090	80	39	BRW 4 /170' E OF PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREENFIELD HILL ESTATES	5	1932090	80	39	BRW 5 /275' E OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREENFIELD HILL ESTATES	5	1932090	80	39	BRW 2 MIDDLE /300' SE OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREENFIELD HILL ESTATES	5	1932090	80	39	BRW 3 S /240' ESE OF PH	615	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREENFIELD HILL ESTATES	5	1932090	80	39	BRW 1 S /350' SSE OF PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTGATE ESTATES	4	1972060	80	26	BRW 4 /280' SW OF PH	925	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTGATE ESTATES	4	1972060	80	26	BRW 5 /150' W OF PH	825	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTGATE ESTATES	4	1972060	80	26	BRW 3 /345' SW OF PH	825	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTGATE ESTATES	4	1972060	80	26	BRW 2 /300' S OF PH	1025	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/CLEARWATER ESTATES	2	1972070	80	32	BRW 2 /156' SW OF PH	683	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/CLEARWATER ESTATES	2	1972070	80	32	BRW 1 /158' S OF PH	443	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MAGDALEN COLLEGE	2	2415010	80	7	BRW 1 /420' NW OF CHAPEL	525	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MAGDALEN COLLEGE	2	2415010	80	7	BRW 2 /360' NW OF CHAPEL	755	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FORESTVIEW MANOR	2	1524010	82	3	BRW 1 /165' N OF BLDG ONE	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FORESTVIEW MANOR	2	1524010	82	3	BRW 2 /155' NW OF BLDG ONE	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	LYME WATER	3	1431010	83	33	BRW 3 /DOWD	220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	LYME WATER	3	1431010	83	33	BRW 1 /MUNGER/HUNTON	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	LYME WATER	3	1431010	83	33	BRW 4 /CELONE	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOONGATE FARM	1	1932060	84	48	BRW 1 /150' W OF PH	120	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKESIDE AT WINNIPESAUKEE	2	62050	85	34	BRW 8 /800' NE OF PS	361	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKESIDE AT WINNIPESAUKEE	2	62050	85	34	BRW 2 /240' NE OF PS	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WATER WHEEL ESTATES	2	112070	85	34	BRW 1 /150' E OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WATER WHEEL ESTATES	2	112070	85	34	BRW 2 /50' E OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTHBROOK MHP	2	203030	85	34	BRW 1 /IN PS 1 /OLD /ESTATES I	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTHBROOK MHP	2	203030	85	34	BRW 2 /225' SE OF PS 2 /NEW /ESTATES II	185	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COUNTRY LANE MANOR	1	363010	85	34	BRW /1 SW OF NEW PH ADDITION	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/THURSTON WOODS	2	1332050	85	34	BRW 1 /154' S OF PUMPHOUSE	760	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/THURSTON WOODS	2	1332050	85	34	BRW 2 /174.5' S OF PUMPHOUSE	447	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIGHLAND LINKS COLONY	2	1162010	88	35	BRW 1 /42' SW OF PH	180	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIGHLAND LINKS COLONY	2	1162010	88	35	BRW 2 /32' NE OF PH	720	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WAGON WHEEL	1	1393050	88	35	BRW 2/16' E OF NEW STONEHENGE RD PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WENTWORTH ACRES	2	1612250	88	35	BRW 1 /25' NNW OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WENTWORTH ACRES	2	1612250	88	35	BRW 2 /143' NW OF PH	580	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WILLOW GROVE TRAILER PARK	1	1753010	88	35	BRW 2 /70' N OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HALE ESTATES	6	512270	90	36	BRW 5 /210' NW OF PH	1203	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HALE ESTATES	6	512270	90	36	BRW 1 /170' E OF PH	1202	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	HALE ESTATES	6	512270	90	36	BRW 2 /70' E OF PH	1203	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HALE ESTATES	6	512270	90	36	BRW 3 /10' N OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HALE ESTATES	6	512270	90	36	BRW 6 /160' N OF PH	660	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HALE ESTATES	6	512270	90	36	BRW 4 /110' NW OF PH	698	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHERRY VALLEY CONDOS	1	882080	90	36	BRW /400' SW OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRETON WOODS DEV	1	882220	90	36	BRW 1 /200 S OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TAYLOR RIVER ESTATES	2	1053030	90	36	BRW 1 /10' S OF PH	180	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TAYLOR RIVER ESTATES	2	1053030	90	36	BRW 2 /25' SW OF PH	220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ELM BROOK VILLAGE	2	1193020	90	36	BRW 1 /5' W FROM CNR OF PH	125	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ELM BROOK VILLAGE	2	1193020	90	36	BRW 2 /6' SW FROM PH	149	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	AZY PINES MOBILE HOME PK/UPP	1	1403020	90	36	BRW /IN UPPER PUMPHOUSE	265	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDWARD HARBOR CONDOS	3	1612210	90	36	BRW 1 /270' W OF PH	630	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDWARD HARBOR CONDOS	3	1612210	90	36	BRW 2 /30' W OF PH	270	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDWARD HARBOR CONDOS	3	1612210	90	36	BRW 3 /170' W OF PH	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PACKER MEADOWS	1	1752030	90	45	BRW 1 /250' N OF BLDG C	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TENNEY BROOK CONDOS I	1	1942020	90	36	BRW 1 /95' NE OF PH	340	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PROFILE APARTMENTS	1	2002020	90	36	BRW /10' N OF PS	415	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TISDALE MOBILE HOMES	2	2053040	90	58	BRW 2 /50' E OF SW CNR GARAGE	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TISDALE MOBILE HOMES	2	2053040	90	58	BRW 3 /40' SE OF SW CNR GARAGE	440	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE ACRES CONDOS	2	2082040	90	36	BRW 1 /90' NE OF PH	155	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE ACRES CONDOS	2	2082040	90	36	BRW 2 /45' N OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WOOD HILL VILLAGE	2	1123020	91	29	BRW 3 /51' SW PS 2 IN BACK OF PARK	205	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WOOD HILL VILLAGE	2	1123020	91	29	BRW 2 /80' NE OF PS 1	295	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SPRUCE VALLEY MHP	2	583010	92	37	BRW 1 /10' NW OF PS	435	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SPRUCE VALLEY MHP	2	583010	92	37	BRW 2 /40' N OF PS	295	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MELLING GLEN	2	762040	92	42	BRW 1 /160' S OF PH	380	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MELLING GLEN	2	762040	92	42	BRW 3 /2640' ENE OF PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OUNTRY HILLS OF EAST KINGSTC	3	702040	93	37	BRW 1 /108' SE OF PH	1100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OUNTRY HILLS OF EAST KINGSTC	3	702040	93	37	BRW 3 /500' W OF PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OUNTRY HILLS OF EAST KINGSTC	3	702040	93	37	BRW 2 /125' SE OF PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	YACHT CLUB VISTA	1	882400	93	37	BRW 1 /120' SW OF PH	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STONEWALL VILLAGE	2	882420	93	37	BRW 1 /900' NW OF PH	560	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STONEWALL VILLAGE	2	882420	93	37	BRW 2 /950' NW OF PH	660	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEST POINT	3	1612040	93	37	BRW 3 /3' N OF BRW 1/001		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEST POINT	3	1612040	93	37	BRW 1 /190' N OF TREATMENT BLDG	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEST POINT	3	1612040	93	37	BRW 2 /6' SW OF INF WELL	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE COMMONS OF ATKINSON	2	112060	95	38	BRW 1 /120' W OF PH NORTH	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE COMMONS OF ATKINSON	2	112060	95	38	BRW 2 /90' SW OF PH SOUTH	255	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/FARMSTEAD ACRES	1	612110	95	36	BRW 1 /170' N OF PH	245	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MAPLE HAVEN	2	612170	95	63	BRW 2 /169' N OF PH	330	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MAPLE HAVEN	2	612170	95	63	BRW 4 /200' NE OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BOW LAKE ESTATES	2	2212010	95	41	BRW / 150' WSW OF PH /STEEL CASING	234	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ANCOEUR APT/HUDSON MOTOR I	1	1202010	96	35	ART 3 /400' NW OF PUMPROOM	805	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/CASTLE REACH	3	2542140	97	39	BRW 4 /400' NW OF PH	1600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/CASTLE REACH	3	2542140	97	39	BRW 1 /49'NW OF PH	885	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/CASTLE REACH	3	2542140	97	39	BRW 2 /243' N OF PH	825	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RICHARDSON ESTATES	1	612130	98	36	BRW 1 /20' N OF PH	454	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRAKE HILL ACRES	2	882050	98	39	BRW 1 /150' W OF NEW PH ACROSS THE BROOK	355	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRAKE HILL ACRES	2	882050	98	39	BRW 2 /7' SE OF NEW PH	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MILL PINE VILLAGE	2	2082070	98	65	BRW 1 /650' N OF PH	1005	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MILL PINE VILLAGE	2	2082070	98	65	BRW 2 /700' N OF PH	980	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SUGAR HILL MANOR MHP	3	2453010	98	39	BRW /362' SE OF PH 1 FRONT OF PARK	355	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	SUGAR HILL MANOR MHP	3	2453010	98	39	BRW 1 /15' W OF PH 1 FRONT OF PARK	375	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROCKY RIVER RESORT	2	162290	100	40	BRW 1 /30' S OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	IMMACULATE CONCEPTION SCH	1	394010	100	4	BRW 2 /170' NW OF PH	335	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGES AT CHESTER CONDOS	2	432010	100	40	BRW N /590' NW OF PH	385	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGES AT CHESTER CONDOS	2	432010	100	40	BRW S /520' NW OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	CHESTER BROOK	3	432030	100	40	BRW 1 /35' E OF PH	1010	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	CHESTER BROOK	3	432030	100	40	BRW 2 /45' E OF PH	605	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	CHESTER BROOK	3	432030	100	40	BRW 3 /40' E OF PH	575	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PLUMER COURT	2	762070	100	40	BRW 1 /250' NE OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PLUMER COURT	2	762070	100	40	BRW 2 /260' NE OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MARINA BAY CONDOS I AND II	1	882140	100	40	BRW 3 /3' W OF PH 2	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COUNTRY VILLAGE WAY	1	882170	100	40	BRW 1 /1' N OF PS	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN VIEW APTS	2	1282010	100	40	BRW 1 /100' W OF PS	175	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN VIEW APTS	2	1282010	100	40	BRW 2 /100' N OF PS	175	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MIDRIDGE CONDOS	1	1392070	100	40	BRW 1 /55' NW OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MARLBOROUGH ESTATES	3	1482010	100	40	BRW 1 /500' SE OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MARLBOROUGH ESTATES	3	1482010	100	40	BRW 2 /480' SE OF PH	580	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MARLBOROUGH ESTATES	3	1482010	100	40	BRW 3 /483' E OF PH	320	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROLLING ACRES MHP	2	1603010	100	40	BRW 1 /IN PS	150	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROLLING ACRES MHP	2	1603010	100	40	BRW 2 /135' N OF PS	325	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STANYAN ROAD	4	1612270	100	40	BRW 1 /130' NE OF PS	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STANYAN ROAD	4	1612270	100	40	BRW 2 /70' SSW OF PS	265	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STANYAN ROAD	4	1612270	100	40	BRW 3 /200' S OF PS	295	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STANYAN ROAD	4	1612270	100	40	BRW 4 /250' SSW OF PS	265	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOWVIEW APARTMENTS	1	1752020	100	48	BRW 1 /45' SW OF PH	295	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIGHLAND VILLAGE DISTRICT	2	1762010	100	40	BRW UE 2 /600' S OF NEW PH	760	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIGHLAND VILLAGE DISTRICT	2	1762010	100	40	BRW UE 1 /600' SE OF NEW PH	660	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ASHUELOT RIVER APTS	1	2302010	100	40	BRW /250' NW OF STORAGE TANKS	605	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/SPRUCE POND ESTS	2	2542180	100	41	BRW 1E /25' SE OF PH	365	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ORCHARD HIGHLANDS	1	912020	105	42	BRW 1 /20' S OF PH	810	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TONEHENGE TRUST APARTMENT	2	1392130	105	48	BRW 1 /700' SW OF BLDG 23	364	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TONEHENGE TRUST APARTMENT	2	1392130	105	48	BRW 2 /145' NE OF BLDG 23	252	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BALMORAL CONDOS	1	2232060	105	42	BRW 1 /500' NW OF PH	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGES OF WINDHAM	2	2542070	105	42	BRW 1S /410' S OF LOWER PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGES OF WINDHAM	2	2542070	105	42	BRW 2N/ 534' N OF LOWER PH	450	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WIGGIN FARM WINTERBERRY	3	2232180	108	43	BRW 1 /MIDDLE 84' SE OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WIGGIN FARM WINTERBERRY	3	2232180	108	43	BRW 2 /N 83' SE OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WIGGIN FARM WINTERBERRY	3	2232180	108	43	BRW 3 /S 183' SSE OF PH	320	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	175 ESTATES	2	2342010	108	48	BRW 1 /32' NE OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	175 ESTATES	2	2342010	108	48	BRW 2 /46' SE OF PH	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HADLEIGH WOODS	2	2542160	109	62	BRW 1 /475' SW OF PH	145	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HADLEIGH WOODS	2	2542160	109	62	BRW 2 /460' SW OF PH	125	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTH LEDGE	2	162050	110	44	BRW 2 /145' NW OF PH 2	1045	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/NESENKEAG	2	1392240	110	44	BRW 2 /280' NW OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/NESENKEAG	2	1392240	110	44	BRW 1 /960' NW OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GOLDEN HILL	2	1932020	110	44	BRW 2 /97' SE OF NE CNR OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GOLDEN HILL	2	1932020	110	44	BRW 1 /67' SE OF NE CNR OF PH	605	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RIVERVIEW MANOR CONDOS	2	1972020	110	46	BRW 1 /68' W OF PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RIVERVIEW MANOR CONDOS	2	1972020	110	46	BRW 2 /43' NW OF PH	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDHAM TERRACE	1	2544020	110	1	BRW 1 /140' NE OF PH	405	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE VINEYARDS	2	2232190	111	74	BRW 1 /250' S OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE VINEYARDS	2	2232190	111	74	BRW 2 /260' SE OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	ECHO LAKE WOODS	2	512050	112	45	BRW 1 /10' N OF PH	156	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ECHO LAKE WOODS	2	512050	112	45	BRW 2 /40' W OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEPPERIDGE WOODS	2	152090	113	45	BRW 1 /150' SE OF PH	637	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEPPERIDGE WOODS	2	152090	113	45	BRW 2 /130' SE OF PH	652	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGES ON THE LAMPREY	2	762080	113	45	BRW 1 /40' SSW OF PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VILLAGES ON THE LAMPREY	2	762080	113	45	BRW 2 /70' SW OF PH	690	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GILFORD FOREST ESTATES	2	882020	113	45	BRW 1 /IN PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GILFORD FOREST ESTATES	2	882020	113	45	BRW 2 /150' SE OF PH	220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRIAR COURT ESTATES	2	912040	113	45	BRW 1 /375' SE OF PH	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRIAR COURT ESTATES	2	912040	113	45	BRW 2 /380' ESE OF PH	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	POINT BREEZE CONDOS	1	2562030	113	46	BRW 1 /85' N OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RIDGEWOOD ESTATES	2	73030	115	47	BRW 1 /39' S OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RIDGEWOOD ESTATES	2	73030	115	47	BRW 2 /144' SE OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/FOREST RIDGE	2	802040	115	46	BRW 1 /54' SW OF PH	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/FOREST RIDGE	2	802040	115	46	BRW 2 /14' NW OF PH	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CROTCHED MOUNTAIN MNTNC	2	832010	115	46	BRW 2 /25' NE OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CROTCHED MOUNTAIN MNTNC	2	832010	115	46	BRW 1 /145' NW OF PH	180	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MT LAUREL ESTATES	2	912050	115	46	BRW 1 /18' NE OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MT LAUREL ESTATES	2	912050	115	46	BRW 2 /10' NE OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TURNBERRY	2	2232110	115	46	BRW 1S /275' S OF PH	860	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TURNBERRY	2	2232110	115	46	BRW 2N /230' SSE OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WENTWORTH COVE ESTATES	1	1282020	116	46	BRW /IN PS	340	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FOREST EDGE	2	512060	118	47	BRW 2 /45' NNE OF PH	380	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FOREST EDGE	2	512060	118	47	BRW 1 /IN LOWER PH	190	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/AVERY ESTATES	2	1392250	118	47	BRW 2 /350' SE OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/AVERY ESTATES	2	1392250	118	47	BRW /75' SE OF PH	405	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOLAR VILLAGE	2	203060	120	48	BRW 4 /75' W OF NEW PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOLAR VILLAGE	2	203060	120	48	BRW 3 NEW /105' SE OF NEW PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EDGE OF WOODS	1	883060	120	48	BRW 1 /210' NE OF PS	175	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIGHLAND APARTMENTS	1	1852060	120	48	BRW 1 /10' S OF SECT B 42' E OF A	180	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRANCH RIVER APARTMENTS	2	1972040	120	48	BRW 1 /130' SE OF PS E	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BRANCH RIVER APARTMENTS	2	1972040	120	48	BRW 2 /120' SE OF PS W	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	AMAZON PARK	1	2003070	120	96	BRW /320' W OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BARRINGTON OAKS	2	153030	123	49	BRW 1 /110' SW OF NEW PH	196	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BARRINGTON OAKS	2	153030	123	49	BRW 2 /85' S OF NEW PH	220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROLYN TOWNHOUSE APARTMENT	1	1852040	123	49	BRW 2 /14' S OF CENTER BELOW GD PS	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MELODY PINES CONDOS	3	512230	125	50	BRW 1 /45' N OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MELODY PINES CONDOS	3	512230	125	50	BRW 2 /40' SW OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE BIG W	1	613060	125	50	BRW 1 /65' ENE OF PH	335	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINNSTOCK CONDOS	2	882060	125	50	BRW 2 /50' SW OF LAKESHORE /WESTERLY	270	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINNSTOCK CONDOS	2	882060	125	50	BRW 1 /40' SW OF LAKESHORE /EASTERLY	310	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NGSTON PINES ELDERLY HOUSIN	1	1272010	125	50	BRW 1 /150' SE OF PH	445	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PENDELTON COVE	1	1282030	125	50	BRW /10' NE OF PS	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MASCOMA MEADOWS	1	1323020	125	50	BRW 1 /IN PH	380	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PILLSBURY LAKE/PENINSULA	2	2462050	125	50	BRW 6 /74' NE OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PILLSBURY LAKE/PENINSULA	2	2462050	125	50	BRW 5 /11' E OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ANNIE OAKLEY MHP	1	613010	127	51	BRW 1 /97' N OF NW CNR OF PH	625	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BROADVIEW CONDOS	2	882130	128	51	BRW 1 /72' W OF PH /LOWER	475	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BROADVIEW CONDOS	2	882130	128	51	BRW 2 /160' W OF PH /LOWER	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OLD LAKE SHORE	1	883010	128	51	BRW /80' W OF PS	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ORFORD VILLAGE DIST	2	1831010	128	51	BRW 1 /70' SW OF PH	940	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ORFORD VILLAGE DIST	2	1831010	128	51	BRW 2 /55' E OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	PENINSULA AT WINDING BROOK	2	2232040	128	51	BRW 1 /45' W OF PH	340	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PENINSULA AT WINDING BROOK	2	2232040	128	51	BRW 2 /45' S OF PH	340	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHITTEMORE SHORES	3	292010	130	52	BRW 3 /950' SE OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHITTEMORE SHORES	3	292010	130	52	BRW 1 /120' S OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHITTEMORE SHORES	3	292010	130	52	BRW 2 /300' S OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MAPLEVALE AND CRICKET HILL	2	702030	130	70	BRW 2 /320' N OF PH	640	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GILFORD VILLAGE WATER DIST	3	881010	130	36	BRW 4 /800' SSW OF PH	553	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GILFORD VILLAGE WATER DIST	3	881010	130	36	BRW 2 /75' NE OF PS	430	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GILFORD VILLAGE WATER DIST	3	881010	130	36	BRW 3 /340' E OF PS	277	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DE COUNTRY VILLAGE TOWNHOU	2	1392030	130	53	BRW 1 /100' W OF PH NORTH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DE COUNTRY VILLAGE TOWNHOU	2	1392030	130	53	BRW 2 /100' SW OF PH/SOUTH	355	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EU/FLETCHER CORNER ESTATE	2	2542150	130	53	BRW 2 /1170' SE OF PH	1040	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CATES MPH	1	203010	134	54	BRW 1 /35' N OF PS	365	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ATTITASH WOODS CONDOS	2	162300	135	54	BRW 1 /105' N OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ATTITASH WOODS CONDOS	2	162300	135	54	BRW 2 /5' N OF PH	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	DANIELS ACRES	2	753020	136	54	BRW 2 /IN VAULT 20' SE OF 18 BRALEY DR	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	DANIELS ACRES	2	753020	136	54	BRW 3 /35' E OF NE CNR PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SCOTCH PINE MHP	1	1403010	137	55	BRW 1 /3' SW OF PS	485	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EAGLES REST MHP	2	62010	138	55	BRW 2 /53' S OF SE CNR OF PH	1408	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EAGLES REST MHP	2	62010	138	55	BRW 1 /33' NNE OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GUNSTOCK GLEN WATER	1	882090	138	55	BRW /IN PH	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BROOKSIDE CROSSING	2	882180	138	55	BRW 1 /65' NE OF PS	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BROOKSIDE CROSSING	2	882180	138	55	BRW 2 /90' NW OF PS	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TAMWORTH PINES	2	2313020	138	55	BRW 1 /300' E OF PH SOUTH	680	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ATKINSON WOODS	3	112100	140	56	BRW 3 /220' NE OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ATKINSON WOODS	3	112100	140	56	BRW 1 /200' N OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ATKINSON WOODS	3	112100	140	56	BRW 2 /220' N OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	IRON WHEEL MHP	2	583020	140	56	BRW 1 /73' NE OF PS	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	IRON WHEEL MHP	2	583020	140	56	BRW 2 /620' SW OF PS	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HI AND LO ESTATES	2	612140	140	56	BRW 4 /334' NW OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HI AND LO ESTATES	2	612140	140	56	BRW 2 /100' NW OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAMPLIGHTER ESTATES	2	1272030	140	56	BRW 1 /40' S OF PH	685	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAMPLIGHTER ESTATES	2	1272030	140	56	BRW 2 /60' S OF PH	685	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HILL TOP	2	1973050	140	56	BRW 4 /50' SW OF PH	620	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HILL TOP	2	1973050	140	56	BRW 2 /180' NE OF PS	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIGH MOWING SCHOOL	2	2525010	140	9	BRW 2 /20' SE ENTRANCE TO BOYS DORM	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIGH MOWING SCHOOL	2	2525010	140	9	BRW 1 /WELL HOUSE BY GYM	580	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTH COUNTRY VILLAGE	2	2373010	143	57	BRW 3 /450' N OF PH	1035	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTH COUNTRY VILLAGE	2	2373010	143	57	BRW 1 /IN PS	180	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOWBROOK	2	612120	145	59	BRW 3 /305' N OF PH	603	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MEADOWBROOK	2	612120	145	59	BRW 2 /300' NE OF PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN VIEW HOUSING	2	883030	148	59	BRW 4 /25' E OF PH	380	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN VIEW HOUSING	2	883030	148	59	BRW 3 /30' NE OF PH	430	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ORTHWOOD MOUNTAIN VIEW MH	2	1793030	148	59	BRW 1 /50' SW OF PH	477	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ORTHWOOD MOUNTAIN VIEW MH	2	1793030	148	59	BRW 2 /135' NW OF PH	614	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	OAK HILL	2	432020	150	60	BRW 1 /55' SW OF PH	912	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	OAK HILL	2	432020	150	60	BRW 2 /2050' SE OF PH	730	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WOODLAND AT DERRY	2	612160	150	60	BRW 1 /110' SW OF PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WOODLAND AT DERRY	2	612160	150	60	BRW 2 /150' W OF PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FRANCESTOWN VILLAGE WATER	2	831010	150	60	BRW 2 /50' S OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FRANCESTOWN VILLAGE WATER	2	831010	150	60	BRW 1 /ON QUINN PROPERTY	370	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DOCKHAM SHORES ESTATES	2	882190	150	60	BRW 1 /50' N OF BRW 2	295	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	DOCKHAM SHORES ESTATES	2	882190	150	60	BRW 2 /1000' W OF PH	290	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DEER MEADOWS	2	1193030	150	60	BRW 1 /210' NE OF PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DEER MEADOWS	2	1193030	150	60	BRW 2 /43' N OF PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DUSTIN HOMESTEAD	1	2002030	150	60	BRW 4 /500' NNW OF PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STRATHAM GREEN CONDOS	3	2232050	150	60	BRW 3 /163' N OF PH	352	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STRATHAM GREEN CONDOS	3	2232050	150	60	BRW 1N /42' E OF PH	460	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STRATHAM GREEN CONDOS	3	2232050	150	60	BRW 2S /48' SE OF PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BURNHAVEN	2	2232160	150	60	BRW 1 /160' E OF PH	180	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BURNHAVEN	2	2232160	150	60	BRW 2 /180' NE OF PH	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PLEASANT LAKE MHP/LOWER	1	2413020	150	32	BRW /10' S OF PH	98	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ILLSBURY LAKE/FRANKLIN PIERC	2	2462040	150	60	BRW 7 /187' N OF PH	1060	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ILLSBURY LAKE/FRANKLIN PIERC	2	2462040	150	60	BRW 4 /35' W OF NEW PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEDIKO SCHOOL	3	2552010	150	20	BRW 1 /30' SE OF DORM BLDG	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEDIKO SCHOOL	3	2552010	150	20	BRW 3 /15' N OF INFIRMARY PH	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WEDIKO SCHOOL	3	2552010	150	20	BRW 4 /10' E OF SCHOOL PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SEASONS AT LAKE SUNAPEE	2	1722010	153	63	BRW 1 /14' SW OF PH	275	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SEASONS AT LAKE SUNAPEE	2	1722010	153	63	BRW 2 /81' SW OF PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WOODLAND GROVE	2	512130	155	62	BRW 1 /IN PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WOODLAND GROVE	2	512130	155	62	BRW 2 /40' SW OF PH	185	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DUBLIN CHRISTIAN ACADEMY	2	664010	155	7	BRW 1 /70' W OF BOYS DORMITORY	425	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DUBLIN CHRISTIAN ACADEMY	2	664010	155	7	BRW 2 /GIRLS DORMITORY ANNEX BASEMENT	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RAND SHEPARD HILL	3	612230	158	63	BRW 3 /250' SE OF PH	145	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RAND SHEPARD HILL	3	612230	158	63	BRW 1 /170' S OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	RAND SHEPARD HILL	3	612230	158	63	BRW 2 /180' SE OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JONATHANS LANDING CONDOS	3	1612170	158	63	BRW 1 /760' E OF PH	620	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JONATHANS LANDING CONDOS	3	1612170	158	63	BRW 3 /700' E OF PH	620	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	JONATHANS LANDING CONDOS	3	1612170	158	63	BRW 2 /730' NE OF PH	620	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ADAMS MOBILE HOME PARK	2	2043010	158	63	BRW 2 /45' NE OF REAR CNR PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ADAMS MOBILE HOME PARK	2	2043010	158	63	BRW 3 /45' SE OF PH	110	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOUTH PARRISH	2	2533010	158	63	BRW 1 /1000' E OF PH	70	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOUTH PARRISH	2	2533010	158	63	BRW 2 /1000' E OF PH	100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BIRCH HILL ESTATES	3	2563010	159	106	BRW 2 /100' S OF PS	542	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BIRCH HILL ESTATES	3	2563010	159	106	BRW 3 /120' SE OF PS	405	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BIRCH HILL ESTATES	3	2563010	159	106	BRW 4 /110' SE OF PS	410	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LEDGES AT NEWFOUND LAKE	5	32010	160	64	BRW 1 /95' NW OF PH	1010	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LEDGES AT NEWFOUND LAKE	5	32010	160	64	BRW 2 /165' NW OF PH	580	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LEDGES AT NEWFOUND LAKE	5	32010	160	64	BRW 3 /45' SE OF PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LEDGES AT NEWFOUND LAKE	5	32010	160	64	BRW 4 /500' NW OF PH	483	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LEDGES AT NEWFOUND LAKE	5	32010	160	64	BRW 5 /250' NE OF PH		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/MINISTERIAL HILLS	2	1392310	160	64	BRW 1 /550' NW OF PH	685	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/MINISTERIAL HILLS	2	1392310	160	64	BRW 2 /610' NW OF PH	725	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/LAMPLIGHTER VILLAGE	2	2542170	162	65	BRW 2 /550' E OF PH	785	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/LAMPLIGHTER VILLAGE	2	2542170	162	65	BRW 1 /450' NE OF PH	385	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WRIGHT FARM CONDOS	2	112030	163	65	BRW 2 /65' S OF PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WRIGHT FARM CONDOS	2	112030	163	65	BRW 1 /180' SE OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TOP NOTCH CONDOS	2	162200	163	65	BRW 1E /280' E OF PH	378	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TOP NOTCH CONDOS	2	162200	163	65	BRW 2E /295' E OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	BEDFORD WATER	3	192010	163	65	BRW 1 /2' S OF PH	540	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STAGECOACH FARMS	3	692020	164	52	BRW 1 /100' SE OF PH	601	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STAGECOACH FARMS	3	692020	164	52	BRW 4 /180' SSE OF PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STAGECOACH FARMS	3	692020	164	52	BRW 5 /50' NNW OF PH 2	480	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OUNTAINSIDE AT CROTTCHED MTI	2	212020	165	70	BRW 1 /73' SW OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	MOUNTAINSIDE AT CROTCHED MT	2	212020	165	70	BRW 2 /160' NW OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FREEDOM VILLAGE CONDOS	2	862030	165	66	BRW 1 /78' SSW OF PH	377	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FREEDOM VILLAGE CONDOS	2	862030	165	66	BRW 2 /105' SW OF PH	377	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHIP O WILL	2	1943010	165	66	BRW 5 /320' NW OF BRW 4 PH	540	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHIP O WILL	2	1943010	165	66	BRW 4 /15' N OF BRW 4 PH	1243	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAINSIDE AT ATTITASH	2	162210	167	61	BRW 1 /200' SSE OF UNIT 11 PS/LOWER WELL	753	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAINSIDE AT ATTITASH	2	162210	167	61	BRW 2 /230' SE OF UNIT 11 PS /UPPER WELL	689	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	GOODRICH PROPERTY	2	162350	175	70	BRW 1 /3' SW OF PH	150	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	GOODRICH PROPERTY	2	162350	175	70	BRW 2 /4 1/2' SE OF PH	283	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ERROL WATER WORKS/WEST	3	781010	175	70	BRW 3 /OUTSIDE NEW PH / EAST OF RIVER	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ERROL WATER WORKS/WEST	3	781010	175	70	BRW 1 /30' E OF LIBRARY	90	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ERROL WATER WORKS/WEST	3	781010	175	70	BRW 2 /IN BASEMENT OF TOWN HALL	190	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/HARVEST VILLAGE	2	1392290	175	70	BRW 2 /220' SE OF PH	425	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/HARVEST VILLAGE	2	1392290	175	70	BRW 3 /215' E OF PH	725	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THORNHILL CONDOS	2	2232020	175	70	BRW 1 /90' NW OF CONTROL BLDG	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THORNHILL CONDOS	2	2232020	175	70	BRW 3 /110' S OF CONTROL BLDG	585	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SHEL AL MOBILE ESTATES	2	1773020	177	71	BRW 1 /5' S OF OFFICE/SINGLE FAMILY RENTAL	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SHEL AL MOBILE ESTATES	2	1773020	177	71	BRW 2 /40' W OF LUCK /RESIDENCE	125	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDY ACRES	2	413030	180	72	BRW 2 /110' N OF PH	320	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WINDY ACRES	2	413030	180	72	BRW 3 /80' NE OF PH	605	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SLOPE N SHORE CLUB	1	1722020	180	73	BRW /30' SW OF INN	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	AUTUMN WOODS	3	2052070	180	72	BRW 3 /91' N OF PH	1025	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	AUTUMN WOODS	3	2052070	180	72	BRW 1 /175' N OF PH	725	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	AUTUMN WOODS	3	2052070	180	72	BRW 4 /1160' NE OF PH	660	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COLLINS LANDING	2	2452040	180	72	BRW 1 /65' NE OF PH	1208	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COLLINS LANDING	2	2452040	180	72	BRW 2 /50' SW OF PH	605	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/LIBERTY TREE ACRES	2	1972010	183	72	BRW 1 /12' ENE OF PS 2 REAR	375	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/LIBERTY TREE ACRES	2	1972010	183	72	BRW 2 /8' SSE OF PS 2 FRONT	625	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COW HILL WELLHOUSE	1	162160	185	74	BRW 1 /15' NNE' OF PH LOWER	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DUBLIN SCH	1	664020	185	19	BRW 1 /200' E OF HILL HOUSE IN PH	115	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VALLEY FIELD APTS NORTHLAND	2	1932070	185	74	BRW 3 /605' NW OF PH	495	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VALLEY FIELD APTS NORTHLAND	2	1932070	185	74	BRW 1 /274' W OF PH	508	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTWIND ESTATES	2	2003040	188	127	BRW 1 /IN BLDG	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTWIND ESTATES	2	2003040	188	127	BRW 2 /400' E OF PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STONEFORD	2	2082050	188	75	BRW 1W /250' SW OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	STONEFORD	2	2082050	188	75	BRW 2 /200' S OF PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MONADNOCK TENANTS	2	1993010	190	75	BRW 2 /60' SW OF PH	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MONADNOCK TENANTS	2	1993010	190	75	BRW 3 /111' S OF PH	425	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WOODLANDS	2	762120	195	78	BRW 1 /90' S OF PH	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WOODLANDS	2	762120	195	78	BRW 2 /180' S OF PH	440	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SALT RIVER CONDOS	2	2232030	195	78	BRW 1 /40' NE OF PH	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SALT RIVER CONDOS	2	2232030	195	78	BRW 2 /45' SE OF PH	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PITTSBURG WATER DEPT	2	1901010	198	79	ART 2 /100' SE OF PH	105	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PITTSBURG WATER DEPT	2	1901010	198	79	ART 5 /45' S OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DANVILLE FOUR SEASONS	1	583050	200	121	BRW 4 /118' SW OF NEW PS	1100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	IVERMORE MOBILE HOME VILLAG	3	1163010	200	80	BRW 1 /6' S OF SHORT ST PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	IVERMORE MOBILE HOME VILLAG	3	1163010	200	80	BRW 2 /8' NW OF STRONG HOUSE 31	150	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	IVERMORE MOBILE HOME VILLAG	3	1163010	200	80	BRW 3 /58' S OF STRONG HOUSE 31	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE MEADOWS	2	1193010	200	80	BRW 1 /47' S OF PH	235	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE MEADOWS	2	1193010	200	80	BRW 2 /75' S OF PH	235	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE KNOLL VILLAGE	2	1333020	200	80	BRW 1 /230' N OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE KNOLL VILLAGE	2	1333020	200	80	BRW 2 /210' N OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	FAR ECHO HARBOR	2	1612030	200	80	BRW /50' WNW OF PH	906	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CHALK POND WATER	4	1652020	200	80	BRW 2 /80' SE OF LOWER PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN RIVER CONDOS EAST	2	2342040	200	80	BRW /100' SE OF PH	610	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN RIVER CONDOS EAST	2	2342040	200	80	BRW /40' N OF PH	625	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOUTH WEARE WATER	3	2452030	200	80	BRW 3 /850' N OF HOYT MILLS /UPPER PH	1105	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOUTH WEARE WATER	3	2452030	200	80	BRW 2 /350' NE OF HOYT MILLS /UPPER PH	1206	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SOUTH WEARE WATER	3	2452030	200	80	BRW 1 /100' NE OF HOYT MILLS /UPPER PH	1025	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CORNERSTONE ESTATES	2	2082060	202	81	BRW 2 /53' NE OF PH	845	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CORNERSTONE ESTATES	2	2082060	202	81	BRW 1 /48' NW OF PH	785	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE GROUSE POINT CLUB	2	1522090	203	81	BRW 2 /335' NW OF WMS/NEAR TENNIS COURT	526	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE GROUSE POINT CLUB	2	1522090	203	81	BRW 1 /62' N OF WATER METER SHED/WMS	526	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/SUNRISE ESTATES	3	1542030	203	81	BRW 1 /118' E OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/SUNRISE ESTATES	3	1542030	203	81	BRW 2 /33' E OF PH	440	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HEMLOCK HAVEN	2	1053020	207	83	BRW 4 /100' NE OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HEMLOCK HAVEN	2	1053020	207	83	BRW 3 /10' E OF NEW PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HITE MOUNTAIN RESORT/GATEW/	2	2342060	208	83	BRW 1 /IN WELLHOUSE	207	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HITE MOUNTAIN RESORT/GATEW/	2	2342060	208	83	BRW 2 /25' SE OF PH	275	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CARROLL COUNTY COMPLEX	5	1844010	210	37	BRW 2 /350' NW OF NEW PH	1006	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CARROLL COUNTY COMPLEX	5	1844010	210	37	BRW /400' W OF NEW PH	315	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MONTROSE CONDOS	2	2232070	210	84	BRW 1S /110' W OF PH	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MONTROSE CONDOS	2	2232070	210	84	BRW 2N /95' NW OF PH	160	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LANCASTER FARMS	2	2052030	213	85	BRW 1 /15' ESE OF PH /LEAD WELL		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LANCASTER FARMS	2	2052030	213	85	BRW 2 /50' NNE OF PH /LAG WELL		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOODY POINT	3	1732010	215	86	BRW 4 /150' NW OF PH	510	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOODY POINT	3	1732010	215	86	BRW 1 /75' W OF PH	610	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOODY POINT	3	1732010	215	86	BRW 3 /40' N OF PH	607	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTVIEW PARK CONDOS	2	1932030	215	86	BRW 1 /40' SW OF PH	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WESTVIEW PARK CONDOS	2	1932030	215	86	BRW 2 /120' S OF PH	410	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HUDSON MOBILE HOME ESTS	1	1203010	220	88	BRW 2 /125' SW OF PS	450	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREAT BAY WATER SYS	2	1732030	220	87	BRW 1 /840' NE OF MAIN PH /LAG	625	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREAT BAY WATER SYS	2	1732030	220	87	BRW 3 /700' NE OF MAIN PH /LEAD	625	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	RODGERS DEV	2	2353010	220	74	BRW 2 /205' W OF PS	153	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	RODGERS DEV	2	2353010	220	74	BRW 1 /100' W OF PS	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE INN AT SPRUCE WOOD	2	694010	225	52	BRW 1 /320' S OF PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE INN AT SPRUCE WOOD	2	694010	225	52	BRW 2 /315' S OF PH	640	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PATRICIAN SHORES	2	1522010	225	90	BRW 1 /IN PH	325	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PATRICIAN SHORES	2	1522010	225	90	BRW 2 /70' WNW OF PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SPAULDING YOUTH CENTER	4	1764010	225	11	BRW 4 /600' S OF UPPER PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SPAULDING YOUTH CENTER	4	1764010	225	11	BRW 1 /IN WESTERLY PH /LOWER	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SPAULDING YOUTH CENTER	4	1764010	225	11	BRW 2 /150' W OF LOWER PH	625	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SPAULDING YOUTH CENTER	4	1764010	225	11	BRW 3 /600' N OF PH /LOWER	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EPSOM HEALTHCARE CTR	2	774010	226	2	BRW 1 /19' NW OF HEALTHCARE CTR	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EPSOM HEALTHCARE CTR	2	774010	226	2	BRW 1 /8' S OF HEALTHCARE CTR	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	TENNEY BROOK II	1	1942010	228	91	BRW 1 /40' E OF PRIMARY PH	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LENCLIFF HOME FOR THE ELDERI	3	224010	230	11	BRW 1 /250' SE OF ADM BLDG UPHILL	1100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LENCLIFF HOME FOR THE ELDERI	3	224010	230	11	BRW 2 /250' SE OF ADM BLDG DOWNHILL	860	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LRMHV	2	883040	233	93	BRW 2 /30/40' E OF NEW EASTSIDE PH 002	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LRMHV	2	883040	233	93	BRW 3 /10' SW OF WESTSIDE PH 003	240	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROCHESTER TERRACE	3	2003020	233	93	BRW 9 /21' SW OF JOSHUA ST PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROCHESTER TERRACE	3	2003020	233	93	BRW 6 /125' N OF ARROW ST PH	860	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROCHESTER TERRACE	3	2003020	233	93	BRW 7 /275' N OF ARROW ST PH	1005	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHITE ROCK WATER	3	262020	240	94	BRW 1 /INSIDE LOWER PH	430	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	WHITE ROCK WATER	3	262020	240	94	BRW 2 /81' NW OF LOWER PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	WHITE ROCK WATER	3	262020	240	94	BRW 3 /112' SW OF ATM PH	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SIX FLAGS MHP	2	343020	240	96	BRW 2 /95' NE OF PS	100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SIX FLAGS MHP	2	343020	240	96	BRW 3 /200' NE OF PS	100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SACO WOODS CONDOS	2	512250	240	96	BRW 1 /370' W OF PH	325	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SACO WOODS CONDOS	2	512250	240	96	BRW 2 /300' W OF PH	363	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OLDE TOWNE	2	43020	243	97	BRW 3 /300' NW OF NEW PH	320	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OLDE TOWNE	2	43020	243	97	BRW 1 /ON LOT 7	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LONGWOODS MHP	2	603010	245	98	BRW 1 /IN PS	490	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LONGWOODS MHP	2	603010	245	98	BRW 2 /133' E OF PS	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	POND VIEW	5	2303020	248	99	BRW 1 /420' NE OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	POND VIEW	5	2303020	248	99	BRW 2 /440' NE OF PH	236	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	POND VIEW	5	2303020	248	99	BRW 3 /470' NE OF PH	210	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	POND VIEW	5	2303020	248	99	BRW 4 /520' NE OF PH	147	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	POND VIEW	5	2303020	248	99	BRW 5 /100' SE OF PH	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EMERALD ACRES	3	153060	250	100	BRW 3 /27' W OF EMERALD DRIVE PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EMERALD ACRES	3	153060	250	100	BRW 4 /60' S OF EMERALD DRIVE PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EMERALD ACRES	3	153060	250	100	BRW 5 /187' SE OF EMERALD DRIVE PH	260	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SUNRAY SHORES WATER DIST	2	202020	250	100	BRW 1 /12' NW OF NW CNR OF RELAY STATION	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SUNRAY SHORES WATER DIST	2	202020	250	100	BRW 2 /39' NE OF NW CNR OF RELAY STATION	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	REDFIELD ESTATES	2	612080	250	100	BRW 1 /10' N OF PH	380	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	REDFIELD ESTATES	2	612080	250	100	BRW 4 /1000' SE OF POND	440	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OAKRIDGE CONDOS	2	1392010	250	100	BRW 3 /50 1/2' E OF PH	925	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	OAKRIDGE CONDOS	2	1392010	250	100	BRW 2 /82 1/2' NE OF PH	450	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/HARDWOOD HTS BIRCH HILL	3	2542060	250	40	BRW 5 /345' S OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/HARDWOOD HTS BIRCH HILL	3	2542060	250	40	BRW 3 /300' SW OF PH	202	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/HARDWOOD HTS BIRCH HILL	3	2542060	250	40	BRW 4 /330' SW OF PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIDDEN VALLEY/MASON	4	2372020	253	101	BRW 5 /2168' NE OF UPPER PH	792	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIDDEN VALLEY/MASON	4	2372020	253	101	BRW 2S /30' SE OF LOWER PH	1003	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIDDEN VALLEY/MASON	4	2372020	253	101	BRW 1 /5' W OF UPPER PH/ORANGE	1100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HIDDEN VALLEY/MASON	4	2372020	253	101	BRW 2M /145' E OF UPPER PH/GREEN	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROCKHOUSE MOUNTAIN	3	512240	255	101	BRW 2 /10' E OF PH	1200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROCKHOUSE MOUNTAIN	3	512240	255	101	BRW 1 /225' E OF PH	1050	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROCKHOUSE MOUNTAIN	3	512240	255	101	BRW 3/200' W OF PH	720	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GLEN RIDGE DEV	2	612070	255	102	BRW 1 /240' SE OF PH	295	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GLEN RIDGE DEV	2	612070	255	102	BRW 2 /200' NE OF PH	295	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ESTER COLLEGE OF NEW ENGLA	2	435020	260	5	BRW 4 /230' NE OF PH	445	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ESTER COLLEGE OF NEW ENGLA	2	435020	260	5	BRW 3/ 85' NW OF PH	585	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VLS NEST GOLF CLUB AND COND	2	2348110	261	37	BRW 1 /360' SSE OF PH	480	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	VLS NEST GOLF CLUB AND COND	2	2348110	261	37	BRW 2 /150' SSE OF PH	620	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOWER SHAKER VILLAGE	2	753030	263	105	BRW 2 /600' NE OF PS	560	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOWER SHAKER VILLAGE	2	753030	263	105	BRW 1 /95' NE OF PS	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MERRYMEETING MHP	2	63020	265	106	BRW 2 /511' SE OF NEW PH	58	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MERRYMEETING MHP	2	63020	265	106	BRW 1 /130' N OF NEW PH	235	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EAGLE RIDGE RESORT	6	162400	270	108	BRW 5 /300' SW OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EAGLE RIDGE RESORT	6	162400	270	108	BRW 6 /350' SW OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EAGLE RIDGE RESORT	6	162400	270	108	BRW 4 /130' SW OF PH	313	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EAGLE RIDGE RESORT	6	162400	270	108	BRW 1 /4' S OF PH	250	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EAGLE RIDGE RESORT	6	162400	270	108	BRW 3 /65' NW OF PH	268	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EAGLE RIDGE RESORT	6	162400	270	108	BRW 7 /330' S OF PH	305	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HOLLIS VILLAGE MARKET PLACE	2	1176010	272	41	BRW 2/427' N OF FIRE STATION/50' NNW OF PH	1500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	HOLLIS VILLAGE MARKET PLACE	2	1176010	272	41	BRW 1 /400' N OF FIRE STATION/35' W OF PH	594	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	LAKES REGION MHP COOP II	2	203090	276	111	BRW 6 /1000' SE OF PH	1040	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKES REGION MHP COOP II	2	203090	276	111	BRW 5 /35' N OF PH 2	685	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKEVIEW NEUROREHAB CTR	2	732020	280	11	BRW 1 /65' SE OF PH	670	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKEVIEW NEUROREHAB CTR	2	732020	280	11	BRW 2 /50' N OF PH	638	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROPEWALK SERVICES	2	102010	290	124	BRW 1 /25' SW OF PH	658	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ROPEWALK SERVICES	2	102010	290	124	BRW 2 /50' N OF PH	658	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LINDERHOF GOLF COURSE	2	162070	295	118	BRW 1 /125' SSW OF PH	205	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LINDERHOF GOLF COURSE	2	162070	295	118	BRW 2 /200' S OF PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GLEN GARRY CONDOS	2	2232010	298	119	BRW 1 /3' SW OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GLEN GARRY CONDOS	2	2232010	298	119	BRW 3 /25' W OF PH	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	CARDIGAN MOUNTAIN SCH	2	354010	300	23	BRW 2 /400' SW OF FIELD HOUSE	525	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	CARDIGAN MOUNTAIN SCH	2	354010	300	23	BRW 1 /210' SSW OF FIELD HOUSE	540	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	MONROE WATER DEPT	3	1591010	300	168	BRW 1 /290' S OF PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORDIC VILLAGE	2	162270	315	126	BRW 2 /130' SSW OF PH 1	377	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORDIC VILLAGE	2	162270	315	126	BRW 4 /148' SSW OF PH 1 /LOWER	342	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LEISURE VILLAGE	3	1973060	315	126	BRW 3 /194' ESE OF PH	603	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LEISURE VILLAGE	3	1973060	315	126	BRW 1 /240' ESE OF PH	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LEISURE VILLAGE	3	1973060	315	126	BRW 2 /170' ESE OF PH	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MALLARDS LANDING	2	203080	325	130	BRW 1 /130' NE OF PH	605	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MALLARDS LANDING	2	203080	325	130	BRW 2 /120' E OF PH	280	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKEVIEW CONDOS	2	752020	328	131	BRW 1 /199' NW OF BLDG 7 /UNIT 15	483	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKEVIEW CONDOS	2	752020	328	131	BRW 2 /90' S OF GRAVITY TANK	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SAMOSET AT WINNIPESAUKEE	2	882160	343	137	BRW 1 /25' SW OF LOWER TENNIS COURT	278	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SAMOSET AT WINNIPESAUKEE	2	882160	343	137	BRW 2 /75' SW OF UNIT 76	310	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOST VALLEY	2	732030	350	72	BRW 1 /42' E OF PH	270	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LOST VALLEY	2	732030	350	72	BRW 2 /42' W OF PH	380	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	KINGSTOWNE MHP	2	773010	350	140	BRW 4 /50' N OF PH	1220	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	KINGSTOWNE MHP	2	773010	350	140	BRW 3 /50' S OF PH	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ACKERMAN RETIREMENT PARK	2	2053020	350	140	BRW 3 /35' W OF PS	285	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	ACKERMAN RETIREMENT PARK	2	2053020	350	140	BRW 4 /6' NE OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FREEDOM HILL	3	1403030	375	148	BRW 5 /1700' W OF PH	720	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FREEDOM HILL	3	1403030	375	148	BRW 3 /156' SE OF PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	FREEDOM HILL	3	1403030	375	148	BRW 4 /145' NW OF PH	440	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EXETER RIVER LANDING	2	803030	380	259	BRW 1 /40' NW OF PS	140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	EXETER RIVER LANDING	2	803030	380	259	BRW 2 /25' NW OF PS	68	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CATAMOUNT HILL	2	43040	383	153	BRW 6 /40' W OF MIDDLE PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CATAMOUNT HILL	2	43040	383	153	BRW 5 /3' W OF MIDDLE PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKELAND	2	202010	388	155	BRW 4 /890' S OF PH	1140	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COTTON FARMS MHP	5	583030	400	158	BRW 7 /160' NW OF WESLEY ST PH	1005	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COTTON FARMS MHP	5	583030	400	158	BRW 8 /147' N OF MARY ST PH	980	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COTTON FARMS MHP	5	583030	400	158	BRW 9 /43' S OF MARY ST PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COTTON FARMS MHP	5	583030	400	158	BRW 4 /32' NW OF WESLEY ST PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	COTTON FARMS MHP	5	583030	400	158	BRW 6 /52' SE OF WESLEY ST PH	805	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE GARDENS MHP	2	203040	413	165	BRW 1 /15' E OF PH	128	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINE GARDENS MHP	2	203040	413	165	BRW 2 /35' E OF PH	128	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINELAND PARK	2	1583010	425	170	BRW 1 /200' E OF PS	638	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PINELAND PARK	2	1583010	425	170	BRW 2 /125' E OF PS	565	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TWIN RIDGE CONDOS	4	1932050	430	108	BRW 6 /210' NE OF PH	880	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TWIN RIDGE CONDOS	4	1932050	430	108	BRW 7 /600' SE OF TWIN RIDGE PH	298	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TWIN RIDGE CONDOS	4	1932050	430	108	BRW 5 /104' SE OF PH	780	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	TWIN RIDGE CONDOS	4	1932050	430	108	BRW 4 /58' SE OF PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	THE SEASONS AT ATTITASH	2	162240	440	177	BRW 1 /35' SW OF PH	222	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	THE SEASONS AT ATTITASH	2	162240	440	177	BRW 2 /25' SW OF PH	222	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	MITTERSILL WATER DEPT	2	841020	475	112	BRW 2 /110' SSE OF STORAGE BLDGS	418	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	MITTERSILL WATER DEPT	2	841020	475	112	BRW 1 /150' SE OF STORAGE BLDGS	980	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREENVILLE ESTATES TENANTS	2	993020	480	192	BRW 4 /153' SE OF LOWER PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	GREENVILLE ESTATES TENANTS	2	993020	480	192	BRW 3 /75' SE OF LOWER PH	150	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	CHESHIRE COUNTY COMPLEX	1	2494010	480	7	BRW 6 /1500' S OF MAIN BLDG	400	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	PEU/W AND E	3	2542030	498	199	BRW 6 /1270' SW OF PH	505	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	PEU/WHITE ROCK SENIOR LIVING	2	262050	547	219	BRW 1 /40' NW OF PH	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	PEU/WHITE ROCK SENIOR LIVING	2	262050	547	219	BRW 2 /57' N OF PH	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	CANAAN WATER DEPT	1	351010	600	192	BRW 1 /50' N OF TREATMENT FACILITY	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	NEW HAMPTON VILLAGE PCT	1	1691010	600	125	BRW 1/ 1240' SSW OF TREATMENT PLANT	832	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SULLIVAN COUNTY COMPLEX	2	2384010	625	6	BRW DH6 /4' N OF DH6 PH	805	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	SULLIVAN COUNTY COMPLEX	2	2384010	625	6	BRW /1000' NW OF DH5 PUMPHOUSE	730	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	MOUNTAIN LAKES WATER DEPT	2	1101050	653	315	BRW 4 /320' N OF PS	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTHWOOD RIDGE WATER DIST	2	1792030	688	55	BRW 1 /205' SW OF PS	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	NORTHWOOD RIDGE WATER DIST	2	1792030	688	55	BRW 2 /170' NE OF PS	265	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	FRANCONIA VILLAGE WATER	5	841010	750	300	COAL HILL BRW /15' FROM RESERVOIR /GALE	350	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	FRANCONIA VILLAGE WATER	5	841010	750	300	OWE BRW /6' N FROM RESERVOIR BLDG 1 ENT	284	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	FRANCONIA VILLAGE WATER	5	841010	750	300	HOWE SPR 1 /3' REAR OF RESERVOIR 1	3	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	FRANCONIA VILLAGE WATER	5	841010	750	300	MAGOWAN SPR /3' REAR OF RESERVOIR 2	3	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKE SHORE PARK	3	882150	790	316	BRW 3 /220' SW OF AMST TANK /PH	520	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKE SHORE PARK	3	882150	790	316	BRW 2 /40' NW OF AMST TANK /PH	530	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	LAKE SHORE PARK	3	882150	790	316	BRW 1 /60' NW OF AMST TANK /PH	405	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CENTURY VILLAGE CONDOS	2	1392180	875	350	BRW 5 /350' S OF PS	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	CENTURY VILLAGE CONDOS	2	1392180	875	350	BRW 1 /50' N OF PS	485	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DREW WOODS	6	612150	980	392	BRW 7 /437' NW OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DREW WOODS	6	612150	980	392	BRW 6 /310' NW OF PH	880	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DREW WOODS	6	612150	980	392	BRW 1 /90' NE OF PH	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DREW WOODS	6	612150	980	392	BRW 4 /100' N OF PH	390	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
\$NULL	DREW WOODS	6	612150	980	392	BRW 3 /120' NE OF PH	660	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	OTCHED MOUNTAIN REHAB CENT	3	972010	1050	22	BRW 13 /600' NE OF WELLHOUSE 13/14	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	OTCHED MOUNTAIN REHAB CENT	3	972010	1050	22	BRW 14 /60' NW OF WELLHOUSE 13/14	1420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	OTCHED MOUNTAIN REHAB CENT	3	972010	1050	22	BRW 8 /375' N OF WELLHOUSE 8	560	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	/ILLAGE DISTRICT OF EIDELWEIS	3	1461010	1050	420	BRW 1 /280' NE OF MUDDY BEACH PS	188	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	/ILLAGE DISTRICT OF EIDELWEIS	3	1461010	1050	420	BRW 2 /360' NE OF MUDDY BEACH PS	423	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	ENFIELD WATER DEPT	4	751010	1145	458	PRIOR WELL 2 /30' NW OF PS 2		\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	TROY WATER WORKS	5	2361010	1200	461	BRW 4 /50' S OF STORAGE TANK	703	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	TROY WATER WORKS	5	2361010	1200	461	BRW 3 /220' NE OF STORAGE TANK	741	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	EMERALD LAKE	8	1141020	1300	520	MARY ROWE WELL /220 NE OF PH	403	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	EMERALD LAKE	8	1141020	1300	520	BRW 4 /MEETING HOUSE WELL 50' S OF PS	254	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	EMERALD LAKE	8	1141020	1300	520	BRW 6 /PATTEN HILL W OF ATMOS STORAGE	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	EMERALD LAKE	8	1141020	1300	520	BRW 1 /HUMMINGBIRD LN	306	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	EMERALD LAKE	8	1141020	1300	520	3RW 7 /PATTEN HILL 20' SW OF CONTROL BLDG	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	EMERALD LAKE	8	1141020	1300	520	BRW 8 /PATTEN HILL 27' E OF CONTROL BLDG	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	EMERALD LAKE	8	1141020	1300	520	BRW 9 /PATTEN HILL 145' E OF CONTROL BLDG	560	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	GUNSTOCK ACRES VILLAGE DIST	10	881020	1425	570	BRW 7B /220' S OF PH	620	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	GUNSTOCK ACRES VILLAGE DIST	10	881020	1425	570	BRW 1 /80' NE OF PS 1	150	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	GUNSTOCK ACRES VILLAGE DIST	10	881020	1425	570	BRW 1C /50' ESE OF PS 1	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	GUNSTOCK ACRES VILLAGE DIST	10	881020	1425	570	BRW 1B /35' NE OF PS 1	1010	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	WHITEFIELD WATER	5	2501010	1450	580	BRW 4 /45' N OF BRAY HILL PS	640	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	FRANKLIN PIERCE UNIVERSITY	4	1994010	1600	18	BRW 13/ 620' E OF PH	640	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	FRANKLIN PIERCE UNIVERSITY	4	1994010	1600	18	BRW 8 /330' S OF STORAGE TANK	1100	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800

Fire Protection	System Name	# Groundwater Sources	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
Y	FRANKLIN PIERCE UNIVERSITY	4	1994010	1600	18	BRW 9 /SERENTIY WELL 30' S OF PC BLDG	480	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	PARADISE SHORES	2	1612010	1881	753	BRW 6 /W OF UPR PH 250' SW ACCESS RD 360'	650	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	PEU/LOCKE LAKE	7	142010	2083	836	BRW 14 /300' S PEACHAM RD PH	704	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	PEU/LOCKE LAKE	7	142010	2083	836	BRW 13 /120' E PEACHAM RD	700	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	PEU/LOCKE LAKE	7	142010	2083	836	BRW 15 /563' SW OF PH	662	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	PEU/LOCKE LAKE	7	142010	2083	836	BRW 3 /195' SE OF PS 1 GOLF COURSE	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	PEU/LOCKE LAKE	7	142010	2083	836	BRW 9 /265' S OF PS 1 GOLF COURSE	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	PEU/LOCKE LAKE	7	142010	2083	836	BRW 10 /2500' NNW OF PS 2 /AIRSTRIP	563	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 17 /100' N OF PH/JAMESON RIDGE	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 6 /320' SW OF OLD VILLAGE RD PH	418	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 7 /300' S OF OLD VILLAGE RD PH	341	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 9 /30' N OF MIDPOINT PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 13 /218' E OF COGSWELL WELL FIELD PH	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	3RW 14 /464' SE OF COGSWELL WELL FIELD PH	600	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 11 /650' E OF MIDPOINT PH	445	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 12 /620' NE OF MIDPOINT PH	420	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 1 /50' SSW OF BRYANT WOODS PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 3 /300' SW OF BRYANT WOODS PH	500	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
N	WALNUT RIDGE/BRYANT WOODS	13	112080	2650	1059	BRW 4 /350' NE OF BRYANT WOODS PH	550	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 10 /555' NE OF BARTLETT BROOK PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 9 /400' NE OF BARTLETT BROOK PH	800	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 13 /310' SW OF ANGLE POND PH	1000	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 8 /39' NE OF BARTLETT BROOK PH	900	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 11 /200' WSW OF PUTNAM PLACE PH	660	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 12 /80' NE OF PH /EAST WOOD PLACE PH	360	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 14 /580' E OF ANGLE POND PH	340	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 4 /70' SE OF TANGLEWOOD PH	295	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 5 /LOT 72C /200' SW OF 4 PH/WOODLAND	225	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 6 /LOT 28C /200' SW OF 5 PH/WOODLAND	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 7 /200' NE OF PIT HATCH/WOODLAND	300	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 1 KENT FARM /180' WNW OF PH	200	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
Y	HAMPSTEAD AREA WATER	15	1031010	2723	1158	BRW 3 KENT FARM /400' NNW OF PH	297	\$ 45,000	\$ 36,000	\$ 36,000	\$ 1,800
						minimum	3				
						maximum	1600				
						average	481				

Table D-3: Level 1 Permitted Overburden Wells Cost Model

Level I (permitted for less than 40 gpm) Overburden (Gravel-Packed and Gravel) Wells*

Date Oct-10

134 number of sources		Estimated		ENR		8921		
assumed re-drilled in vicinity of original well		Permitting	\$15,000	Assumed median depth	40	ft	\$1,125	per foot
permitting assumed to take ~4.5 mos		Well Construction	\$25,000	Assumed Service Life	40	yrs	2	number screen redvelopments
* also includes dug wells, infiltration, and point wells		Engineering	\$5,000 +	Service Life Factor for 20 yr period	0.5	20/service life		per 20-yr period
costs do not include exploration because these are replacement wells		Total	\$45,000	Assumed Redevelopment Period (some yearly)	8 to 10	years	avg	
				cst range	\$8,000	\$12,000	\$10,000	

Fire Protection	System Name	# Groundwater Sources	# of SURFACE_SOURCES	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Screen Redevelopment	Total 20-Year Component Replacement Cost	Annual Need
									TOTAL			TOTAL	
								TOTAL	\$6,030,000		TOTAL	\$5,963,000	\$298,150
\$NULL	WILDWOOD DEV	1	0	22010	123	49	GPW 1 /IN PH	119	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	GOLDEN OAKS MHP	1	0	23010	125	50	GPW 1 /1200' NE OF AMST TANK IN PH	50	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	HALCYON HILL	2	0	153020	58	24	DUG 1 /144' SW OF PH	17	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	AMBLESIDE MHP	1	0	153040	163	69	DUG /16' IN PH	16	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BARRINGTON MOBILE HOME ESTATES	3	0	153050	198	79	DUG N /335' NNE OF PH	15	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BARRINGTON MOBILE HOME ESTATES	3	0	153050	198	79	GRW 1 /290' E OF PH	25	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BARRINGTON MOBILE HOME ESTATES	3	0	153050	198	79	GRW 3 /300' NE OF PH	33	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	NORTH LEDGE	2	0	162050	110	44	GPW 1 /135' NW OF PH 2	160	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	RIVER RUN CONDOS	3	0	162170	750	300	GPW 1 /140' N OF PH	91	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CRAWFORD HILLS	1	0	162190	118	47	DUG 1 /135' NW OF PH	16	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	ROCKY RIVER RESORT	2	0	162290	100	40	GPW 1 /25' S OF PH	95	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CRAWFORD POND	1	0	162330	58	23	DUG /25' NE OF PH	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	SUGARWOOD ON THE SACO	1	0	162390	30	12	GPW 1 /225' W OF PS	17	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	STILLINGS GRANT	4	0	162410	75	30	DUG 3 /100' W OF PH	0	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	STILLINGS GRANT	4	0	162410	75	30	DUG 2 /50' S OF PH	0	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	STILLINGS GRANT	4	0	162410	75	30	GPW 1 /165' SW OF NEW PH	150	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	STILLINGS GRANT	4	0	162410	75	30	GPW 1 /230' SE OF NEW PH	100	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BEARFOOT CREEK	1	0	162430	20	8	GPW 1 /153' W OF UG PH VAULT	130	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BATH VILLAGE WATER WORKS	1	0	171010	95	33	DUG /210' NE OF HILL RD	16	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BEDFORD WATER	3	0	192010	163	65	GRW 4 /1350' NE OF PH	65	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BEDFORD WATER	3	0	192010	163	65	GRW 3 /49' E OF PH	18	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	LAKELAND	2	0	202010	388	155	GRW 1 /IN LOWER PH /OFF RTE 107	26	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	EVERGREEN DRIVE WATER	2	0	262010	80	29	GPW 1 /450' NW OF PH	43	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CONNECTICUT RIVER MHP	1	0	413020	50	18	GPW /5' NE OF BLUE ANNEX BLDG	37	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
N	MOUNTAIN VIEW PARK ESTATES	1	0	493020	45	18	GPW 1 /IN WELL HOUSE /NW CNR OF PARK	60	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CATHEDRAL LEDGE	2	0	512030	150	60	GPW 3 /30' NE OF PH	140	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CATHEDRAL LEDGE	2	0	512030	150	60	GPW 2 /37.5' NNE OF PH	90	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	FOREST PARK VILLAGE	1	0	512070	45	18	GPW 1 /IN PS	185	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	REBECCA LANE WATER SYS	1	0	512080	140	56	GPW /18' SW OF PH	75	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	NORTH PINES	2	0	512110	67	27	GRW 1 /IN PS 2 100' NW OF PS 1	80	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	NORTH PINES	2	0	512110	67	27	GRW 2 /IN PS 2 100' NW OF PS 1	80	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	OAKWOOD HEIGHTS	2	0	512170	50	20	GPW 1 /90' N OF PH	204	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CEDAR CREEK	1	0	512200	105	42	GPW 1 /100' W OF PH	76	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	NEAR LEDGE	1	0	512210	63	25	GPW /70' S OF PH	40	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	MELODY PINES CONDOS	3	0	512230	125	50	GPW 1 /30' E OF PH	132	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	MOUNTAIN VALE VILLAGE MHP	2	0	513100	388	155	GPW 1 /40' SW OF PS	73	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	MOUNTAIN VALE VILLAGE MHP	2	0	513100	388	155	GPW 2 /88' W OF PS	85	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	JOHNSON CITY MHP	1	0	603020	45	19	GPW 1 /IN PH	147	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BARTON MHP	1	0	702010	43	17	DUG 1 /350' E OF NEW PH	21	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	COLBY BROOK ESTATES	1	0	773020	68	27	DUG 1 /214' SE OF PH	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	FREEDOM WATER PCT	2	0	861010	163	67	GPW 1 /45' S OF PS	55	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	FREEDOM WATER PCT	2	0	861010	163	67	GPW 2 /65' E OF PS	62	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	LOV WATER	3	0	862010	538	215	GPW 2 /80' WSW OF PH	45	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	LOV WATER	3	0	862010	538	215	GPW 3 /52' S OF PH	50	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PINE LANDING CONDOS	2	0	862020	50	20	GPW 1 /200' N OF CONDOMINIUM UNITS	43	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
N	GUNSTOCK ACRES VILLAGE DIST	10	0	881020	1425	570	DUG 5 /40' S OF PS 5	17	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225

Fire Protection	System Name	# Groundwater Sources	# of SURFACE SOURCES	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Screen Redevelopment	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	FRENCH POND ESTATES	1	0	1102020	25	10	DUG /60' SE OF PH	0	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PITARYS MOBILE HOME PARK/EAST	1	0	1173010	90	36	DUG 1 /EAST SIDE OF MHP /IN PH	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PITARYS MOBILE HOME PARK/WEST	1	0	1173020	135	54	DUG 2 /WEST SIDE OF MHP /IN PH	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	EAGLE BROOK	2	0	1212130	53	21	GRW 1 /45' SSW OF PH	80	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	EAGLE BROOK	2	0	1212130	53	21	GRW 2 /10' NW OF PH	76	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	ANNS LANDING	1	0	1272020	63	21	GPW 1 /70' N OF PS	16	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	LINCOLN WATER WORKS	7	2	1351010	2750	1800	COLD SPR GRW GROUP	0	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	LINCOLN WATER WORKS	7	2	1351010	2750	1800	GRW 1 /COLD SPR GROUP/260' N OF CS PH	21	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	LINCOLN WATER WORKS	7	2	1351010	2750	1800	GRW 2 /COLD SPR GROUP/155' N OF CS PH	18	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	LINCOLN WATER WORKS	7	2	1351010	2750	1800	GRW 3 /COLD SPR GROUP/105' N OF CS PH	19	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	LINCOLN WATER WORKS	7	2	1351010	2750	1800	GRW 4 /COLD SPR GROUP/40' N OF CS PH	17	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	LINCOLN WATER WORKS	7	2	1351010	2750	1800	GRW 5 /COLD SPR GROUP/35' S OF CS PH	14	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	LINCOLN WATER WORKS	7	2	1351010	2750	1800	GRW 6 /COLD SPR GROUP/90' S OF CS PH	17	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	SILVER LAKE LANDING SR HOUSING	1	0	1462040	25	20	DUG /250' W OF BLDG	12	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	MONROE WATER DEPT	3	0	1591010	300	168	GRW 2 /81' S OF PH	40	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CHALK POND WATER	4	0	1652020	200	80	GPW 1 /380' NE OF LOWER PH	35	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	NEWFIELDS VLG WATER AND SEWER	4	0	1681010	500	175	GPW 1 /IN PS 1	26	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	NEWFIELDS VLG WATER AND SEWER	4	0	1681010	500	175	GPW 2 /IN PS 2 VAULT	45	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	NEWFIELDS VLG WATER AND SEWER	4	0	1681010	500	175	GPW 4 /40' WNW OF PS VAULT	45	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	VAILLANCOURT MOBILE HOME PARK	2	0	1713010	112	50	GPW /40' W OF PH	35	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	VAILLANCOURT MOBILE HOME PARK	2	0	1713010	112	50	GPW /3' NE OF PH	55	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CARY AND ALLEN ST DEV	1	0	1742010	43	17	GPW /110' E OF RTE 10 IN PH VAULT	82	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BLUFFS AT OSSIPPEE LAKE	2	0	1842010	258	103	3PW 1 /24' SE OF BEACH SOURCE SMPLE BLDG	27	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BLUFFS AT OSSIPPEE LAKE	2	0	1842010	258	103	iPW 2 /60' SSE OF BEACH SOURCE SMPLE BLDG	27	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	INDIAN MOUND SHOPPING CENTER	2	0	1842020	40	16	GPW 2 /12' SW OF PS	49	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	INDIAN MOUND SHOPPING CENTER	2	0	1842020	40	16	GPW 1 /45' SE OF PS	49	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	INDIAN MOUND GOLF CLUB	2	0	1842030	225	90	GPW 1 /12' E OF PH	50	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	DEER COVE WATER	2	0	1842060	123	49	GPW 1 /495' N OF PH	61	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	DEER COVE WATER	2	0	1842060	123	49	GPW 2 /560' N OF PH	58	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	OSSIPEE MOUNTAINS ESTATES	2	0	1843010	255	102	GPW 1 /30' W OF THE VIKING RD PH1	60	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	OSSIPEE MOUNTAINS ESTATES	2	0	1843010	255	102	GPW 2 /70' SW OF THE VIKING RD PH1	60	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	SANDY RIDGE ESTATES	2	0	1843020	125	50	GRW 1 /67' N OF NW CNR OF NEW PH	78	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	SANDY RIDGE ESTATES	2	0	1843020	125	50	GRW 2 /155' NE OF NW CNR OF NEW PH	74	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CARROLL COUNTY COMPLEX	5	0	1844010	210	37	DUG 1 /200' NW OF OLD RES	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CARROLL COUNTY COMPLEX	5	0	1844010	210	37	DUG 2 /400' NW OF OLD RES	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CARROLL COUNTY COMPLEX	5	0	1844010	210	37	DUG 3 /500' NW OF OLD RES	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
N	SIMPSON MILL ROAD	1	0	1852090	35	14	GPW 2 /112' W OF PH	27	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	PLAINFIELD VILLAGE WATER DIST	2	0	1921010	248	100	MOORE WELL B /227' NE OF PH	83	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	PLAINFIELD VILLAGE WATER DIST	2	0	1921010	248	100	MOORE WELL A /200' NE OF PH	83	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PARADISE ESTATES	1	0	2003030	405	162	DUG PAIR /100' SE OF PS	15	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	HAWTHORNE VILLAGE	1	0	2032010	55	22	GRW 2 /500' W OF PH	265	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BOW LAKE ESTATES	2	0	2212010	95	41	GRW / 145' SW PH /WHITE PVC CASING	19	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	EASTFIELD CROSSING	2	0	2302040	113	45	GPW 1 /840' W OF PH	18	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	EASTFIELD CROSSING	2	0	2302040	113	45	GPW 2 /690' NW OF PH	21	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PINE GROVE MOBILE HOME PARK	2	0	2303010	305	122	GPW 2 /420' SW OF LOT 116	32	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PINE GROVE MOBILE HOME PARK	2	0	2303010	305	122	GPW 1 /350' SW OF LOT 116	32	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	TAMWORTH WATER WORKS	1	0	2311010	265	60	GPW 1 /100' S OF PH	123	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	WHITE LAKE ESTATES	2	0	2312030	250	100	GPW 1 /15' E OF PH	100	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	WHITE LAKE ESTATES	2	0	2312030	250	100	GPW 2 /15' NE OF PH	100	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	REMICK ACRES	1	0	2312050	60	24	GPW 1 /190' ENE OF PH	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	TAMWORTH MOBILE HOME PARK	3	0	2313010	75	30	GRW 1 /150' NNE OF PH	21	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	TAMWORTH MOBILE HOME PARK	3	0	2313010	75	30	GRW 2 /150' NE OF PH	21	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	TAMWORTH PINES	2	0	2313020	138	55	GPW 1 /300' E OF PH NORTH	49	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	NORTHPOINTE WATER	1	0	2342020	83	33	GRW /400' NW OF PH	120	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	MILLSBROOK VILLAGE	2	0	2342110	68	27	DUG WELL /140' NW OF PH	24	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	LOCHMERE VILLAGE DIST	2	0	2351020	278	111	GPW 1 /111' W OF PH	10	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	LOCHMERE VILLAGE DIST	2	0	2351020	278	111	GPW 2 /116' NW OF PH	11	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	BEVERLY HILLS WATER	1	0	2392010	120	48	GPW 1 /10' E OF PH	100	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225

Fire Protection	System Name	# Groundwater Sources	# of SURFACE_SOURCES	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Screen Redevelopment	Total 20-Year Component Replacement Cost	Annual Need
\$NULL	MICHAWANIC VILLAGE CONDOS	2	0	2392030	120	48	GPW 1S /115' E OF PH	60	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	MICHAWANIC VILLAGE CONDOS	2	0	2392030	120	48	GPW 2N /120' E OF PH	60	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	SOUTH MAIN STREET WATER DIST	2	0	2422010	200	42	DUG 1 /126' SW OF PH	15	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	SOUTH MAIN STREET WATER DIST	2	0	2422010	200	42	GRW 1 /65' SW OF PH	17	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	WATERVILLE VALLEY WATER DIST	3	0	2441010	3050	1220	GPW 1	28	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	WATERVILLE VALLEY WATER DIST	3	0	2441010	3050	1220	GPW 3 /600' SW OF PH 1	22	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PEU/DANIELS LKE	1	0	2452010	70	28	GRW /IN PH	33	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	SUGAR HILL MANOR MHP	3	0	2453010	98	39	DUG 1 /100' S OF PH 1 FRONT OF PARK	22	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	KUNCANOWET HILLS MOBILE HOME	2	0	2453020	103	41	DUG 1 /270' WNW OF PS	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	KUNCANOWET HILLS MOBILE HOME	2	0	2453020	103	41	DUG 2 /270' WSW OF PS	28	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	POUND ROAD WATER WORKS	1	0	2512010	53	21	GRW /IN PH	115	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	GREEN VALLEY MOBILE HOME PARK	2	0	2533020	115	46	GPW 4 /436' NW OF PH	67	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
Y	GREEN VALLEY MOBILE HOME PARK	2	0	2533020	115	46	GPW 5 /414' NW OF PH	67	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	JACK O LANTERN CONDOS	2	0	2572010	98	39	GPW 1 /600' NNE OF PH	18	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	JACK O LANTERN CONDOS	2	0	2572010	98	39	GPW 2 /600' NE OF PH	17	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	TAMWORTH MOBILE HOME PARK	3	0	2313010	75	30	PTW 1 /135' NNE OF PH	18	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	INDIAN MOUND GOLF CLUB	2	0	1842030	225	90	PTW 1 /SW CNR OF PS	25	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PONDEROSA MHP	2	0	1393060	110	44	PTW 2 /62' SE OF PS NEAR POND SHED	18	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PEU/GOLDEN BROOK	3	0	2542010	313	125	PTW 2 /76' NE OF PH	40	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CHALK POND WATER	4	0	1652020	200	80	PTW 3 /138' S OF LOWER PH	16	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PEU/GOLDEN BROOK	3	0	2542010	313	125	PTW 3 /81' NE OF PH	44	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	CHALK POND WATER	4	0	1652020	200	80	PTW 4 /21' W OF LOWER PH	16	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PEU/PINEHAVEN WATER TRUST	1	0	1392040	90	36	PTW 4 /30' N OF PH	30	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PEU/GOLDEN BROOK	3	0	2542010	313	125	PTW 4 /54' NE OF PH	42	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	PONDEROSA MHP	2	0	1393060	110	44	PTW 4 /75' NE OF PH	18	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	HILLSIDE INN CONDOS	2	0	1113010	65	26	INF /150' N OF PS	20	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	HILLSIDE INN CONDOS	2	0	1113010	65	26	INF /20' N OF PS	25	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	FAR ECHO HARBOR	2	0	1612030	200	80	INF /47' SW OF PS	505	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	GLENCLIFF HOME FOR THE ELDERLY	3	0	224010	230	11	INF 1 /1775' NE OF ADM BLDG	30	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225
\$NULL	MOUNTAIN LAKES WATER DEPT	2	0	1101050	653	315	INF WELL /IN PH	14	\$45,000	\$ 22,500	\$22,000	\$44,500	\$2,225

Table D-4: Level 2 Permitted Bedrock Wells Cost Model

Generalized Costs for Larger Replacement Bedrock Wells Permitted for > 40 gpm (Level I)

Level II (permitted for more than 40 gpm) Bedrock Wells*

68	number of sources	Assumed median depth	470	ft	Estimated	
	assumed re-drilled in vicinity of original well	Assumed Service Life	25	yrs	Permitting	\$40,000
	permitting assumed to take ~9 mos	Service Life Factor for 20 yr period	0.8	20/service life	Well Construction	\$100,000
	* may also include springs				Engineering	\$20,000 +
	Generally, BRW are not cleaned and redeveloped		\$340	per ft	Total	\$160,000

Date **Oct-10**
ENR **8921**

costs do not include exploration because these are replacement wells

Fire Protection	System Name	# Groundwater Sources	# of SURFACE_SOURCES	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
											\$8,704,000	\$435,200
							TOTAL	\$10,880,000			\$8,704,000	\$435,200
N	WALNUT RIDGE/BRYANT WOODS	13	0	112080	2650	1059	BRW 10 /750' SE OF OLD VILLAGE RD PH	600	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	WALNUT RIDGE/BRYANT WOODS	13	0	112080	2650	1059	BRW 16 /675' NE OF SETTLERS RIDGE PH	420	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	PEU/LOCKE LAKE	7	0	142010	2083	836	BRW 11 /475' SSW OF PS 1 GOLF COURSE	425	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	COLBY POND	2	0	582010	399	158	BRW 2 /252' N OF PH	550	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	COLBY POND	2	0	582010	399	158	BRW 1 /35' E OF PH	400	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	DREW WOODS	6	0	612150	980	392	BRW 5 /275' NW OF PH	470	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	BRANDYWINE	2	0	702020	72	29	BRW 1 /90' NE OF PH	490	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	BRANDYWINE	2	0	702020	72	29	BRW 2 /130' NW OF PH	470	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	MAPLEVALE AND CRICKET HILL	2	0	702030	130	70	BRW 1 /85' NE OF PH	420	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	18 HUGHES LNEFFINGHAM	2	0	732040	60	24	BRW 1 /180' W OF PH	59	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	ENFIELD WATER DEPT	4	0	751010	1145	458	PRIOR WELL 1 /25' E OF 1 PS	425	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	ENFIELD WATER DEPT	4	0	751010	1145	458	MARSH WELL /30' E OF MARSH PS	460	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	ENFIELD WATER DEPT	4	0	751010	1145	458	MCCONNELL WELL /180' S OF AVALONE 2	550	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	EPPING WATER AND SEWER DEPT	3	0	761010	1240	545	BRW 1 /FREEMONT RD	270	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	EPPING WATER AND SEWER DEPT	3	0	761010	1240	545	BRW 3 /HOAR POND WELL 2	370	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	EPPING WATER AND SEWER DEPT	3	0	761010	1240	545	BRW 2 /NW OF HOAR POND	500	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	EXETER RIVER MOBILE HOME PARK	1	0	803020	980	392	BRW 1 /125' NW OF PH	160	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	FRANCONIA VILLAGE WATER	5	0	841010	750	300	MAGOWAN BRW /6' S OF RESERVOIR 2	350	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	GUNSTOCK ACRES VILLAGE DIST	10	0	881020	1425	570	BRW 1A /40' SE OF PS 1	505	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	GUNSTOCK ACRES VILLAGE DIST	10	0	881020	1425	570	BRW 7 /160' SW OF PS 7	530	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	GUNSTOCK ACRES VILLAGE DIST	10	0	881020	1425	570	BRW 7A /140' SW OF PS 7	561	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	GUNSTOCK ACRES VILLAGE DIST	10	0	881020	1425	570	BRW 7C /1350' N OF PS7	750	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	GUNSTOCK ACRES VILLAGE DIST	10	0	881020	1425	570	BRW 7D /950' N OF PS7	750	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	VILLAGE DIST OF EASTMAN	3	0	951010	3000	1250	BRW 6 /APPROX 100' W OF THE WTP	999	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	HALES LOCATION	2	0	1021010	385	94	BRW 2 /750' SW OF PH	100	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	HALES LOCATION	2	0	1021010	385	94	BRW 1 /750' W OF PH	110	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	HAMPSTEAD AREA WATER	15	0	1031010	2723	1158	BRW 3 /163' SE OF VILLAGE GREEN PH	225	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	HAMPSTEAD AREA WATER	15	0	1031010	2723	1158	CRAN MEAD BRW 650' NW NORFOLK & ST J	360	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	BRW 2 /COAKLEY	308	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	AW 8A/MARSTINS SPRINGS REPLACEMENT	12	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	BRW CAYRE 17 /0N WOODS RD	456	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	BRW CAYRE 18 /460' S OF CAYRE 17	565	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	BRW 21 /MR 2 AT MILL RD	647	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	BRW CAYRE 19 /250' E OF CAYRE 17	435	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	BRW 13B /NEXT TO COAKLEY /008	703	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	BRW 20 /MR 1 AT MILL RD	607	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	PRECINCT OF HAVERHILL CORNER	2	0	1101010	540	192	BRW /100' SSW OF COLLECTOR BASIN	600	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	EMERALD LAKE	8	0	1141020	1300	520	BRW 11 /200' NW OF PATTEN HILL STORAGE	603	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	LITTLETON WATER AND LIGHT DEP	1	2	1381010	6010	1680	BRW 1 /BRICKYARD RD WELL	500	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	PEU/SUNRISE ESTATES	3	0	1542030	203	81	BRW 3 /700' W OF PH /HAROLD DR	423	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	BADGER HILL	2	0	1562030	258	103	BRW 1 /199' NW OF PH	505	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	BADGER HILL	2	0	1562030	258	103	BRW 3 /590' SW OF PH	305	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	PARADISE SHORES	2	0	1612010	1881	753	BRW 5 /W OF UP R PH AT ACCESS RD STA 8	522	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	NEWFIELDS VLG WATER AND SEWE	4	0	1681010	500	175	BRW 6 /15' NNW OF SARGENT TEBO PS	340	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	PORTSMOUTH WATER WORKS	6	1	1951010	33000	7200	COLLINS WELL		\$160,000	\$ 128,000	\$128,000	\$ 6,400

Fire Protection	System Name	# Groundwater Sources	# of SURFACE_SOURCES	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Total 20-Year Component Replacement Cost	Annual Need
Y	FRANKLIN PIERCE UNIVERSITY	4	0	1994010	1600	18	BRW 12/ 501' E OF PH	700	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	ROLLINSFORD WATER AND SEWER	3	0	2011010	1688	639	BRW 3 /WELL PIT LEFT OF ACCESS RD	300	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	ROLLINSFORD WATER AND SEWER	3	0	2011010	1688	639	BRW 4 /WELL PIT RIGHT OF ACCESS RD	300	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	RYE WATER DIST	3	0	2041010	3900	1546	BRW /BAILEY BROOK 6	545	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	RYE WATER DIST	3	0	2041010	3900	1546	BRW /CEDAR RUN/1000' S OF BAILEY BROOK	437	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	BRW 1 /NE NEAR RTE 107	500	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	BRW 2 /SE NEAR RTE 107	500	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	BRW 3 /NW NEAR RTE 107	500	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	BRW 4 /SW NEAR RTE 107	518	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	BRW 5 /800' N OF PS /OLD NEW BOSTON RD	402	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	GEORGES MILLS WATER WORKS	2	0	2271020	315	126	BRW 2	500	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	GEORGES MILLS WATER WORKS	2	0	2271020	315	126	BRW 1	580	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	TROY WATER WORKS	5	0	2361010	1200	461	BRW 1 /200' E OF CHLORINATION BLDG	200	\$160,000	\$ 128,000	\$128,000	\$ 6,400
N	N WALPOLE VILLAGE DIST/HIGH	1	0	2401030	150	60	BRW /IN PH	273	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	WHITEFIELD WATER	5	0	2501010	1450	580	BRW 6A /DODGE LOT 3' NNE OF DODGE PS	400	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	WHITEFIELD WATER	5	0	2501010	1450	580	BRW 1 /IN CHERRY MTN PS W OF RTE 115	325	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	PEU/W AND E	3	0	2542030	498	199	BRW 3 /45' SW OF REAR COR PH /LAG	941	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	PEU/W AND E	3	0	2542030	498	199	BRW 4 /107' S OF REAR COR PH	740	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	PEU/FLETCHER CORNER ESTATES	2	0	2542150	133	53	BRW 1 /980' SE OF PH	1005	\$160,000	\$ 128,000	\$128,000	\$ 6,400
\$NULL	PEU/SPRUCE POND ESTS	2	0	2542180	100	41	BRW 2W /54' SW OF PH	305	\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	EXETER WATER DEPT	2	2	801010	11000	3500	SKINNER SPRINGS		\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	NO HAVERHILL WATER AND LIGHT	1	0	1101020	675	270	SPR 1 /COLD		\$160,000	\$ 128,000	\$128,000	\$ 6,400
Y	PRECINCT OF HAVERHILL CORNER	2	0	1101010	540	192	SPRING COLLECTOR BASIN /LOWER WELLFIELD		\$160,000	\$ 128,000	\$128,000	\$ 6,400
							min	12				
							max	1005				
							avg	465				

Fire Protection	System Name	# Groundwater Sources	# of SURFACE SOURCES	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Screen Redevelopment	Total 20-Year Component Replacement Cost	Annual Need
Y	NORTH CONWAY WATER PCT	4	0	511030	5000	2200	GPW 3 /500' S OF RIVER RD /SEE COMMENTS	76	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NORTH CONWAY WATER PCT	4	0	511030	5000	2200	GPW 4 /1550' NW OF PS	116	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOVER WATER DEPT	8	0	651010	28000	6800	GPW CAMPBELL /HOPPERS /GLEN HILL RD	88	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOVER WATER DEPT	8	0	651010	28000	6800	GPW CUMMINGS /SMITH WELL RD DOVER	75	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOVER WATER DEPT	8	0	651010	28000	6800	GPW HUGHES /OLD STAGE RD DOVER	107	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOVER WATER DEPT	8	0	651010	28000	6800	GPW SMITH /SMITH WELL RD DOVER	75	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOVER WATER DEPT	8	0	651010	28000	6800	GPW 1 /CALDERWOOD HOPPERS	104	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOVER WATER DEPT	8	0	651010	28000	6800	GPW IRELAND /MAST RD DOVER	101	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOVER WATER DEPT	8	0	651010	28000	6800	GPW GRIFFIN /MAST RD MADBURY	114	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOVER WATER DEPT	8	0	651010	28000	6800	GPW /FRENCH CROSS RD WELL	175	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	UNH/DURHAM WATER SYS	1	2	691010	16000	1080	LEE WELL	54	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	EPSOM VILLAGE DIST	2	0	771010	750	285	GPW 2 /IN PS /BEHIND ELEMENTARY SCHOOL	42	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	EPSOM VILLAGE DIST	2	0	771010	750	285	GPW 1 /IN PS /BEHIND LIBRARY S OF RTE 4	42	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	EXETER WATER DEPT	2	2	801010	11000	3500	GPW LARY LN	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	FARMINGTON WATER DEPT	3	0	811010	3000	1050	GPW 4 /CEMETERY WELL 1 /450' NW OF PH	28	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	FARMINGTON WATER DEPT	3	0	811010	3000	1050	GPW 5 /CEMETERY WELL 2 /340' NE OF PH	23	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	FARMINGTON WATER DEPT	3	0	811010	3000	1050	GPW 6 /1200' E OF RTE 11	38	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	FRANKLIN WATER WORKS	4	0	851010	7000	2292	GPW 1N /ACME WELL 1	75	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	FRANKLIN WATER WORKS	4	0	851010	7000	2292	GPW 2S /ACME WELL 2	75	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	FRANKLIN WATER WORKS	4	0	851010	7000	2292	GPW 3 /AT FRANKLIN FALL DAM	122	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
\$NULL	LOV WATER	3	0	862010	538	215	GPW 1 /175' WSW OF PH	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	GOFFSTOWN VILLAGE PCT	2	1	911010	3000	1100	GPW 1 /60' N OF RIVER	40	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	GOFFSTOWN VILLAGE PCT	2	1	911010	3000	1100	GPW 2 /270' N OF GPW 1	40	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	GORHAM WATER AND SEWER DEPT	1	2	921010	2630	1052	GPW 2 /2000' SW OF MAIN AND BELLOUE	72	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
N	VILLAGE DIST OF EASTMAN	3	0	951010	3000	1250	DUG WELL FIELD	22	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
N	VILLAGE DIST OF EASTMAN	3	0	951010	3000	1250	GPW R4 /REPLACEMENT SOURCE FOR 004	49	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW JENNESS /CENTRAL RD	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW 1 COAKLEY /WINNICUT RD	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW DALTON NO 14 /RTE 111 HAMPTON RD	31	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW WHITES FIELD /MILL RD	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW PEABODY NO 16 /STRATHAM	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW CRENSHAW /WINNICUT RD	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW RYDER /LITTLE RIVER RD	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW SCAMMON /MILL RD	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW SICARD /SICARD ST	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	AQUARION WATER/NH	18	0	1051010	23000	8600	GPW 5A /26' NE OF PH	21	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOGSWELL SPRINGS WATER WORKS	3	0	1121010	2500	530	GPW 1 /W OF RTE 114 /E OF GPW 2	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOGSWELL SPRINGS WATER WORKS	3	0	1121010	2500	530	GPW 2 /W OF RTE 114 AND GPW 1	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	DOGSWELL SPRINGS WATER WORKS	3	0	1121010	2500	530	GPW 3 /FOSTER RD /1000' ESE PS 3	45	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HILL WATER WORKS	2	0	1131010	350	139	GRW 1 /IN PH	40	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HILL WATER WORKS	2	0	1131010	350	139	GRW 2 /45' SE OF GRW 1	42	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NORTH HINSDALE WATER DEPT	2	0	1151010	1800	500	GRW 2 /30' N OF NORTH HINSDALE PH	48	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NORTH HINSDALE WATER DEPT	2	0	1151010	1800	500	GRW 3 /250' N OF NORTH HINSDALE PH	76	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HINSDALE WATER DEPT/DOWNTOWN	2	0	1151020	1600	500	GPW 4 /300' NW GLEN ST PS	37	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HINSDALE WATER DEPT/DOWNTOWN	2	0	1151020	1600	500	GPW 5 /IN GLEN ST PS	38	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HOOKSETT VILLAGE WATER PCT	4	0	1181020	2250	886	GPW 2 /SO END OF LAKE /SOUTH WELL	56	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HOOKSETT VILLAGE WATER PCT	4	0	1181020	2250	886	GPW 1 /60' SE OF CONTROL BLDG /NORTH WELL	76	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HOOKSETT VILLAGE WATER PCT	4	0	1181020	2250	886	GPW 3 /50' WNW OF SOUTH WELL AND PH	65	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HOOKSETT VILLAGE WATER PCT	4	0	1181020	2250	886	GPW 4 /900' N OF SOUTH WELL PH /EAST WELL	75	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HOPKINTON VILLAGE PCT	2	0	1191020	215	100	GPW 2 /270' FROM PH	56	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HOPKINTON VILLAGE PCT	2	0	1191020	215	100	GPW 3 /302' NW OF PH	34	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HUDSON WATER DEPT	3	0	1201010	16000	5730	GPW DUCHARME	90	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HUDSON WATER DEPT	3	0	1201010	16000	5730	GPW WEINSTEIN	65	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	HUDSON WATER DEPT	3	0	1201010	16000	5730	GPW DAME	90	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	JAFFREY WATER WORKS	3	0	1221010	3612	1445	GPW 1 /TURNPIKE RD WELL	46	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	JAFFREY WATER WORKS	3	0	1221010	3612	1445	GPW 2 /CONTOCOOK LAKE WELL	48	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	JAFFREY WATER WORKS	3	0	1221010	3612	1445	GPW /REDUNDANT TPKE WELL 2	58	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	KEENE WATER DEPT	4	1	1241010	25000	6000	GPW WEST ST WELL /WELL 1 /66	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050

Fire Protection	System Name	# Groundwater Sources	# of SURFACE SOURCES	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Screen Redevelopment	Total 20-Year Component Replacement Cost	Annual Need
Y	KEENE WATER DEPT	4	1	1241010	25000	6000	GPW 1 N /WELL 2 /67	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	KEENE WATER DEPT	4	1	1241010	25000	6000	GPW 2 M /WELL 3 /68	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	KEENE WATER DEPT	4	1	1241010	25000	6000	GPW 4 S /WELL 4 /69	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	LISBON WATER DEPT	2	0	1361010	1050	420	GPW 1 /CASWELL	55	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	LISBON WATER DEPT	2	0	1361010	1050	420	GPW 2 /200' W OF GPW 1	55	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
N	VILLAGE DISTRICT OF EIDELWEISS	3	0	1461010	1050	420	GPW 6 /GARAGE WELL	74	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MARLBOROUGH WATER WORKS	2	0	1481010	750	300	GPW 1 /IN PH 1 /400' SW OF SCHOOL	30	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MARLBOROUGH WATER WORKS	2	0	1481010	750	300	GPW 2 /IN PH 2 /FITCH COURT	44	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERRIMACK VILLAGE DIST	6	0	1531010	25000	8730	GPW 4 /MVD 4	53	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERRIMACK VILLAGE DIST	6	0	1531010	25000	8730	GPW 5 /MVD 5	65	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERRIMACK VILLAGE DIST	6	0	1531010	25000	8730	GPW 3 /CAMP SARGENT	68	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERRIMACK VILLAGE DIST	6	0	1531010	25000	8730	GPW 7 /WITCHES BROOK WELL HOLLIS	52	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERRIMACK VILLAGE DIST	6	0	1531010	25000	8730	GPW 8 /450' SE OF WELL 7 HOLLIS	57	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERRIMACK VILLAGE DIST	6	0	1531010	25000	8730	GPW 2A /BERRY LN	96	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MILFORD WATER UTILITIES DEPT	2	0	1561010	9500	3476	GPW CURTIS 2 /WEST	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MILFORD WATER UTILITIES DEPT	2	0	1561010	9500	3476	GPW CURTIS 1 /EAST	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MILTON WATER DIST	5	0	1581010	800	350	GPW /IN PH	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MILTON WATER DIST	5	0	1581010	800	350	RPW GPW 2 /550' E OF END OF ST JAMES AVE	44	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MILTON WATER DIST	5	0	1581010	800	350	RPW GPW 3 /590' E OF END OF ST JAMES AVE	44	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MILTON WATER DIST	5	0	1581010	800	350	RPW GPW 4 /620' E OF END OF ST JAMES AVE	44	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MILTON WATER DIST	5	0	1581010	800	350	RPW/GPW 1 /520' E OF END OF ST JAMES AVE	44	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MONROE WATER DEPT	3	0	1591010	300	168	GPW 1 /IN PH	48	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PENNICHUCK WATER WORKS	2	3	1621010	86630	23629	GPW /IN PS/AMHERST VILLAGE	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PENNICHUCK WATER WORKS	2	3	1621010	86630	23629	GPW /IN PS/BON TERRAIN	56	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEW LONDON SPRINGFIELD WATER	6	0	1721010	2750	1100	GPW 2 /LOWER E	30	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEW LONDON SPRINGFIELD WATER	6	0	1721010	2750	1100	GPW 5 /LOWER SE	35	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEW LONDON SPRINGFIELD WATER	6	0	1721010	2750	1100	GPW 1 /LOWER NE	30	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEW LONDON SPRINGFIELD WATER	6	0	1721010	2750	1100	GPW 3 /UPPER NW	56	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEW LONDON SPRINGFIELD WATER	6	0	1721010	2750	1100	GPW 6 /UPPER WEST	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEW LONDON SPRINGFIELD WATER	6	0	1721010	2750	1100	GPW 4 /UPPER SW	59	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEWMARKET WATER WORKS	2	0	1731010	5000	1933	GPW BENNETT /RTE 152 NEAR PW GARAGE	48	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEWMARKET WATER WORKS	2	0	1731010	5000	1933	GPW SEWELL /350' S OF 152	82	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NEWPORT WATER WORKS	1	1	1741010	5000	1597	GPW 1 /POLLARDS MILL WELL	85	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	GROVETON WATER SYS	2	0	1781010	2650	793	GPW 1 /860' W OF PH	65	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	GROVETON WATER SYS	2	0	1781010	2650	793	GPW 2 /800' W OF PH	81	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	OSSIPEE WATER DEPT	2	0	1841010	850	325	GPW 1 /40' E OF PH	85	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	OSSIPEE WATER DEPT	2	0	1841010	850	325	GPW 2 /80' S OF PH	88	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PEU/WILLIAMSBURG	2	0	1851010	615	246	GPW 1 /141' W OF ENTRANCE GATE	35	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PEU/WILLIAMSBURG	2	0	1851010	615	246	GPW 1A /125' W OF ENTRANCE GATE	35	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PEMBROKE WATER WORKS	5	0	1861010	5200	2032	GPW 4 /BEAR BROOK PS 1	51	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PEMBROKE WATER WORKS	5	0	1861010	5200	2032	GPW 3 /CONCORD	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PEMBROKE WATER WORKS	5	0	1861010	5200	2032	GPW 2 /CONCORD	88	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050

Fire Protection	System Name	# Groundwater Sources	# of SURFACE SOURCES	EPA ID #	Population	Service Connections	Source Description	Well Depth (ft)	2010 Replacement Cost	20 yrs/ Service Life	Screen Replacement	Total 20-Year Component Replacement Cost	Annual Need
Y	PEMBROKE WATER WORKS	5	0	1861010	5200	2032	GPW BB 3 /1500' NE OF BB 1 PH	75	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PEMBROKE WATER WORKS	5	0	1861010	5200	2032	GPW 6 /RTE 106	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PETERBOROUGH WATER WORKS	3	0	1871010	4062	1586	GPW /SUMMER ST	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PETERBOROUGH WATER WORKS	3	0	1871010	4062	1586	GPW TARBELL /TARBELL RD	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PETERBOROUGH WATER WORKS	3	0	1871010	4062	1586	GPW NORTH /TARBELL RD /W OF MEADOW SCH	76	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERIDEN VILLAGE WATER DIST	3	0	1921020	750	60	DUG /100 YDS E OF ELEMENTARY SCHOOL	30	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERIDEN VILLAGE WATER DIST	3	0	1921020	750	60	GRW 1 /40' FT NE OF EXISTING PH/WELL A	46	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	MERIDEN VILLAGE WATER DIST	3	0	1921020	750	60	GRW 2 /675' NW OF EXISTING PH/WELL B	46	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PLYMOUTH VIL WATER AND SEWER	2	0	1941010	6300	985	GPW 1 /PH NE	44	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PLYMOUTH VIL WATER AND SEWER	2	0	1941010	6300	985	GPW 2 /PIT SW	45	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PORTSMOUTH WATER WORKS	6	1	1951010	33000	7200	PORTSMOUTH GPW 1	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PORTSMOUTH WATER WORKS	6	1	1951010	33000	7200	MADBURY GPW 4	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PORTSMOUTH WATER WORKS	6	1	1951010	33000	7200	MADBURY GPW 2	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PORTSMOUTH WATER WORKS	6	1	1951010	33000	7200	MADBURY GPW 3	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	PORTSMOUTH WATER WORKS	6	1	1951010	33000	7200	GREENLAND GPW 5	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	RAYMOND WATER DEPT	3	0	1971010	2682	1073	GPW 1 /50' W OF PH	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	RAYMOND WATER DEPT	3	0	1971010	2682	1073	GPW 2 /150' N OF PH	53	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	RAYMOND WATER DEPT	3	0	1971010	2682	1073	GPW 3 /175' N OF PW 2	53	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	ROLLINSFORD WATER AND SEWER	3	0	2011010	1688	639	GPW 1 /LOCATED IN GPW PH	32	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	RYE WATER DIST	3	0	2041010	3900	1546	GPW /GARLAND RD QTR MILE SE OF STORAG TNKS	49	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	GPW 3 /IN RILEY PH 3 /NW OF GPW 4	90	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	GPW 2 /TRUE RD FURTHEST /W OF GPW 1	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	GPW 7 /I 97 WELL	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	GPW 1 /TRUE RD /E OF GPW 2	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	SEABROOK WATER DEPT	10	0	2111010	14000	4314	GPW 4 /IN RILEY PH 4 /SE OF GPW 3	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	SOMERSWORTH WATER WORKS	1	1	2151010	12000	3300	GPW 1	70	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
\$NULL	COOS COUNTY FARM	2	0	2194010	295	6	GPW 1 /60' W OF PS	140	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
\$NULL	COOS COUNTY FARM	2	0	2194010	295	6	GPW 2 /AUX IN PS	137	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NORTH STRATFORD WATER DEPT	2	0	2221010	300	109	GPW 1 /80' E OF PH	75	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	NORTH STRATFORD WATER DEPT	2	0	2221010	300	109	GPW 2 /240' E OF PH	60	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
N	WEST SWANZEY WATER	2	0	2301020	183	73	GPW /IN PH 1 N WITH HYDRO TANK	76	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
N	WEST SWANZEY WATER	2	0	2301020	183	73	GPW /IN PH 2	77	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	TILTON NORTHFIELD WATER DIST	2	0	2351010	2500	941	GPW 2 /WESTERLY	69	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	TILTON NORTHFIELD WATER DIST	2	0	2351010	2500	941	GPW 1 /EASTERLY	69	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	TROY WATER WORKS	5	0	2361010	1200	461	GPW 1 /900' E OF JAFFREY RD	43	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	TROY WATER WORKS	5	0	2361010	1200	461	GPW 2 /APPROX 25' NE OF GPW1	42	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	SANBORNVILLE WATER DEPT	2	0	2391010	1500	410	GPW 2 /IN PS 2 /TOWN OF BROOKFIELD	38	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	SANBORNVILLE WATER DEPT	2	0	2391010	1500	410	GPW 3 /50' S OF PS	0	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WALPOLE WATER DEPT	2	0	2401010	975	389	GPW 1 /125' S OF GREAT BROOK WATKINS	28	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WALPOLE WATER DEPT	2	0	2401010	975	389	GPW 2 /600' E OF CONN RIVER /RIVER WELL	68	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	N WALPOLE VILLAGE DISTRICT/LOW	2	0	2401020	800	300	GPW 1 /50' E OF RIVER	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	N WALPOLE VILLAGE DISTRICT/LOW	2	0	2401020	800	300	GPW 2 /100' N OF GPW 1	49	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WARNER VILLAGE WATER DIST	2	0	2411010	500	198	GPW 1 /ROYCE /EASTERLY OF 2	38	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WARNER VILLAGE WATER DIST	2	0	2411010	500	198	GPW 2 /ROYCE /WESTERLY OF 2	38	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WATERVILLE VALLEY WATER DIST	3	0	2441010	3050	1220	GPW 2	52	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WHITEFIELD WATER	5	0	2501010	1450	580	GPW 1 /ROBINSON 600' W OF PS /RTE 116 WS	83	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WHITEFIELD WATER	5	0	2501010	1450	580	GW 2 /ROBINSON WELL 2 /RW2 100' SE OF GPW1	275	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WILTON WATER WORKS	2	0	2521010	1665	665	EVERETT GPW /IN PH	52	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WILTON WATER WORKS	2	0	2521010	1665	665	ABBOTT GPW /400' N OF PH 400' E OF RTE 31	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WINCHESTER WATER DEPT	3	0	2531010	2800	1121	GPW 1 /2 1/2 MI N OF 119/ E SIDE RTE 10	54	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WINCHESTER WATER DEPT	3	0	2531010	2800	1121	GPW 2 /100 YDS N OF GPW 1	57	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WINCHESTER WATER DEPT	3	0	2531010	2800	1121	GPW 3 /S SIDE OF 119 /1 MILE E OF RTE 10	55	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WOODSTOCK WATER DEPT	2	0	2571020	2475	990	GPW 1 /IN PH 1 1000' W OF RTE 175	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	WOODSTOCK WATER DEPT	2	0	2571020	2475	990	GPW 2 /IN PH 2 200' SE OF GPW 1	50	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050
Y	FRANKLIN WATER WORKS	4	0	851010	7000	2292	PTW FIELD SANBORNTON	25	\$160,000	\$80,000	\$41,000	\$121,000	\$6,050

TABLE D-6
PROJECTED VALUES BY WELL TYPE

BY PERMITTING LEVEL AND GEOLOGICAL CLASS	COUNT (2010)	2010 REPLACEMENT VALUE (\$M)	ANNUAL (\$M)	20 YEAR VALUE (\$M)
Bedrock (Level 1)	903	\$40.6	\$1.6	\$32.5
Bedrock (Level 2)	134	\$10.9	\$0.4	\$8.7
Total Bedrock	1037			
Overburden (Level 1)	68	\$6.0	\$0.3	\$5.9
Overburden (Level 2)	202	\$32.3	\$1.2	\$24.4
Total Overburden	270			
Total	1307	\$89.8	\$3.5	\$71.5

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Bedrock includes bedrock wells, artesian wells, springs

Overburden includes gravel wells, gravel-packed, dug, point, infiltration wells

APPENDIX E
Conversion of Estimated 2010
Developed Costs to a Periodic Investment Need

APPENDIX E

CONVERSION OF ESTIMATED 2010 DEVELOPED COSTS TO A PERIODIC INVESTMENT NEED

REFERENCED BY APPENDICES:

SURFACE WATER (APPENDIX F)

GROUNDWATER (APPENDIX G)

TREATMENT, AND PRESSURE BOOSTING FACILITIES (APPENDIX H)

E.1 BACKGROUND

The purpose of this Study is to make a determination of how much money must be invested to replace or maintain New Hampshire Community Water System facilities over a future period of time; annually, 20-years, or otherwise. Actual built projects were analyzed to create a mathematical cost model that was used to estimate a replacement cost for all community water system treatment plants and pressure booster stations in terms of 2010 dollars. Following this, each 2010 cost needed to be converted into a periodic investment to replace or keep up the facilities over time. This Appendix section constitutes a general discussion of the development of a method for converting the 2010 estimated replacement cost into the periodic investment need. This appendix section is referred to by the sections of the report concerning building-based facilities: Surface Water Treatment Plants, Ground Water Treatment Facilities, and Pressure Boosting Stations..

A large portion the value of community water system infrastructure is invested in complex facilities including water treatment plants and pressure booster stations. These facilities consist of buildings constructed to house primary and auxiliary water treatment process functions and equipment. They are termed "complex" in that many different built and manufactured components comprise them, each with correspondingly variable costs to build initially, then to maintain or replace. Examples of these components include the building itself, tankage, process and piping equipment, both within and outside in the yard. Additionally, there is important auxiliary equipment required to run a facility such as telemetry, instrumentation, control, heating,

and plumbing. These many components are subject to varying rates of deterioration, and a correspondingly variable need and cost for replacement/refurbishments over time.

E.2 METHODOLOGY

A uniform way of projecting replacement costs over twenty years and annually was developed. The approach was based on building trade components and their estimated service life. It is worth reiterating that the purpose of the Study is to obtain an aggregated replacement value for all existing facilities of each type in the state, and is not appropriate for estimating a true value for each individual facility in the database.

E.2.1 Review of Initial Steps (covered in more detail in pertinent sections)

Initial steps are described under each appendix discussing the specifics of each infrastructure type. These resulted in a 2010 replacement cost for each facility in the NH database inventory of facilities. Generalized initial steps are summarized here.

Collection of Known Project Costs: Cost information was compiled for a set of recent and historical construction projects. These projects included construction costs and also other development costs (planning studies, engineering, financing, and administration) when these could be found which were combined to result in a "Total Developed Cost" for each facility. Land purchase costs were not generally available and are therefore excluded from the analysis.

Indexing to Current Year (2010): Compiled project costs were normalized to 2010 using a construction cost index (in this case the Engineering News Record's 20-City Construction Cost Average). After normalizing actual constructed projects' Total Developed Costs to the year 2010, a mathematical model was developed that could predict a general Total Developed Cost for the facilities in the DES database. The specifics of this for each infrastructure type are described under the pertinent sections of this report.

These initial steps resulted in an estimated 2010 cost for each facility datapoint in the infrastructure inventory. However, the purpose was to determine a 20-year and an annual investment need that would cover replacement/refurbishment based on the expected service lives

of the facility's components. However, for complex facilities housing treatment and other water system equipment and functions, not all components around, on, and in a building have the same service life. Certain assets, such as roofs, must be rebuilt more regularly, whereas the structural components of a building are long-lived and don't need regular replacement. Software must be replaced very frequently compared to other equipment in the facility because of the pace of technology advancements.

E.2.2 Estimated Share of Costs by Building Trade Asset Division

To determine how to apportion the 2010 replacement cost (previous paragraph) over a 20-year period, the same sample sets of recently constructed projects (used to create the model) were again examined to determine how the construction costs were apportioned by asset type. Each constructed project's records allowed an examination of its breakdown of cost according to building trade division, which could then be combined and averaged. To get at the components of a water treatment facility, a breakdown according to asset categories as represented by the share of construction cost by skilled construction trade discipline may be made as shown in Table E-1.

In general, different contractors (the building trade division) have the expertise to supply and install the different asset categories within constructed facilities and equipment in a construction project (process, civil, structural, architectural, plumbing/heating/ventilation, instrumentation/electrical). During construction, these different types of work are tracked for the purpose of payment using a document called the "Schedule of Values" which breaks out the costs according to these different areas. These documents tend to not be entirely consistent from project to project in the way elements of cost are grouped together, but most contractors generally follow the same groupings. Although, there is certainly variation in the specifics within each building trade, it is a good general approach to assume that things constructed under any particular building trade would share similar characteristics. The general contractor may combine the divisions such as architectural and structural in organizing the construction work. Mechanical and process divisions are often combined, as are the electrical and instrumentation/telemetry sections. However, the schedule of values is usually the only available detailed record of construction costs.

For each constructed project, Schedules of Values were collected and examined to determine the relative percentage share of total construction cost by grouped construction trade division. These were then averaged across all the projects to create a factor. The construction trade division factors were applied to the 2010 estimated cost for each building based facility in the database to make an estimate of what each building trade division's share could be. These costs were broken out in this way to enable application of service life to each estimated division cost.

Table E-1 shows both the breakout of cost components by building trade asset type. Additionally, Table E-1 provides a general description of the systems, equipment, and work under each trade division, showing the estimated division shares as an average. Architectural and structural assets were separated here because of the very different service lives of their components (although they are often quoted together by the general contractor who is thinking in terms of supplying a whole building).

An estimate for prospective frequencies and intervals for maintenance and refurbishments over a 20-year period based on each facility's component asset's expected service life is described next.

E.2.3 Service Life

The construction building trade asset divisions, described above, may also be used for determining the cost to replace/refurbish facility components over time. The systems and equipment furnished and installed during construction under each of the building trade asset divisions (described above), may be assumed to have generally similar needs for refurbishment or replacement over time (represented by either of the terms "service life" or "useful life"). For example, as a group instrumentation and software systems may be expected to become outdated or require replacement within a comparatively short time frame compared to more robust and heavily built treatment process equipment (filters, pressure vessels). Architectural components such as windows, doors, roofing, and paint tend to be subject to more deterioration over time compared to the long-lived concrete and masonry (comprising a structural system). In this final

TABLE E-1

BREAKOUT BY BUILDING TRADE ASSET GROUP - ESTIMATED SHARE OF COSTS AND SERVICE LIFE

Asset Division	Example Components Under Asset Division	Est. Service Life of Component Group		Average Asset Div % of Total Developed Cost		
				Groundwater Facilities	Surface Water Treatment Plants	Pressure Boosting Facilities
Civil/Site	Clearing & grubbing, excavation, trenching, loaming/seeding/mulching/ landscaping, paving, pre-cast concrete, demolition, site piping	75		20%	15%	10%
Structural	Cast-in-place concrete, rebar, masonry, tankage	100		18%	18%	15%
Architectural	Roof, carpentry, damp-proofing, metals/grating, coatings	25		12%	12%	15%
Process	Treatment process equipment, interior piping, valves, gauges, chemical feed systems	20	15	30%	38%	35%
Mechanical	Plumbing, heating, ventilation, sanitary systems (sometimes this division includes process piping and equipment), storage silos, lifts, gantrys, special mechanical equipment	10				
Electrical	Service entrance & distribution, wiring/conduits, power panels, emergency backup power & transfer switch, telephone, security systems	20	15	20%	17%	25%
Instrumentation /Telemetry	Process instrumentation, control panels, process computers (programmable logic controllers), operator interface, control wiring/conduits	10				

step of the model, the 20 years of the cost period were divided by the estimated service life to create a ratio factor that could be applied to each trade division percent of cost. The estimated service life for different classifications of water facilities are shown in Table E-1.

E.2.3 Projecting Investment Need

To get to the 20-year need, the techniques described above were applied. The estimated 2010 cost for each facility in the DES dataset was multiplied by the estimated share of costs contributed by each Building Trade Asset Division. Following this, a factor was applied consisting of the 20 year time horizon divided by the estimated service life for each Building Trade Asset Division. This is explained much more briefly in the following equation:

$$\text{20-Year Investment Need} = \sum [(\text{Total Developed Cost Indexed to 2010}) \times (\text{Bldg Assed Class \% Share of Cost}) \times \left(\frac{\text{20 yr Horizon}}{\text{Bldg Asset Class. Service Life}} \right)]$$

The 20-year result was divided by 20 to also present an annual need.

The projected need for each of the facilities in the DES database were then summed to obtain the estimated expected total investment need for each class of water infrastructure, over the 20 years, as well as annually. This is a linear relationship such that the 20 year cost may be divided by two to find a 10 year investment need, or by 20 to find an annual cost.

The calculations are shown in each of the applicable Appendix section spreadsheets.

APPENDIX F
Surface Water Treatment Facilities

APPENDIX F

SURFACE WATER TREATMENT FACILITIES

F.1 SURFACE WATER TREATMENT FACILITY METHOD

The population of surface water facilities serving from 0.10 to 50 MGD is fairly small in New Hampshire (39 systems). The date of construction and construction cost for each surface water treatment plant serving over 0.10 MGD was available from NHDES records. This provided an almost complete inventory of plant costs to which the division cost component/service life approach could be applied.

Complete cost information was available for 34 of the 39 surface water treatment facilities. Because costs were not available for five facilities, the 34 for which information was available were modeled using regression analysis. The completeness of the data set allowed modeling only the NH systems without using other cost examples for the set from within New England.

The Engineering News Record 20- City Construction Cost Index was used to bring all costs to the year 2010. Table F-1 shows the cost set used. A scatterplot was generated for each system for which costs were available with "cost per gallon" on the x axis (abscissa) and "capacity as million gallons per day (MGD)" on the y axis (ordinate). Standard residuals were examined to remove apparent outliers before generating a line of best fit (Figure F-1) to use as the model equation. The equation was applied to the five systems for which costs were not available (shown at the bottom of Table F-1) to estimate a 2010 total developed cost.

Because the objective is to determine both an annual and 20-year funding need to replace facilities as they age, subsequent steps were made for modeling. These steps are common for any of the building based infrastructure housing facilities, and are described in detail in Appendix E. Table F-2 displays both the model equation applied to the five facilities without historical costs, and the component method of incorporating the service lives of the various building assets.

Table F-1:NH Surface Water Facilities: Cost Set for Developing Model

Enter Date of Current ENR Index **Nov-10**
 Current ENR index for that date **8951**

COST SET OF NH SURFACE WATER PLANTS

EPA#	Municipality	Public Water System	Type	Capacity, MGD	Project Year	ENR CCI	Actual Construction Cost	Engineering Cost	Actual Total Developed Cost for Given Date	Indexed to 2010 Total Developed Cost	Cost/Gallon Indexed to 2010	Cost/Gallon Indexed to 2010
0351010	CANAAN	CANAAN WATER DEPT	Slow Sand	0.10	1988	4519	\$ 361,902	\$ 136,600	\$ 498,502	\$ 987,367	\$ 9.87	\$ 9.87
1691010	NEW HAMPTON	NEW HAMPTON VILLAGE PRECINCT	Kinetico	0.17	1995	5471	\$ 340,851	\$ 101,298	\$ 442,149	\$ 723,362	\$ 4.19	\$ 4.19
0081010	ANDOVER	ANDOVER VILLAGE DIST	Kinetico	0.20	1993	5210	\$ 405,159	\$ 13,476	\$ 418,635	\$ 719,204	\$ 3.60	\$ 3.60
1191010	HOPKINTON	CONTOOCOOK VILLAGE PRECINCT	Kinetico	0.20	1993	5210	\$ 627,520	\$ 175,937	\$ 803,457	\$ 1,380,317	\$ 6.90	\$ 6.90
1911010	PITTSFIELD	PITTSFIELD AQUEDUCT CO	Conventional - Trident	0.25	1997	5826	\$ 795,757	\$ 89,231	\$ 884,988	\$ 1,359,631	\$ 5.44	\$ 5.44
0161010	BARTLETT	BARTLETT VILLAGE PRECINCT	Slow Sand	0.30	1995	5471	\$ 761,000	\$ 127,898	\$ 888,898	\$ 1,454,251	\$ 4.85	\$ 4.85
0241010	BETHLEHEM	BETHLEHEM VILLAGE DIST	Slow Sand	0.50	1993	5210	\$ 964,738	\$ 356,956	\$ 1,321,694	\$ 2,270,635	\$ 4.54	\$ 4.54
2271010	SUNAPEE	SUNAPEE WATER WORKS	Slow Sand	0.50	1997	5826	\$ 1,546,074	\$ 414,457	\$ 1,960,531	\$ 3,012,016	\$ 6.02	\$ 6.02
0911010	GOFFSTOWN	GOFFSTOWN VILLAGE PRECINCT	Kinetico	0.60	1994	5408	\$ 1,064,000	\$ 143,500	\$ 1,207,500	\$ 1,998,502	\$ 3.33	\$ 3.33
1291010	LANCASTER	LANCASTER WATER DEPT	Slow Sand	0.70	1995	5471	\$ 1,690,025	\$ 150,643	\$ 1,840,669	\$ 3,011,362	\$ 4.30	\$ 4.30
1741010	NEWPORT	NEWPORT WATER WORKS	Slow Sand	0.70	1993	5210	\$ 1,060,096	\$ 192,633	\$ 1,252,729	\$ 2,152,155	\$ 3.07	\$ 3.07
0921010	GORHAM	GORHAM WATER AND SEWER DEPT	Slow Sand	1.00	1990	4732	\$ 1,648,821	\$ 282,544	\$ 1,931,365	\$ 3,653,203	\$ 3.65	\$ 3.65
1101040	HVERHILL	WOODSVILLE WATER & LIGHT	Conventional - Trident	1.00	1991	4835	\$ 1,467,160	\$ 367,344	\$ 1,834,504	\$ 3,396,067	\$ 3.40	\$ 3.40
1141010	HILLSBORO	HILLSBORO WATER WORKS	Slow Sand	1.00	1995	5471	\$ 2,242,518	\$ 421,394	\$ 2,663,912	\$ 4,358,202	\$ 4.36	\$ 4.36
1351010	LINCOLN	LINCOLN WATER WORKS	Conventional - Trident	1.00	1992	4985	\$ 2,268,367	\$ 367,888	\$ 2,636,255	\$ 4,733,434	\$ 4.73	\$ 4.73
1521010	MEREDITH	MEREDITH WATER DEPT	Conventional - Trident	1.00	1988	4519	\$ 1,264,340	\$ 245,247	\$ 1,509,586	\$ 2,989,989	\$ 2.99	\$ 2.99
2561010	WOLFEBORO	WOLFEBORO WATER AND SEWER	Conventional - Trident	2.00	1996	5620	\$ 2,366,104	\$ 440,791	\$ 2,806,895	\$ 4,470,374	\$ 2.24	\$ 2.24
2151010	SOMERSWORTH	SOMERSWORTH WATER WORKS	Conventional	3.00	1991	4835	\$ 2,463,303	\$ 493,539	\$ 2,956,842	\$ 5,473,760	\$ 1.82	\$ 1.82
0801010	EXETER	EXETER WATER DEPT	Conventional	3.40	1990	4732	\$ 2,816,648	\$ 846,128	\$ 3,662,776	\$ 6,928,188	\$ 2.04	\$ 2.04
0231010	BERLIN	BERLIN WATER WORKS	Conventional - Trident	4.00	1995	5471	\$ 4,999,772	\$ 655,157	\$ 5,654,929	\$ 9,251,551	\$ 2.31	\$ 2.31
1951010	PORTSMOUTH	PORTSMOUTH WATER WORKS	Conventional	5.00	1995	5471	\$ 1,607,181	\$ 381,104	\$ 1,988,285	\$ 3,252,865	\$ 0.65	\$ 0.65
2001010	ROCHESTER	ROCHESTER WATER DEPT	Conventional	5.00	1988	4519	\$ 4,402,311	\$ 582,794	\$ 4,985,105	\$ 9,873,840	\$ 1.97	\$ 1.97
1241010	KEENE	KEENE WATER DEPT	Conventional - Trident	6.00	1994	5408	\$ 3,405,015	\$ 451,354	\$ 3,856,369	\$ 6,382,577	\$ 1.06	\$ 1.06
1281010	LACONIA	LACONIA WATER WORKS	Conventional - Trident	6.00	1989	4615	\$ 2,718,169	\$ 470,183	\$ 3,188,352	\$ 6,183,703	\$ 1.03	\$ 1.03
2051010	SALEM	SALEM WATER DEPT	Conventional - Trident	6.00	1991	4835	\$ 3,726,543	\$ 645,593	\$ 4,372,136	\$ 8,093,777	\$ 1.35	\$ 1.35
1621010	NASHUA	PENNICHUCK WATER WORKS	Conventional	32.00	1980	3237	-	-	\$ 7,600,000	\$ 21,014,787	\$ 0.66	\$ 0.66
1621010	NASHUA	PENNICHUCK WATER WORKS	Conventional	32.00	2009	8566	\$ 29,900,000	\$ 5,200,000	\$ 35,100,000	\$ 36,676,099	\$ 1.15	\$ 1.15
1471010	MANCHESTER	MANCHESTER WATER WORKS	Conventional	50.00	1974	2020	-	-	\$ 5,500,000	\$ 24,370,554	\$ 0.49	\$ 0.49
1471010	MANCHESTER	MANCHESTER WATER WORKS	Conventional	50.00	2006	7751	-	-	\$ 32,800,000	\$ 37,876,531	\$ 0.76	\$ 0.76
1071010	HANOVER	HANOVER WATER WORKS	Membrane	3.50	2005	7415	\$ 4,992,100	\$ 777,793	\$ 5,769,893	\$ 6,964,833	\$ 1.99	\$ 1.99
991010	GREENVILLE	GREENVILLE WATER DEPT	Conventional	0.40	1999	6060	\$ 1,810,101	\$ 389,500	\$ 2,199,601	\$ 3,248,817	\$ 8.12	\$ 8.12
SuggestedOutliers removed for developing model												
2494010	WESTMORELAND	CHESHIRE COUNTY HOME	Conventional	0.10	1992	4985	\$ 477,000	\$ 81,566	\$ 558,566	\$ 1,002,913	\$ 10.03	\$ 10.03
1211010	JACKSON	JACKSON WATER PRECINCT	Kinetico	0.35	2003	6695	\$ 1,566,666	\$ 359,894	\$ 1,926,560	\$ 2,575,645	\$ 7.36	\$ 7.36
1951010	PORTSMOUTH	PORTSMOUTH WATER WORKS	Conventional	4.00	2010	8671	\$ 16,949,947	\$ 4,307,000	\$ 21,256,947	\$ 21,942,484	\$ 5.49	\$ 5.49
Systems without historical cost information												
461010	CLAREMONT	CLAREMONT WATER DEPT	Conventional	4.00								
501010	CONCORD	CONCORD WATER WORKS	Conventional	10.00								
691010	DURHAM	DURHAMUNH WATER WORKS	Conventional	1.50								
1321010	LEBANON	LEBANON WATER DEPT	Conventional	4.00								
1381010	LITTLETON	LITTLETON WATER AND LIGHT	Slow Sand	1.50								

**Figure F-1: NH Surface Water Treatment Plants
Capacity vs Actual Cost per Gallon Indexed to 2010**

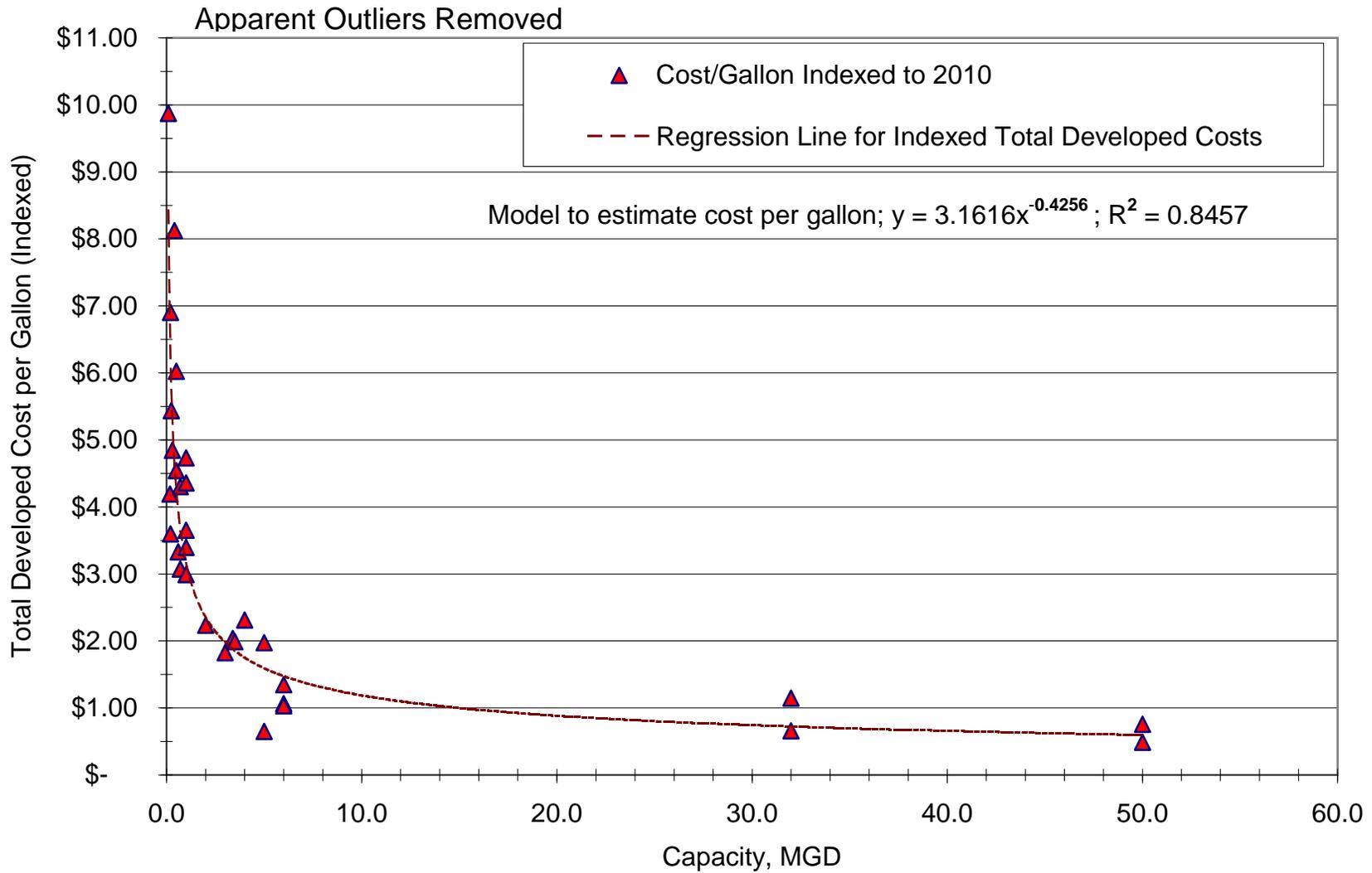


Table F-2 NH Surface Water Plants Cost Model

39 Number of Surface Water Treatment Facilities with Capacity > 0.10 MGD
 34 Number of actual NH SWT Systems for Which Development Costs Exist
 Nov-10 Enter Date of Current ENR Index
 8951 Current ENR index for that date

Model to estimate cost per gallon for 5 systems w/ out historical costs;
 $y = 3.1616x^{0.4256}$; $R^2 = 0.8457$

Line number	20-YEAR REPLACEMENT of COMPONENT COSTS					
Estimated Service Life Cycle	1	15	15	25	100	75
Factors: 20 yr/Service Life	2	1.33	1.33	0.80	0.20	0.27
Share of Construction Cost by Division	3	0.38	0.17	0.12	0.18	0.15

NH SURFACE WATER PLANTS

EPA#	Municipality	Public Water System	Type	Capacity, MGD	Project Year	ENR CCI	Actual Construction Cost	Engineering Cost	Actual Total Developed Cost for Given Date	Cost/Gal Treated Capacity	Cost/Gal Capacity (Indexed to 2010)	Estimated 2010 Total Developed Cost	Mechanical/Process (38%)	Electrical/Instr (%17)	Architectural (12%)	Structural (18%)	Civil (15%)	Total 20-Year Component Replacement Cost	Annual			
TOTAL												\$ 288,659,721									\$ 261,333,268	\$ 13,066,663
0351010	CANAAN	CANAAN WATER DEPT	Slow Sand	0.10	1988	4519	\$ 361,902	\$ 136,600	\$ 498,502	\$ 4.99	\$9.87	\$ 987,367	\$ 500,266	\$ 223,803	\$ 94,787	\$ 35,545	\$ 39,495	\$ 893,896	\$ 44,695			
2494010	WESTMORELAND	CHESHIRE COUNTY HOME	Conventional	0.10	1992	4985	\$ 477,000	\$ 81,566	\$ 558,566	\$ 5.59	\$10.03	\$ 1,002,913	\$ 508,143	\$ 227,327	\$ 96,280	\$ 36,105	\$ 40,117	\$ 907,971	\$ 45,399			
1691010	NEW HAMPTON	NEW HAMPTON VILLAGE PRECINCT	Kinetic	0.17	1995	5471	\$ 340,851	\$ 101,298	\$ 442,149	\$ 2.56	\$4.19	\$ 723,362	\$ 366,504	\$ 163,962	\$ 69,443	\$ 26,041	\$ 28,934	\$ 654,884	\$ 32,744			
0081010	ANDOVER	ANDOVER VILLAGE DIST	Kinetic	0.20	1993	5210	\$ 405,159	\$ 13,476	\$ 418,635	\$ 2.09	\$3.60	\$ 719,204	\$ 364,397	\$ 163,020	\$ 69,044	\$ 25,891	\$ 28,768	\$ 651,119	\$ 32,556			
1191010	HOPKINTON	CONTOOCOOK VILLAGE PRECINCT	Kinetic	0.20	1993	5210	\$ 627,520	\$ 175,937	\$ 803,457	\$ 4.02	\$6.90	\$ 1,380,317	\$ 699,361	\$ 312,872	\$ 132,510	\$ 49,691	\$ 55,213	\$ 1,249,647	\$ 62,482			
1911010	PITTSFIELD	PITTSFIELD AQUEDUCT CO	Conventional - Trident	0.25	1997	5826	\$ 795,757	\$ 89,231	\$ 884,988	\$ 3.54	\$5.44	\$ 1,359,631	\$ 688,880	\$ 308,183	\$ 130,525	\$ 48,947	\$ 54,385	\$ 1,230,919	\$ 61,546			
0161010	BARTLETT	BARTLETT VILLAGE PRECINCT	Slow Sand	0.30	1995	5471	\$ 761,000	\$ 127,898	\$ 888,898	\$ 2.96	\$4.85	\$ 1,454,251	\$ 736,820	\$ 329,630	\$ 139,608	\$ 52,353	\$ 58,170	\$ 1,316,582	\$ 65,829			
1211010	JACKSON	JACKSON WATER PRECINCT	Kinetic	0.35	2003	6695	\$ 1,566,666	\$ 359,894	\$ 1,926,560	\$ 5.50	\$7.36	\$ 2,575,645	\$ 1,304,994	\$ 583,813	\$ 247,262	\$ 92,723	\$ 103,026	\$ 2,331,818	\$ 116,591			
0241010	BETHLEHEM	BETHLEHEM VILLAGE DIST	Slow Sand	0.50	1993	5210	\$ 964,738	\$ 356,956	\$ 1,321,694	\$ 2.64	\$4.54	\$ 2,270,635	\$ 1,150,455	\$ 514,677	\$ 217,981	\$ 81,743	\$ 90,825	\$ 2,055,681	\$ 102,784			
2271010	SUNAPEE	SUNAPEE WATER WORKS	Slow Sand	0.50	1997	5826	\$ 1,546,074	\$ 414,457	\$ 1,960,531	\$ 3.92	\$6.02	\$ 3,012,016	\$ 1,526,088	\$ 682,724	\$ 289,154	\$ 108,433	\$ 120,481	\$ 2,726,879	\$ 136,344			
0911010	GOFFSTOWN	GOFFSTOWN VILLAGE PRECINCT	Kinetic	0.60	1994	5408	\$ 1,064,000	\$ 143,500	\$ 1,207,500	\$ 2.01	\$3.33	\$ 1,998,502	\$ 1,012,574	\$ 452,994	\$ 191,856	\$ 71,946	\$ 79,940	\$ 1,809,310	\$ 90,466			
1291010	LANCASTER	LANCASTER WATER DEPT	Slow Sand	0.70	1995	5471	\$ 1,690,025	\$ 150,643	\$ 1,840,669	\$ 2.63	\$4.30	\$ 3,011,362	\$ 1,525,757	\$ 682,575	\$ 289,091	\$ 108,409	\$ 120,454	\$ 2,726,286	\$ 136,314			
1741010	NEWPORT	NEWPORT WATER WORKS	Slow Sand	0.70	1993	5210	\$ 1,060,096	\$ 192,633	\$ 1,252,729	\$ 1.79	\$3.07	\$ 2,152,155	\$ 1,090,425	\$ 487,822	\$ 206,607	\$ 77,478	\$ 86,086	\$ 1,948,418	\$ 97,421			
0921010	GORHAM	GORHAM WATER AND SEWER DEPT	Slow Sand	1.00	1990	4732	\$ 1,648,821	\$ 282,544	\$ 1,931,365	\$ 1.93	\$3.65	\$ 3,653,203	\$ 1,850,956	\$ 828,059	\$ 350,707	\$ 131,515	\$ 146,128	\$ 3,307,366	\$ 165,368			
1101040	HAVERHILL	WOODSVILLE WATER & LIGHT	Conventional - Trident	1.00	1991	4835	\$ 1,467,160	\$ 367,344	\$ 1,834,504	\$ 1.83	\$3.40	\$ 3,396,067	\$ 1,720,674	\$ 769,775	\$ 326,022	\$ 122,258	\$ 135,843	\$ 3,074,573	\$ 153,729			
1141010	HILLSBORO	HILLSBORO WATER WORKS	Slow Sand	1.00	1995	5471	\$ 2,242,518	\$ 421,394	\$ 2,663,912	\$ 2.66	\$4.36	\$ 4,358,202	\$ 2,208,155	\$ 987,859	\$ 418,387	\$ 156,895	\$ 174,328	\$ 3,945,625	\$ 197,281			
1351010	LINCOLN	LINCOLN WATER WORKS	Conventional - Trident	1.00	1992	4985	\$ 2,268,367	\$ 367,888	\$ 2,636,255	\$ 2.64	\$4.73	\$ 4,733,434	\$ 2,398,273	\$ 1,072,912	\$ 454,410	\$ 170,404	\$ 189,337	\$ 4,285,336	\$ 214,267			
1521010	MEREDITH	MEREDITH WATER DEPT	Conventional - Trident	1.00	1988	4519	\$ 1,264,340	\$ 245,247	\$ 1,509,586	\$ 1.51	\$2.99	\$ 2,989,989	\$ 1,514,928	\$ 677,731	\$ 287,039	\$ 107,640	\$ 119,600	\$ 2,706,937	\$ 135,347			
2561010	WOLFEBORO	WOLFEBORO WATER AND SEWER	Conventional - Trident	2.00	1996	5620	\$ 2,366,104	\$ 440,791	\$ 2,806,895	\$ 1.40	\$2.24	\$ 4,470,374	\$ 2,264,990	\$ 1,013,285	\$ 429,156	\$ 160,933	\$ 178,815	\$ 4,047,179	\$ 202,359			
2151010	SOMERSWORTH	SOMERSWORTH WATER WORKS	Conventional	3.00	1991	4835	\$ 2,463,303	\$ 493,539	\$ 2,956,842	\$ 0.99	\$1.82	\$ 5,473,760	\$ 2,773,372	\$ 1,240,719	\$ 525,481	\$ 197,055	\$ 218,950	\$ 4,955,577	\$ 247,779			
0801010	EXETER	EXETER WATER DEPT	Conventional	3.40	1990	4732	\$ 2,816,648	\$ 846,128	\$ 3,662,776	\$ 1.08	\$2.04	\$ 6,928,188	\$ 3,510,282	\$ 1,570,389	\$ 665,106	\$ 249,415	\$ 277,128	\$ 6,272,320	\$ 313,616			
0231010	BERLIN	BERLIN WATER WORKS	Conventional - Trident	4.00	1995	5471	\$ 4,999,772	\$ 655,157	\$ 5,654,929	\$ 1.41	\$2.31	\$ 9,251,551	\$ 4,687,453	\$ 2,097,018	\$ 888,149	\$ 333,056	\$ 370,062	\$ 8,375,738	\$ 418,787			
1951010	PORTSMOUTH	PORTSMOUTH WATER WORKS	Conventional	5.00	1995	5471	\$ 1,607,181	\$ 381,104	\$ 1,988,285	\$ 0.40	\$0.65	\$ 3,252,865	\$ 1,648,118	\$ 737,316	\$ 312,275	\$ 117,103	\$ 130,115	\$ 2,944,927	\$ 147,246			
2001010	ROCHESTER	ROCHESTER WATER DEPT	Conventional	5.00	1988	4519	\$ 4,402,311	\$ 582,794	\$ 4,985,105	\$ 1.00	\$1.97	\$ 9,873,840	\$ 5,002,746	\$ 2,238,070	\$ 947,889	\$ 355,458	\$ 394,954	\$ 8,939,116	\$ 446,956			
1241010	KEENE	KEENE WATER DEPT	Conventional - Trident	6.00	1994	5408	\$ 3,405,015	\$ 451,354	\$ 3,856,369	\$ 0.64	\$1.06	\$ 6,382,577	\$ 3,233,839	\$ 1,446,717	\$ 612,727	\$ 229,773	\$ 255,303	\$ 5,778,359	\$ 288,918			
1281010	LACONIA	LACONIA WATER WORKS	Conventional - Trident	6.00	1989	4615	\$ 2,718,169	\$ 470,183	\$ 3,188,352	\$ 0.53	\$1.03	\$ 6,183,703	\$ 3,133,076	\$ 1,401,639	\$ 593,635	\$ 222,613	\$ 247,348	\$ 5,598,312	\$ 279,916			
2051010	SALEM	SALEM WATER DEPT	Conventional - Trident	6.00	1991	4835	\$ 3,726,543	\$ 645,593	\$ 4,372,136	\$ 0.73	\$1.35	\$ 8,093,777	\$ 4,100,847	\$ 1,834,590	\$ 777,003	\$ 291,376	\$ 323,751	\$ 7,327,566	\$ 366,378			
1621010	NASHUA	PENNICHUCK WATER WORKS	Conventional	32.00	1980	3237	-	-	\$ 7,600,000	\$ 0.24	\$0.66	\$ 21,014,787	\$ 10,647,492	\$ 4,763,352	\$ 2,017,420	\$ 756,532	\$ 840,591	\$ 19,025,387	\$ 951,269			
1621010	NASHUA	PENNICHUCK WATER WORKS	Conventional	32.00	2009	8566	\$ 29,900,000	\$ 5,200,000	\$ 35,100,000	\$ 1.10	\$1.15	\$ 36,676,099	\$ 18,582,557	\$ 8,313,249	\$ 3,520,906	\$ 1,320,340	\$ 1,467,044	\$ 33,204,095	\$ 1,660,205			
1471010	MANCHESTER	MANCHESTER WATER WORKS	Conventional	50.00	1974	2020	-	-	\$ 5,500,000	\$ 0.11	\$0.49	\$ 24,370,554	\$ 12,347,748	\$ 5,523,992	\$ 2,339,573	\$ 877,340	\$ 974,822	\$ 22,063,475	\$ 1,103,174			
1471010	MANCHESTER	MANCHESTER WATER WORKS	Conventional	50.00	2006	7751	-	-	\$ 32,800,000	\$ 0.66	\$0.76	\$ 37,876,531	\$ 19,190,776	\$ 8,585,347	\$ 3,636,147	\$ 1,363,555	\$ 1,515,061	\$ 34,290,886	\$ 1,714,544			
1071010	HANOVER	HANOVER WATER WORKS	Membrane	3.50	2005	7415	\$ 4,992,100	\$ 777,793	\$ 5,769,893	\$ 1.65	\$1.99	\$ 6,964,833	\$ 3,528,849	\$ 1,578,696	\$ 668,624	\$ 250,734	\$ 278,593	\$ 6,305,496	\$ 315,275			
991010	GREENVILLE	GREENVILLE WATER DEPT	Conventional	0.40	1999	6060	\$ 1,810,101	\$ 389,500	\$ 2,199,601	\$ 5.50	\$8.12	\$ 3,248,817	\$ 1,646,067	\$ 736,399	\$ 311,886	\$ 116,957	\$ 129,953	\$ 2,941,263	\$ 147,063			
461010	CLAREMONT	CLAREMONT WATER DEPT	Conventional	4.00					\$ 1.80		\$ 692,540	\$ 7,213,962	\$ 3,655,074	\$ 1,635,165	\$ 692,540	\$ 259,703	\$ 288,558	\$ 6,531,040	\$ 326,552			
501010	CONCORD	CONCORD WATER WORKS	Conventional	10.00					\$ 1.23		\$ 12,296,314	\$ 6,230,132	\$ 2,787,164	\$ 1,180,446	\$ 442,667	\$ 491,853	\$ 11,132,263	\$ 556,613				
691010	DURHAM	DURHAM/UNH WATER WORKS	Conventional	1.50					\$ 2.72		\$ 4,076,243	\$ 2,065,296	\$ 923,948	\$ 391,319	\$ 146,745	\$ 163,050	\$ 3,690,359	\$ 184,518				
1321010	LEBANON	LEBANON WATER DEPT	Conventional	4.00					\$ 1.80		\$ 7,213,962	\$ 3,655,074	\$ 1,635,165	\$ 692,540	\$ 259,703	\$ 288,558	\$ 6,531,040	\$ 326,552				
1381010	LITTLETON	LITTLETON WATER AND LIGHT	Slow Sand	1.50					\$ 2.72		\$ 4,076,243	\$ 2,065,296	\$ 923,948	\$ 391,319	\$ 146,745	\$ 163,050	\$ 3,690,359	\$ 184,518				

Modeled

Greenville costs made available after initial modeling done, included with this updated version

Plants for which cost records were available 34
 Plants to which cost model applied 5
 total surface water treatment plants 39

$$\text{Component 20-Year Replacement Cost} = \sum [(\text{Current Yr Total Developed Cost}) \times (\text{Bldg Asset Class \% Share of Cost}) \times (20 \text{ yr Horizon} / \text{Est'd Bldg Asset Class Service Life})]$$

2010 Total Developed Cost \$ 250,534,180

Estimated Total 20 Yr Replacement Cost \$ 261,333,268 \$ 13,066,663

SURFACE WATER TREATMENT PROJECTION OF CAPITAL NEEDS

The total cost to replace these facilities during 2010 was estimated to be \$261.3M for surface water treatment facilities in the State of New Hampshire. Annually and over the 20 year period are summarized in Table F-3 below.

**TABLE F-3
PROJECTED SURFACE WATER TREATMENT FACILITY REPLACEMENT COSTS
IN NEW HAMPSHIRE**

Type of Treatment	Estimated Number of Water Systems in New Hampshire	Estimated 2010 Replacement Cost (\$)	Estimated 20-year Replacement Cost of System Components (\$)	Average Annual Expenditures for years 2010 through 2030 (\$/year)
Surface Water	39		\$261.3M	\$13.1

APPENDIX G
Ground Water Treatment Facilities

APPENDIX G

GROUND WATER TREATMENT FACILITIES

G.1 METHODOLOGY FOR GROUNDWATER SYSTEMS

A general discussion of groundwater facilities is presented in Section 8 of the text. Because of the large number of ground water systems, and the variability amongst systems, a step by step method was developed to form reasonable correlations and cost projections based on known factors. To create a cost model, mathematical relationships were developed based on a set of facilities for which the actual construction and cost information was known. These relationships were then applied to the database of facilities for to estimate a cost for each. The steps to creating a model are discussed in detail, below.

G.2 DEVELOP AN INVENTORY OF KNOWN PROJECT COSTS

Records of recently constructed projects for which detailed cost information was available were assembled. Information included the treatments provided, footprint area of the facility housing the treatment, approximate construction or bid date, production capacity, bid construction costs and other costs of development (excluding land purchase) where possible. Construction and development costs were combined into, what will be termed in this study report, a "Total Developed Cost". Total Developed Cost was defined to include not only the actual costs of construction (of all facilities including the well pump and transmission piping), but also included the cost of planning studies, engineering and survey, financing, and administration when these could be found (however, this did not include land costs). Prior to creating a cost model, the Total Developed Costs were normalized to the current date using a construction cost index (in this case the Engineering News Record's 20-City Construction Cost Average).

G.3 LINKING CONSTRUCTED PROJECT COSTS AND THE DATASET OF WELL FACILITIES

In order to determine a mathematical relationship (the model), a second numerical factor was identified (an independent variable) that would be part of the record in the DES dataset of facilities. This factor would be used to link the DES dataset of groundwater facilities with a factor shared in common in the records of the constructed facilities making up the set of Total

Developed Costs. Such a factor should be common among all the water facilities of the same type. Cost determinative factors considered were:

- Building footprint in square feet
- Population served
- Production volume; such as a flow rate in terms of millions of gallons per day (MGD) or gallons per minute (gpm)
- Type of treatment used

However, the factors above could not be used directly as a linking factor to Total Developed Cost without some manipulation for the following reasons:

1. Building size - Building size is considered to be the most influential factor in project cost. However, the dimensions of the facilities used by the 662 community groundwater systems was not part of the record in the database (and was impractical to obtain directly).
2. Population served - The NH database lists a community water system's population based on the customer accounts served by a common water main distribution system. The population served by each of several facilities in a system cannot be parsed out because each groundwater well's contribution to the water supply is mixed together within the distribution piping system for the entire population, and cannot be ascribed to one well. Therefore, population cannot be used as a linking factor to costs.
3. Capacity production Volume - Capacity production volume of a facility may be somewhat predictive of the building area required when the treatment process equipment is also known. Both treatment method and process equipment that are provided to each database facility was in the database, but the rated production capacity for each facility is not in the database record.

One would not necessarily expect that such information would be collected for a database. This is because, from an operational point of view, production is not a fixed quantity. For example, the daily hours of operation, and used percent of well capacity would vary from day

to day based on operational need. Water systems are unlikely to use their complete groundwater capacity every day because water systems generally hold excess capacity in order to be able to address emergencies. Additionally, water systems will generally rotate and alternate well usage, use them at less than full capacity, or at full pumping capacity but for only a short portion of a day. It is important for water systems to have such production capacity in reserve in the event of well failure, pump failure, or contamination of one of the sources.

However, the database for groundwater wells did contain the safe yield of each groundwater source. DES staff were able to link the sources to the facility serving them, and sum the safe yields going to each facility. Summed safe yield is discussed in more detail below.

4. Treatment methods - The DES database records both treatment method and equipment type used for each facility. If the treatment process equipment is identified, and if production capacity were available, a rough estimate of the facility required to house the equipment could be made. The type and capacity of the process equipment influences the size of facilities (and therefore construction cost based on square footage). More complicated treatment entails more equipment with more supporting auxiliary facilities, which each need to be purchased, installed, started and tested. Moreover, each process system requires space to house it inside a building, increasing the building footprint. The inventory of constructed projects with their known Total Developed Costs, supported the conclusion that that the cost of facilities tended to increase with increasing treatment process complexity, beginning with (1) "chemical addition", (2) "aeration", and (3) "granular media pressure filtration facilities". A category "no treatment" has been included, although no specific examples were available in the constructed project cost set. Many of the smallest facilities that make up much of the inventory of facilities in NH do not provide any treatment. A basic estimate was made to enable these facilities to be included.

G.3.1 Using Cumulative Safe Yield as the Independent Variable Linking Database to Cost

The DES database identified each building facility that served each community well, and also the type of treatment provided. The DES database contained the determined safe yield (from permitting records) of each community well in the state. DES staff were able to combine the two

data sets to show the cumulative safe yield contributions of all wells served by each building facility.

Cumulative Safe Yield was therefore chosen as the basic surrogate parameter to stand for capacity production volume. This is because safe yield could be assumed to be similar in magnitude to production capacity (which also tends to be larger than average production usage). The cumulative safe yield was therefore entered as the independent variable for estimating a basic building square footage using the Step 1 model, described below. Treatment factors were then developed to adjust estimated square footage and construction costs due to process equipment, described in more detail below.

Although not optimal, Cumulative Safe Yield as a surrogate independent variable for capacity production volume was determined to be the only available link between the constructed cost set and all database community groundwater systems.

G.4 STRATEGY FOR A COST MODEL

G.4.1 Working with the Set of Constructed Project Costs

A cost set of 39 construction projects were collected. After projects were removed by analysis for outliers or for having insufficient information, 30 projects remained to use as the basis for cost modeling. Project records included plant capacity, square footage, treatments, and total developed costs. Costs were indexed to 2010 as described above. The 30 cost samples divided according to treatment as follows:

- chemical additions - 12 cost data points from 1996 to 2010,
- aeration and chemical addition - (12 cost data points from 1995 to 2010).
- granular media/resin pressure filtration - (6 cost data points from 2000 to 2010;).
- no treatment - No costs were available for facilities either not providing treatment, nor for the facilities serving the very smallest systems.

The modeling process is summarized briefly in this paragraph and described in more detail below. A regression analysis was made for each treatment grouping in the set of constructed projects to identify a mathematical relationship between (1) production capacity and square

footage, and (2) square footage and cost. Each regression analysis was tested for fit and outliers removed (determined as more than two standard deviations from regression line).

This provided stepping stones: production capacity ► square footage ► cost. The first relationship (production capacity and square footage (1)) was applied to the cumulative safe yield of each database facility to estimate a square footage. Then this square footage was entered into the second relationship (square foot and cost (2)) to estimate a total developed cost.

Additional adjustments were then made for the type of treatment in the facility, both in terms of how treatment affects square footage and how treatment equipment affects cost. Replacement costs were then projected over twenty years based on building trade components and their estimated service life. More detail of the method is described sequentially below.

G.4.2 Step by Step Development of Link between Independent Variable and Estimated 2010 Cost

The steps to developing the cost model for groundwater facilities may be summarized as follows:

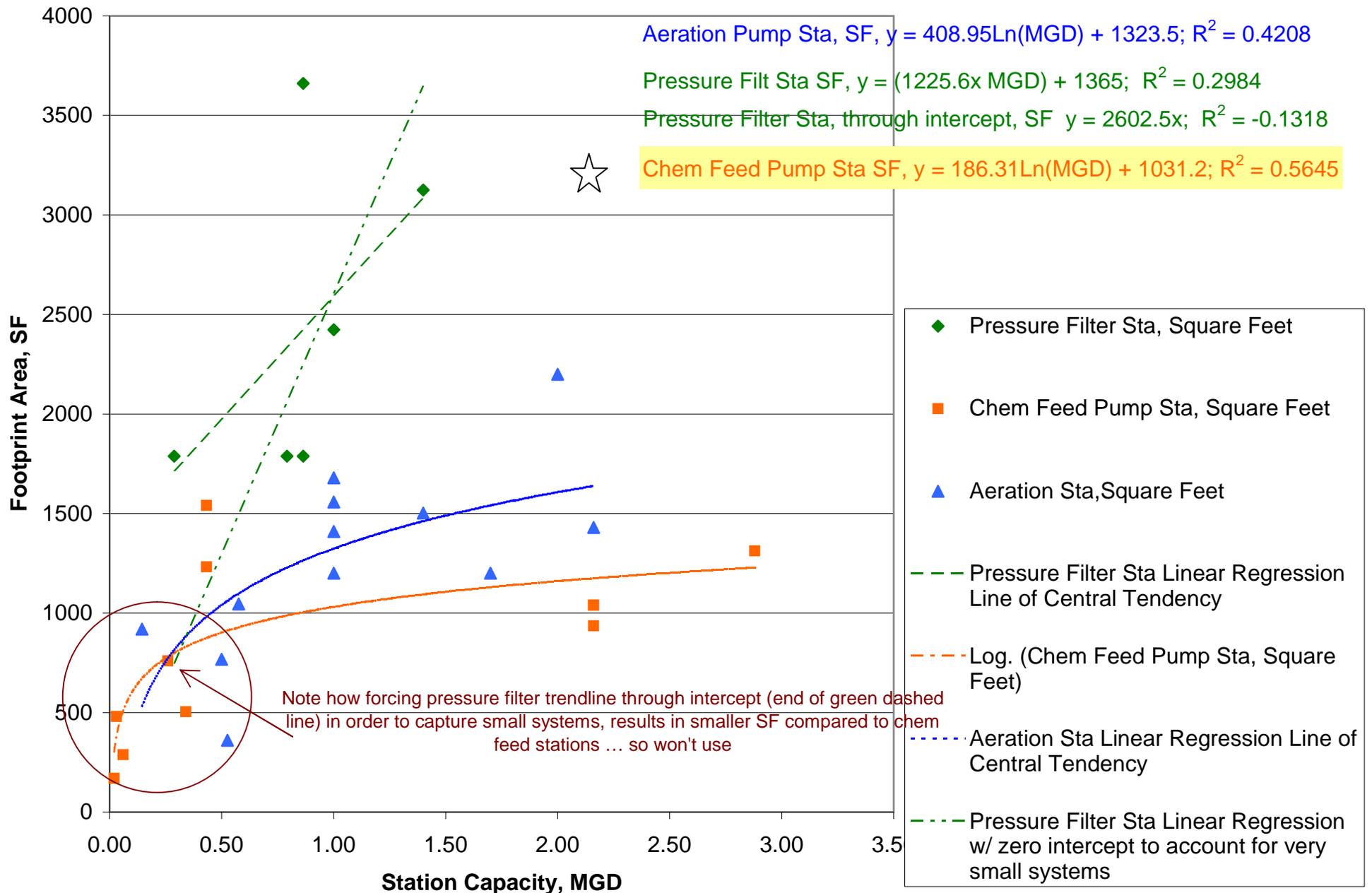
Step 1: Relating Capacity to Square Footage: For the set of constructed projects, actual production capacity volumes (x axis) were scatter plotted against building footprint area (y axis), and regression analysis applied. This was initially done separately for each treatment facility grouping (chemical additions, aeration, pressure filtration) because building space requirements tend to increase with increasing treatment complexity (as described above) in the following order: (1) no treatment uses very little floor space, (2) chemical additions require some space to store and dispense the chemicals, (3) aeration requires a vessel and a second pump, and (4) pressure filtration requires the media vessels and chemicals to condition the water entering the vessels.

Each treatment grouping of the constructed projects showed a relationship between production volume capacity and square footage with a large amount of scatter. Moreover, neither the aeration nor the pressure filtration treatment grouping cost sets included facilities with capacities below 0.10 MGD (except for one costed aeration facility with a 0.14 MGD capacity). This

meant that for the pressure filtration and aeration facilities, the capacity to square footage relationship in the lower part of their curve was not represented by data points and could not reliably be extended to apply to small capacity systems. Because the small groundwater facilities constitute the majority of facilities in the NH dataset, it was important to represent a strong mathematical model relationship in the smaller capacity area is very important. For this reason, the statistical relationships available for aeration and pressure filtration facilities could not be applied to facilities with the smaller production capacities (see Figure G-1).

However, Figure G-1 shows how the constructed project costs for the chemical additions treatment grouping covered a wide range of production capacities (0.02 to 2.9 MGD), and they also exhibited a stronger statistical relationship between capacity and square footage ($R^2 = 0.56$ compared to the aeration or pressure filter grouping cost sets which showed $R^2 = 0.42$ and -0.13 , respectively). Setting the intercepts of the pressure grouping set to zero resulted in an estimate of less square footage for small capacity facilities than was found by plotting the chemical additions grouping, which didn't make sense. However, the shape of the curve for chemical additions treatment facilities exhibited the same behavior as the aeration facilities curve, starting out with a large increases in square footage with increasing capacity, but leveling out between 1.0 and 2.0 MGD. The shape of the curve for capacity vs square footage became a method for obtaining an initial base-line square footage for the entire database of groundwater facilities, using the chemical feed only relationship; $SF = 186.31 \ln(\text{MGD}) + 1031.2$. However, Figure G-1 show how retaining the shape of the chemical additions pump station curve for the more complex process facilities, and afterwards increasing the estimate of square footage by multiplicative factors (derived from the cost inventory) could effectively include the influence of treatment on building square footage. A similar approach was also used to include the effect on constructed cost of the purchase and installation of equipment (an effect of process on cost in addition to influencing the square footage of a building). The development of these factors is described next.

**Figure G-1: (Step 1) - Regression on Costed, Indexed GW Stations:
MGD capacity vs Footprint Area**



Step 2: Adjustment Factor for Building Areas Required by Treatment Grouping: As described in Step 1, above, the production capacity vs. square footage relationship was not strong when considering the more complex treatment groups separately (aeration and pressure filtration). To adequately include the influence of treatment type on modeled costs, two factors were developed. The first to adjust square footage according to the treatment processes used, and a second to adjust costs according to the treatment process purchased and installed (Step 4, below). The development of the first factor is described herein Step 2, and its application to estimating cost in Step 2.

The square footages for facilities were each normalized by dividing square footages by the production capacity. There were eleven (11) examples for chemical addition facilities, nine (9) for aeration, and five for pressure filtration. The examples were provided by Wright-Pierce project records, DES records, Underwood Engineers, and Horizon Engineering. The SF/MGD was averaged for each treatment grouping. Because we had no examples of the no-treatment "code 0" grouping, these were assumed to be 10% less than the chemical additions only grouping. Factors to upwardly adjust square footage according to the treatment provided are shown in Table G-1a, below:

TABLE G-1A (STEP 2)

FACTORS TO ADJUST SQUARE FOOT AREA FOR TREATMENT

Treatment Grouping	Area Adjustment Factor for Treatment
No Treatment	0%
Chemical Addition	10%
Aeration	30%
Pressure Filtration	50%

These are shown in more detail with the sample set from which they were derived in Table G-1b.

Step 3: Relating Square Footage to Total Developed Cost: The set of costed constructed projects were again separated according to treatment grouping and actual square footages scatter plotted against 2010 indexed Total Developed Costs to determine a mathematical relationship (recall the discussion in Step 1 above was about relating production capacity vs. square footage by treatment grouping, which exhibited a weaker, more scattered relationship compared to the same treatment groupings for square footage vs. costs). For relating square footage to cost, each treatment grouping subset's linear regression line exhibited a very similar slope and intercept that was independent of treatment grouping (Figure G-2). For this reason the subsets were combined to create a stronger relationship (Figure G-3). To capture smaller capacity facilities, the model intercept was set to zero (the relationship is given as $\$M = 0.0012 \times SF$; $R^2 = 0.79$). This relationship was applied to the adjusted estimate of square footage determined in Steps 1 and 2 for each database facility. For those database systems with production flows less than 10 gpm, \$280,000 was assigned as a baseline cost. Cost was estimated for database points with flows greater than 10 gpm by applying this mathematical model to the estimated square footage derived in Steps 1 and 2, above.

Step 4: Adjust Total Developed Cost for Treatment Process Equipment Purchase and Installation

Step 1 & 2 created and adjusted an estimated square footage based on combined safe yield and a factor for the additional building square footage required by the type of treatment housed. Step 3 used the estimated square footages to calculate an estimated 2010 total developed cost. At this stage, the Step 3 cost estimate was based only on square footage considerations. Step 4 modified the Step 3 cost estimate by applying a factor for the purchase and installation of treatment equipment. To develop the factor for treatment process equipment cost and installation, the records of construction cost projects separate out the costs attributable to purchasing and installing treatment process equipment and associated auxiliary facilities. No Step 4 adjustment was made if no treatment (treatment code "0") was provided to the database point. Treatment Factors for Total Developed Costs are shown in Table G-2a:

Table G-1b: (Step 2) - Factors to Adjust Square footage by Treatment Provided

Name of Treatment Facility	Treatment Code	Square Foot By Treatment				Capacity, MGD Rate	Actual Building SF	SF/MGD
		sf 0 assumed	sf 1a	sf 1b	sf 2			
Dover French Cross Road; 10473 (new)	2				4237	0.9	3661	4237
Lisbon Moody Rd; 10384 (new)	2				2423	1.0	2423	2423
Seabrook NH not built - 10448	2				2069	0.9	1788	2069
Jackson NH Ellis River WTP; 6956 (new)	2				6208	0.3	1788	6208
So Berwick Willow Dr: 10189 (retrofit)	2				2258	0.8	1788	2258
Madawaska Martin Brk - 10042	1a		3277			0.4	1416	3277
Farmington Well No 6 PH -6873	1a		712			1.7	1232	712
Eagle Lake LeBoeuf PS-10534/11052	1a		2920			0.3	759	2920
Devens Patton -10912G	1a		433			2.16	936	433
Devens MacPherson -10912O	1a		481			2.16	1040	481
Devins Shabokin -10912L	1a		481			2.16	1040	481
Pittsburg (Horizon) assumed flow rate	1a					0.03	480	16000
Colebrook (underwood)	1a		1482			0.34	504	1482
Tioga R, Belmont	1a		8450			0.02	169	8450
Crotched Mtn Main, Frankestown	1a		4800			0.06	288	4800
N Conway WP, Conway	1a		456			2.88	1312	456
Caribou-10476	1b			1073		1.4	1502	1073
Rochester Cocheco Well	1b			5963		0.4	2576	5963
Madawaska St David PS - 10989 contr 2	1b			1557		1.0	1557	1557
Rangleley Dallas Esker PS - 6589 contract 95-2	1b			1536		0.5	768	1536
Paris Utility District -6504	1b			706		1.7	1200	706
Presque Isle Reach Rd PS - 10305/10186	1b			1100		2.0	2200	1100
Brunswick-Topsham - Jordan Ave PS - 6975	1b			3119		1.4	4491	3119
Pittsfield Detroit PS - 6438	1b			1200		1.0	1200	1200
Bowdoinham Mclver Road PS - 6795	1b			6380		0.1	919	6380
mean square footage/MGD Capacity (assumed to be 10% less for no treatment)		2100	2349	2515	3439			
sf/mgd diff betw "0" and other treatment			249	415	1339			
Step 2; percent diff in sf from "0" treatment		0%	12%	20%	64%			
Step 2; divide capacity normalized area by assumed not treatment area to make it a multiplier			10%	30%	50%			

1a chemical feed treatment square footage is assumed to be 9% higher on average than a facility with chemical feed facilities; limited data set means this is a rough estimate
 So a facility with no treatment would be assumed to have normalized SF/MGD of approx 10% less than 1a treated square foot/MGD
 2100

**Figure G-2: NH GROUNDWATER TREATMENT FACILITIES:
Sample Set of Costed, Indexed Facilities
Footprint Area vs Total Developed Cost (\$M)**

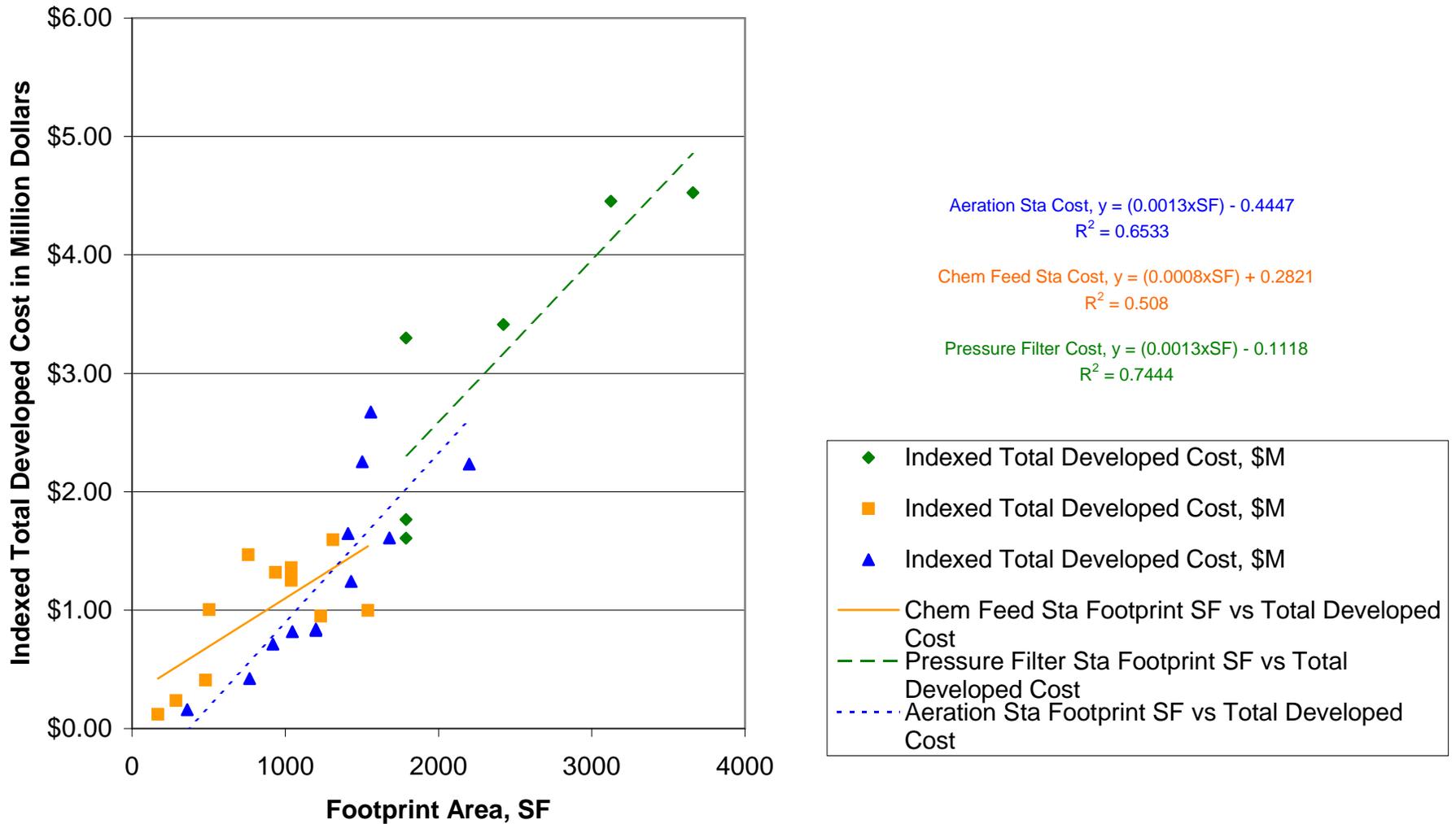


Figure G-3: NH GROUNDWATER TREATMENT FACILITIES
Sample Set of All Costed, Indexed Facilities
Footprint Area vs Total Developed Cost, \$M (outliers removed)
Intercept through Origin to Capture Small Systems

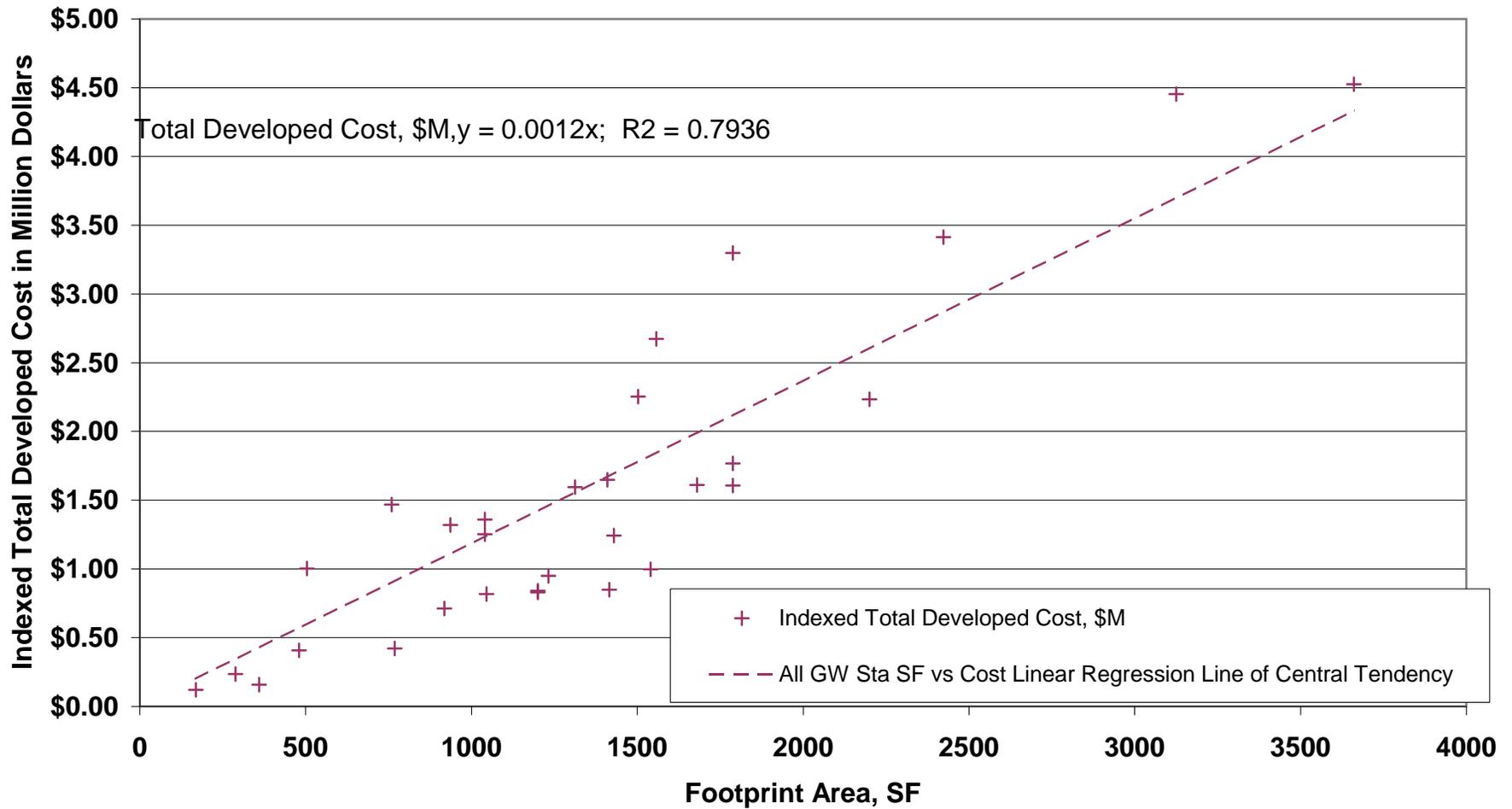


TABLE G-2A (STEP 4)

FACTORS TO ADJUST SQUARE FOOT AREA FOR TREATMENT

Treatment Grouping	Cost Adjustment Factor for Treatment
No Treatment	0%
Chemical Addition	7.2%
Aeration	17.4%
Pressure Filtration	19.2%

Table G-2B shows additional detail of the Total Developed Cost and the dates of the sample set projects. These were not indexed to 2010 because for determining proportion, this step was not required.

G.4.3 Determining the Projected Future Investment Need

The results of Steps 1 through 4 estimated a 2010 replacement cost for each facility in the NH database inventory of groundwater facilities. It is worth reiterating that the value of the method is to obtain an aggregated replacement value for all groundwater facilities in the state, and is not appropriate for estimating a true value for each individual facility in the database. All modeling steps are shown and described visually in the header rows of Table G-3.

Steps 1 through 4 normalized the infrastructure inventory to estimated 2010 costs. However, the interest is in determining a 20-year replacement/refurbishment cost based on the expected service lives of the facility's components. Not all building components have the same service life. Certain assets, such as roofs, must be rebuilt more regularly, whereas the structural components of a building are long-lived and don't need regular replacement. Software must be replaced very frequently compared to other equipment in the facility because of the pace of technology advancements. The next steps first break the Total Developed Costs into components based on building asset divisions, then factors costs over the 20 year period using a factor based on service life.

Table G-2b: (Step 4): Treatment Process Factor for Total Developed Cost

Treatment Codes	Process Method
1a	Chemical feed only
1b	Aeration w/ or w/o chem feed
2	GS, Ferric oxide, ion xchange, calcite filter, any other

Bid Date	ENR	Constructed Facility	Treatment Code	Capacity, MGD Rate	SF	Costs not indexed to current date			process cost divided by total developed costs		
						Process	Total Developed Cost (TDC)	Process cost as % of TDC	Chem feed - code 1a	Aeration - code 1b	Pressure filter sta, code 2
31-May-06	7696	Dover French Cross Road Pressure Filter Plant	2	0.9	3661	\$982,650	\$3,983,037	24.7%			24.7%
24-May-05	7398	Lisbon Moody Rd Pressure Filter Plant	2	1.0	2423	\$576,000	\$2,795,222	20.6%			20.6%
14-Jun-05	7415	Seabrook NH - 10448	2	0.9	1788	\$575,000	\$2,732,098	21.0%			21.0%
11-Apr-02	6538	Jackson NH Ellis River WTP SW Pressure Filter Plant	2	0.3	1788	\$86,929	\$1,451,200	6.0%			6.0%
8-Oct-03	6771	So Berwick Willow Dr: Pressure Filter Plant	2	0.8	1788	\$339,711	\$1,439,798	23.6%			23.6%
1-May-08	8141	Eagle Lake LeBoeuf Pump Station	1a	0.3	759	\$133,464	\$1,165,061	11.5%	11.5%		
4-Jun-02	6538	Madawaska Martin Brk Pump Station	1a	0.4	1416	\$56,300	\$616,962	9.1%	9.1%		
16-Mar-99	6060	Farmington Well No 6 Pump House	1a	1.7	1232	\$62,000	\$606,460	10.2%	10.2%		
15-Sep-05	7520	Caribou-Aeration Facility	1b	1.4	1502	\$172,160	\$1,802,722	9.6%		9.6%	
4-Nov-09	8592	Rochester Cochecho Well Aeration Facility	1b	0.4	2576	\$347,751	\$4,335,846	8.0%		8.0%	
8-May-08	6538	Madawaska St David PS Aeration Facility	1b	1.0	1557	\$381,085	\$1,922,860	19.8%		19.8%	
21-May-96	5620	Rangeley Dallas Esker PS Aeration Facility	1b	0.5	768	\$34,391	\$267,328	12.9%		12.9%	
16-Jun-98	5920	Paris Utility District Aeration Facility	1b	1.7	1200	\$137,750	\$548,320	25.1%		25.1%	
24-Apr-04	7017	Presque Isle Reach Rd PS - 10305/10186 (new)	1b	2.0	2200	\$263,650	\$1,674,360	15.7%		15.7%	
13-Apr-00	6222	Brunswick-Topsham - Jordan Ave PS Aeration Facility	1b	1.4	4491	\$254,500	\$2,238,500	11.4%		11.4%	
20-Aug-96	5620	Pittsfield Detroit PS -Aeration Facility	1b	1.0	1200	\$162,000	\$527,535	30.7%		30.7%	
12-Mar-98	5920	Bowdoinham Mclver Road PS Aeration Facility	1b	0.1	919	\$76,000	\$468,498	16.2%		16.2%	
						mean			9.7%	16.6%	19.2%

Step 5 Adjusting Cost Components by Building Asset Components - To transform the 2010 replacement values to a 20-year projection, the useful life of individual components must be accessed (because the purpose is to find the cost needs of existing facilities, not costs to expand to meet growth or meet the requirements of new regulations).

To identify which components of cost would need to be replaced/refurbished over time, the categorized components of cost developed during actual construction projects may be used as a reasonable guideline. During the construction of a project, records are kept that break out costs based on construction building trade divisions. A detailed description of this process is presented in Appendix E.

Step 6 - Adjusting Cost Components by Anticipated Service Life: A convenient feature for determining the 20-year need, is that the systems and equipment installed under each of the construction building trade divisions may be assumed to have similar needs for refurbishment or replacement over time. A factor may be developed based on the estimated service life of building trade division asset classes. A detailed description of this process is presented in Appendix E.

Step 7 - Steps 5 and 6 are combined to break apart the estimated 2010 Total Developed Cost, and then project a replacement/refurbishment need over 20 years and annually.

$$\text{20-Year Investment Need} = \sum \left[(\text{Total Developed Cost Indexed to 2010}) \times (\text{Bldg Assed Class \% Share of Cost}) \times \left(\frac{20 \text{ yr Horizon}}{\text{Bldg Asset Class. Service Life}} \right) \right]$$

The calculations are presented in the attached spreadsheet Table G-3.

G.5 PROJECTIONS OF CAPITAL NEEDS FOR GROUND WATER TREATMENT FACILITIES

There are approximately 500 ground water pump/treat facilities in the State of New Hampshire. The complete inventory for all treatment facilities in New Hampshire including are included in Table G-3. Table G-4, below summarizes projected need.

Table G-3: Cost Model for NH Database Groundwater Treatment Facilities

506 count of facilities

Step 1 Develop a prospective square footage of a building based on summed safe yield of wells
 *Basic GW Pump Sta SF, $y = 186.31\ln(\text{MGD}) + 1031.2$; $R^2 = 0.5645$
 *This Basic Building model best accounted for low capacity systems

Step 2 Adjust for different building areas required by treatment code

Treatment Code	Treatment Process Master Code Key	SF adjustment for treatment code	Step 4 Process \$ / Total Developed Cst\$
0	no treatment	+/- 0% SF / multiplier = 1	0.0%
1a	chemical feed only, does not have 2, 1b, or cartridge filter	+10% SF/ multiplier = 1.1	7.2%
1b	aeration, may also involve chemical feed, does not have 2 treatment	+30% SF/ multiplier = 1.3	19.2%
2	treatment involves GS, ferric oxide (adedge), ion exchange or calcite filter, and any (+50% SF / multiplier = 1.5	same as 1b
3	with cartridge filter (apply 1b model)	same as 1b	same as 1b

Step 3 Estimate Total Developed Cost from Regression Equation Relating SF to \$M Indexed Total Developed Cost
 $=IF(\$D1<=10,\$280000,(0.0012*\$G1*1000000))$ $R^2 = 0.7936$

Notes: NH DES Database contains no characteristics of facilities housing pumping, electrical, treatment, telemetry equipment.
 Population is not available as an independent variable because population applies to whole system, and systems may be served by more than one well
 To create a basis for estimating a value, wells feeding into each facility have safe yields summed
 For stations w/ zero reported Safe Yield, a placeholder value is entered; can't use population because applies it to whole system, not portion served by facility. It is understood that summed safe yield would tend to overestimate the capacity of the facilities serving the wells because most wells are alternated or used to part of their capacity, or are not operated for the entire 24 hours of a day
 Costs may change greatly depending on the building type/materials, the cost data points are not intended to be an estimate of a particular facility's value, more a cost data point to be useful only in the aggregate

Date 30-Nov-10
 ENR CCI 20-City Index 8950.64

												DETERMINE ANNUAL AND 20-YEAR REPLACEMENT of COMPONENT COSTS							
												Step 6 -Estimated Replacement Year Cycle							
												15	15	25	100	75	Step 6		
												Step 5 -Share of Construction Cost by Building Asset Class							
												30%	20%	12%	18%	20%	Step 5		
EPA ID	System Name	Summed Safe Yields (gpm) of all wells serving the facility	Est Capacity, MGD (based on Summed Safe Yield)	Treatment Process Master Code	Steps 1 & 2 est SF from MG capacity & Treatment Provided, SF	Step 3, est total developed cost as \$M from sf	Step 4, adj by treatment process for 2010 total developed cost	Mechanical/ Process	Electrical/ Instrument ation	Architectural	Structural	Civil	Total 20-Year Component Replacement Cost	Annual					
TOTALS							\$477,258,705						\$406,624,417	\$20,331,221					
363010	COUNTRY LANE MANOR	0	0.00	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
512150	DEERBROOK CONDOS	0	0.00	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1212050	MT JEFFERSON/WASHINGTON CONDOS	0	0.00	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1932190	CHANDLER TERRACE	0	0.00	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
2552010	WEDIKO SCHOOL	0	0.00	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
2552010	WEDIKO SCHOOL	0	0.00	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
162330	CRAWFORD POND	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1051010	AQUARION WATER/NH	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1051010	AQUARION WATER/NH	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1051010	AQUARION WATER/NH	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1051010	AQUARION WATER/NH	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1051010	AQUARION WATER/NH	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1113010	HILLSIDE INN CONDOS	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1113010	HILLSIDE INN CONDOS	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1333060	PACKERS FALLS VILLAGE	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1621010	PENNICHUCK WATER WORKS	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
1844010	CARROLL COUNTY COMPLEX	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
2111010	SEABROOK WATER DEPT	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
2232120	SMITH FARM WATER	0	0.00	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
883040	LRMHV	0	0.00	1b	200	\$280,000	\$328,720	\$131,488	\$87,659	\$31,557	\$11,834	\$17,532	\$280,069	\$14,003					
2281010	SURRY VILLAGE WATER	3	0.0043	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1392130	STONEHENGE TRUST APARTMENTS	6	0.0086	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
212010	SOUTH FACE CONDOS	6	0.0086	3	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1792050	THE MEADOW AT NORTHWOOD	6	0.0086	1b	200	\$280,000	\$328,720	\$131,488	\$87,659	\$31,557	\$11,834	\$17,532	\$280,069	\$14,003					
162060	GLEN ACRES	8	0.0115	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
374010	CANTERBURY SPRUCES HOUSING	8	0.0115	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
974010	GREENFIELD COMMONS	8	0.0115	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1992020	HASBROUCK APARTMENTS	8	0.0115	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1332030	GREYSTONE COMMONS	8	0.0115	3	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
2053030	SHADOW LAKE MOBILE HOME PARK	9	0.0130	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1272010	KINGSTON PINES ELDERLY HOUSING	9	0.0130	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					
2003070	AMAZON PARK	10	0.0137	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
872010	GOVERNORS FOREST	10	0.0141	0	200	\$280,000	\$280,000	\$112,000	\$74,667	\$26,880	\$10,080	\$14,933	\$238,560	\$11,928					
2003020	ACORN TERRACE	10	0.0144	0	200	\$280,000	\$280,000	\$112,000	\$74,667	\$26,880	\$10,080	\$14,933	\$238,560	\$11,928					
162390	SUGARWOOD ON THE SACO	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
297020	WHIP O WILL CONDOS	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
594020	INN AT DEERFIELD	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
594030	SHERBURN WOODS	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
821010	FITZWILLIAM VILLAGE/PRIGGE	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1392030	OLDE COUNTRY VILLAGE TOWNHOUSE	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1402030	VOA/NE SENIOR HOUSING	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
2082010	PEU/BEAVER HOLLOW	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
2342110	MILLSBROOK VILLAGE	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
2552010	WEDIKO SCHOOL	10	0.0144	2	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
512200	CEDAR CREEK	10	0.0144	3	200	\$280,000	\$333,760	\$133,504	\$89,003	\$32,041	\$12,015	\$17,801	\$284,364	\$14,218					
1123020	WOOD HILL VILLAGE	10	0.0144	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787					

EPA ID	System Name	Summed Safe Yields (gpm) of all wells serving the facility	Est Capacity, MGD (based on Summed Safe Yield)	Treatment Process Master Code	Steps 1 & 2 est SF from MG capacity & Treatment Provided, SF	Step 3, est total developed cost as \$M from sf	Step 4, adj by treatment process for 2010 total developed cost	Mechanical/Process	Electrical/Instrumentation	Architectural	Structural	Civil	Total 20-Year Component Replacement Cost	Annual
1752030	PACKER MEADOWS	10	0.0144	1a	200	\$280,000	\$300,160	\$120,064	\$80,043	\$28,815	\$10,806	\$16,009	\$255,736	\$12,787
342070	VILLAGE POND	10	0.0144	1b	200	\$280,000	\$328,720	\$131,488	\$87,659	\$31,557	\$11,834	\$17,532	\$280,069	\$14,003
2002030	DUSTIN HOMESTEAD	10	0.0144	1b	200	\$280,000	\$328,720	\$131,488	\$87,659	\$31,557	\$11,834	\$17,532	\$280,069	\$14,003
112090	DEARBORN RIDGE	11	0.0151	1a	275	\$330,313	\$354,096	\$141,638	\$94,426	\$33,993	\$12,747	\$18,885	\$301,690	\$15,084
1332010	OYSTER RIVER CONDOS	11	0.0158	1a	285	\$341,754	\$366,360	\$146,544	\$97,696	\$35,171	\$13,189	\$19,539	\$312,139	\$15,607
2052070	AUTUMN WOODS	11	0.0158	1b	337	\$403,891	\$474,168	\$189,667	\$126,445	\$45,520	\$17,070	\$25,289	\$403,991	\$20,200
262010	EVERGREEN DRIVE WATER	12	0.0173	2	358	\$429,181	\$511,583	\$204,633	\$136,422	\$49,112	\$18,417	\$27,284	\$435,869	\$21,793
821020	FITZWILLIAM VILLAGE/LAUGHNER	12	0.0173	2	358	\$429,181	\$511,583	\$204,633	\$136,422	\$49,112	\$18,417	\$27,284	\$435,869	\$21,793
1333030	EVERGREEN TERRACE	12	0.0173	2	358	\$429,181	\$511,583	\$204,633	\$136,422	\$49,112	\$18,417	\$27,284	\$435,869	\$21,793
1932160	HOWARD MANOR CONDOS	12	0.0173	2	358	\$429,181	\$511,583	\$204,633	\$136,422	\$49,112	\$18,417	\$27,284	\$435,869	\$21,793
664010	DUBLIN CHRISTIAN ACADEMY	12	0.0173	3	358	\$429,181	\$511,583	\$204,633	\$136,422	\$49,112	\$18,417	\$27,284	\$435,869	\$21,793
763010	EVANS TRAILER PARK	12	0.0173	3	358	\$429,181	\$511,583	\$204,633	\$136,422	\$49,112	\$18,417	\$27,284	\$435,869	\$21,793
2384010	SULLIVAN COUNTY COMPLEX	12	0.0173	1a	303	\$363,153	\$389,300	\$155,720	\$103,813	\$37,373	\$14,015	\$20,763	\$331,683	\$16,584
1852090	SIMPSON MILL ROAD	13	0.0181	1a	313	\$375,152	\$402,163	\$160,865	\$107,243	\$38,608	\$14,478	\$21,449	\$342,643	\$17,132
1212080	BLACK MOUNTAIN MEADOW CONDOS	13	0.0187	2	377	\$452,444	\$539,314	\$215,726	\$143,817	\$51,774	\$19,415	\$28,763	\$459,495	\$22,975
1992050	CARRIAGE APTS	13	0.0187	2	377	\$452,444	\$539,314	\$215,726	\$143,817	\$51,774	\$19,415	\$28,763	\$459,495	\$22,975
153010	GREEN HILLS MHP	13	0.0187	1a	319	\$382,838	\$410,402	\$164,161	\$109,441	\$39,399	\$14,774	\$21,888	\$349,662	\$17,483
412010	MEADOWVIEW APTS	14	0.0202	1a	334	\$401,063	\$429,939	\$171,976	\$114,651	\$41,274	\$15,478	\$22,930	\$366,308	\$18,315
1852020	PEU/GAGE HILL	14	0.0202	1b	395	\$473,983	\$556,457	\$222,583	\$148,388	\$53,420	\$20,032	\$29,678	\$474,101	\$23,705
282010	MILL POND CROSSING	15	0.0216	2	412	\$494,036	\$588,891	\$235,556	\$157,038	\$56,534	\$21,200	\$31,408	\$501,735	\$25,087
2312050	REMICK ACRES	15	0.0216	2	412	\$494,036	\$588,891	\$235,556	\$157,038	\$56,534	\$21,200	\$31,408	\$501,735	\$25,087
2452030	SOUTH WEARE WATER	15	0.0216	2	412	\$494,036	\$588,891	\$235,556	\$157,038	\$56,534	\$21,200	\$31,408	\$501,735	\$25,087
2232070	MONTROSE CONDOS	15	0.0222	1b	418	\$501,685	\$588,978	\$235,591	\$157,061	\$56,542	\$21,203	\$31,412	\$501,809	\$25,090
702040	COUNTRY HILLS OF EAST KINGSTON	16	0.0230	1a	362	\$433,902	\$465,143	\$186,057	\$124,038	\$44,654	\$16,745	\$24,808	\$396,302	\$19,815
1403020	LAZY PINES MOBILE HOME PK/UPPR	17	0.0240	2	437	\$524,716	\$625,462	\$250,185	\$166,790	\$60,044	\$22,517	\$33,358	\$532,899	\$26,645
1392290	PEU/HARVEST VILLAGE	17	0.0245	1a	374	\$448,812	\$481,126	\$192,450	\$128,300	\$46,188	\$17,321	\$25,660	\$409,919	\$20,496
841010	FRANCONIA VILLAGE WATER	18	0.0259	0	456	\$547,026	\$547,026	\$218,811	\$145,874	\$52,515	\$19,693	\$29,175	\$466,066	\$23,303
203020	LADD HILL MHP	18	0.0259	2	456	\$547,026	\$652,055	\$260,822	\$173,881	\$62,597	\$23,474	\$34,776	\$555,551	\$27,778
512120	SACO RIVER FOREST	18	0.0259	2	456	\$547,026	\$652,055	\$260,822	\$173,881	\$62,597	\$23,474	\$34,776	\$555,551	\$27,778
762070	PLUMER COURT	18	0.0259	2	456	\$547,026	\$652,055	\$260,822	\$173,881	\$62,597	\$23,474	\$34,776	\$555,551	\$27,778
774010	EPSOM HEALTHCARE CTR	18	0.0259	2	456	\$547,026	\$652,055	\$260,822	\$173,881	\$62,597	\$23,474	\$34,776	\$555,551	\$27,778
2082100	AUTUMN HILLS	18	0.0259	2	456	\$547,026	\$652,055	\$260,822	\$173,881	\$62,597	\$23,474	\$34,776	\$555,551	\$27,778
2372050	WINMIR CONDOS	18	0.0259	3	456	\$547,026	\$652,055	\$260,822	\$173,881	\$62,597	\$23,474	\$34,776	\$555,551	\$27,778
1053020	HEMLOCK HAVEN	18	0.0259	1a	386	\$462,868	\$496,195	\$198,478	\$132,319	\$47,635	\$17,863	\$26,464	\$422,758	\$21,138
362010	HILLCREST MANOR APTS	19	0.0269	1a	394	\$472,251	\$506,253	\$202,501	\$135,001	\$48,600	\$18,225	\$27,000	\$431,328	\$21,566
2232170	LAMINGTON HILL	19	0.0274	3	469	\$562,741	\$670,787	\$268,315	\$178,877	\$64,396	\$24,148	\$36,775	\$571,510	\$28,576
1921010	PLAINFIELD VILLAGE WATER DIST	19	0.0274	1a	397	\$476,165	\$510,449	\$204,180	\$136,120	\$49,003	\$18,376	\$27,224	\$434,903	\$21,745
583030	COTTON FARMS MHP	20	0.0288	0	481	\$577,649	\$577,649	\$231,059	\$154,040	\$55,454	\$20,795	\$30,808	\$492,157	\$24,608
882410	HAMPSHIRE VILLAGE	20	0.0288	0	481	\$577,649	\$577,649	\$231,059	\$154,040	\$55,454	\$20,795	\$30,808	\$492,157	\$24,608
2002040	MEADOWBROOK VILLAGE	20	0.0288	0	481	\$577,649	\$577,649	\$231,059	\$154,040	\$55,454	\$20,795	\$30,808	\$492,157	\$24,608
262040	COTTAGES AT WINDCHIMES	20	0.0288	2	481	\$577,649	\$688,557	\$275,423	\$183,615	\$66,102	\$24,788	\$36,723	\$586,651	\$29,333
821030	FITZWILLIAM VILLAGE/MASSIN	20	0.0288	2	481	\$577,649	\$688,557	\$275,423	\$183,615	\$66,102	\$24,788	\$36,723	\$586,651	\$29,333
1173010	PITARYS MOBILE HOME PARK/EAST	20	0.0288	2	481	\$577,649	\$688,557	\$275,423	\$183,615	\$66,102	\$24,788	\$36,723	\$586,651	\$29,333
1582010	SHORTRIDGE ACADEMY	20	0.0288	2	481	\$577,649	\$688,557	\$275,423	\$183,615	\$66,102	\$24,788	\$36,723	\$586,651	\$29,333
1932130	26 CHANDLER AVE CONDOS	20	0.0288	2	481	\$577,649	\$688,557	\$275,423	\$183,615	\$66,102	\$24,788	\$36,723	\$586,651	\$29,333
2004010	INN AT SECRETARIAT ESTATES	20	0.0288	2	481	\$577,649	\$688,557	\$275,423	\$183,615	\$66,102	\$24,788	\$36,723	\$586,651	\$29,333
2544020	WINDHAM TERRACE	20	0.0288	2	481	\$577,649	\$688,557	\$275,423	\$183,615	\$66,102	\$24,788	\$36,723	\$586,651	\$29,333
152020	OLD STAGE COACH ARMS	20	0.0288	3	481	\$577,649	\$688,557	\$275,423	\$183,615	\$66,102	\$24,788	\$36,723	\$586,651	\$29,333
92010	STEELE POND DEV	20	0.0288	1a	407	\$488,780	\$523,972	\$209,589	\$139,726	\$50,301	\$18,863	\$27,945	\$446,424	\$22,321
162170	RIVER RUN CONDOS	20	0.0288	1a	407	\$488,780	\$523,972	\$209,589	\$139,726	\$50,301	\$18,863	\$27,945	\$446,424	\$22,321
803040	BEECH HILL MHP	20	0.0288	1a	407	\$488,780	\$523,972	\$209,589	\$139,726	\$50,301	\$18,863	\$27,945	\$446,424	\$22,321
883060	EDGE OF WOODS	20	0.0288	1a	407	\$488,780	\$523,972	\$209,589	\$139,726	\$50,301	\$18,863	\$27,945	\$446,424	\$22,321
1802020	CAMELOT COURT	20	0.0288	1a	407	\$488,780	\$523,972	\$209,589	\$139,726	\$50,301	\$18,863	\$27,945	\$446,424	\$22,321
1932020	GOLDEN HILL	20	0.0288	1a	407	\$488,780	\$523,972	\$209,589	\$139,726	\$50,301	\$18,863	\$27,945	\$446,424	\$22,321
2494010	CHESHIRE COUNTY COMPLEX	20	0.0288	1a	407	\$488,780	\$523,972	\$209,589	\$139,726	\$50,301	\$18,863	\$27,945	\$446,424	\$22,321
612240	WILLOW BEND	20	0.0288	1b	481	\$577,649	\$678,160	\$271,264	\$180,843	\$65,103	\$24,414	\$36,169	\$577,792	\$28,890
882100	BELKNAP HEIGHTS WATER	20	0.0288	1b	481	\$577,649	\$678,160	\$271,264	\$180,843	\$65,103	\$24,414	\$36,169	\$577,792	\$28,890
882130	BROADVIEW CONDOS	20	0.0288	1b	481	\$577,649	\$678,160	\$271,264	\$180,843	\$65,103	\$24,414	\$36,169	\$577,792	\$28,890
1612040	WEST POINT	21	0.0295	1a	412	\$494,852	\$530,482	\$212,193	\$141,462	\$50,926	\$19,097	\$28,292	\$451,970	\$22,599
1763010	SODA BROOK	21	0.0302	1a	417	\$500,779	\$536,835	\$214,734	\$143,156	\$51,536	\$19,326	\$28,631	\$457,383	\$22,869
1921010	PLAINFIELD VILLAGE WATER DIST	21	0.0302	1a	417	\$500,779	\$536,835	\$214,734	\$143,156	\$51,536	\$19,326	\$28,631	\$457,383	\$22,869
2232170	LAMINGTON HILL	21	0.0302	1a	417	\$500,779	\$536,835	\$214,734	\$143,156	\$51,536	\$19,326	\$28,631	\$457,383	\$22,869
1393060	PONDEROSA MHP	22	0.0310	3	499	\$598,668	\$713,613	\$285,445	\$190,297	\$68,507	\$25,690	\$38,059	\$607,998	\$30,400
612120	MEADOWBROOK	22	0.0310	1a	422	\$506,565	\$543,038	\$217,215	\$144,810	\$52,132	\$19,549	\$28,962	\$462,669	\$23,133
912020	ORCHARD HIGHLANDS	22	0.0317	2	504	\$605,350	\$721,577	\$288,631	\$192,421	\$69,271	\$25,977	\$38,484	\$614,784	\$30,739
2342020	NORTHPOINTE WATER	22	0.0317	2	504	\$605,350	\$721,577	\$288,631	\$192,421	\$69,271	\$25,977	\$38,484	\$614,784	\$30,739
612090	HUBBARD HILL	22	0.0317	1a	427	\$512,219	\$549,099	\$219,640	\$146,426	\$52,714	\$19,768	\$29,285	\$467,832	\$23,392
1992060	SAWMILL DORMITORY	22	0.0317	1a	427	\$512,219	\$549,099	\$219,640	\$146,426	\$52,714	\$19,768	\$29,285	\$467,832	\$23,392
1101050	MOUNTAIN LAKES WATER DEPT	23	0.0331	1a	436	\$523,151	\$560,818	\$224,327	\$149,552	\$53,839	\$20,189	\$29,910	\$477,817	\$23,891
512110	NORTH PINES	24	0.0346	2	526	\$630,639	\$751,722	\$300,689	\$200,459	\$72,165	\$27,062	\$40,092	\$640,467	\$32,023
1141020	EMERALD LAKE	24	0.0346	2	526	\$630,639	\$751,722	\$300,689	\$200,459	\$72,165	\$27,062	\$40,092	\$640,467	\$32,023
972010	CROTCHED MOUNTAIN REHAB CENTER	24	0.0346	1a	445	\$533,618	\$572,038	\$228,815	\$152,544	\$54,916	\$20,593	\$30,509	\$487,377	\$24,369
512060	FOREST EDGE	25	0.0360	0	535	\$642,504	\$642,504	\$257,002	\$171,334	\$61,680	\$23,130	\$34,267	\$547,413	\$27,371
162190	CRAWFORD HILLS	25	0.0360	1a	453	\$543,657	\$582,801	\$233,120	\$155,413	\$55,949	\$20,981	\$31,083	\$496,546	\$24,827
612110														

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882130	BROADVIEW CONDOS	25	0.0360	1b	535	\$642,504	\$754,300	\$301,720	\$201,147	\$72,413	\$27,155	\$40,229	\$642,663	\$32,133
112080	WALNUT RIDGE/BRYANT WOODS	25	0.0366	2	539	\$647,117	\$771,364	\$308,546	\$205,697	\$74,051	\$27,769	\$41,139	\$657,202	\$32,860
1972050	PAWTUCKAWAY FARMS	26	0.0374	2	545	\$653,903	\$779,453	\$311,781	\$207,854	\$74,827	\$28,060	\$41,571	\$664,094	\$33,205
882180	BROOKSIDE CROSSING	26	0.0374	3	545	\$653,903	\$779,453	\$311,781	\$207,854	\$74,827	\$28,060	\$41,571	\$664,094	\$33,205
1522010	PATRICIAN SHORES	27	0.0389	0	554	\$664,872	\$664,872	\$265,949	\$177,299	\$63,828	\$23,935	\$35,460	\$566,471	\$28,324
1793030	NORTHWOOD MOUNTAIN VIEW MHP	27	0.0389	0	554	\$664,872	\$664,872	\$265,949	\$177,299	\$63,828	\$23,935	\$35,460	\$566,471	\$28,324
1932100	STRAWBERRY HILL	27	0.0389	3	554	\$664,872	\$792,528	\$317,011	\$211,341	\$76,083	\$28,531	\$42,268	\$675,234	\$33,762
1992040	HAMPSHIRE COURT WATER	28	0.0403	2	563	\$675,442	\$805,127	\$322,051	\$214,701	\$77,292	\$28,985	\$42,940	\$685,968	\$34,298
1844010	CARROLL COUNTY COMPLEX	29	0.0422	1a	486	\$582,689	\$624,643	\$249,857	\$166,571	\$59,966	\$22,487	\$33,314	\$532,196	\$26,610
142010	PEU/LOCKE LAKE	30	0.0432	0	580	\$695,495	\$695,495	\$278,198	\$185,465	\$66,767	\$25,038	\$37,093	\$592,561	\$29,628
203060	SOLAR VILLAGE	30	0.0432	0	580	\$695,495	\$695,495	\$278,198	\$185,465	\$66,767	\$25,038	\$37,093	\$592,561	\$29,628
1972020	RIVERVIEW MANOR CONDOS	30	0.0432	0	580	\$695,495	\$695,495	\$278,198	\$185,465	\$66,767	\$25,038	\$37,093	\$592,561	\$29,628
262060	PEU/STONE SLED FARM	30	0.0432	2	580	\$695,495	\$829,030	\$331,612	\$221,075	\$79,587	\$29,845	\$44,215	\$706,333	\$35,317
512170	OAKWOOD HEIGHTS	30	0.0432	2	580	\$695,495	\$829,030	\$331,612	\$221,075	\$79,587	\$29,845	\$44,215	\$706,333	\$35,317
821020	FITZWILLIAM VILLAGE/LAUGHNER	30	0.0432	2	580	\$695,495	\$829,030	\$331,612	\$221,075	\$79,587	\$29,845	\$44,215	\$706,333	\$35,317
1392240	PEU/NESENKEAG	30	0.0432	2	580	\$695,495	\$829,030	\$331,612	\$221,075	\$79,587	\$29,845	\$44,215	\$706,333	\$35,317
1932120	CROSS RIDGE ESTATES	30	0.0432	2	580	\$695,495	\$829,030	\$331,612	\$221,075	\$79,587	\$29,845	\$44,215	\$706,333	\$35,317
2232060	BALMORAL CONDOS	30	0.0432	2	580	\$695,495	\$829,030	\$331,612	\$221,075	\$79,587	\$29,845	\$44,215	\$706,333	\$35,317
1932040	FORREST STREET CONDOS	30	0.0432	3	580	\$695,495	\$829,030	\$331,612	\$221,075	\$79,587	\$29,845	\$44,215	\$706,333	\$35,317
2413010	PLEASANT LAKE MHP/UPPER	30	0.0432	3	580	\$695,495	\$829,030	\$331,612	\$221,075	\$79,587	\$29,845	\$44,215	\$706,333	\$35,317
142010	PEU/LOCKE LAKE	30	0.0432	1a	490	\$588,495	\$630,867	\$252,347	\$168,231	\$60,563	\$22,711	\$33,646	\$537,499	\$26,875
432030	CHESTER BROOK	30	0.0432	1a	490	\$588,495	\$630,867	\$252,347	\$168,231	\$60,563	\$22,711	\$33,646	\$537,499	\$26,875
1272030	LAMPLIGHTER ESTATES	30	0.0432	1a	490	\$588,495	\$630,867	\$252,347	\$168,231	\$60,563	\$22,711	\$33,646	\$537,499	\$26,875
1332050	PEU/THURSTON WOODS	30	0.0432	1a	490	\$588,495	\$630,867	\$252,347	\$168,231	\$60,563	\$22,711	\$33,646	\$537,499	\$26,875
1392230	ROLLING MEADOWS CONDOS IV	30	0.0432	1a	490	\$588,495	\$630,867	\$252,347	\$168,231	\$60,563	\$22,711	\$33,646	\$537,499	\$26,875
171010	BATH VILLAGE WATER WORKS	30	0.0432	1b	580	\$695,495	\$816,511	\$326,604	\$217,736	\$78,385	\$29,394	\$43,547	\$695,667	\$34,783
2562050	SHERWOOD FOREST	30	0.0432	1b	580	\$695,495	\$816,511	\$326,604	\$217,736	\$78,385	\$29,394	\$43,547	\$695,667	\$34,783
1402020	VILLAGES AT LOUDON	32	0.0461	2	595	\$714,252	\$851,389	\$340,555	\$227,037	\$81,733	\$30,650	\$45,407	\$725,383	\$36,269
2452040	COLLINS LANDING	33	0.0468	2	599	\$718,758	\$856,760	\$342,704	\$228,469	\$82,249	\$30,843	\$45,694	\$729,960	\$36,498
192060	ENGLISH WOODS	33	0.0475	2	603	\$723,196	\$862,049	\$344,820	\$229,880	\$82,757	\$31,034	\$45,976	\$734,466	\$36,723
2415010	MAGDALEN COLLEGE	33	0.0475	2	603	\$723,196	\$862,049	\$344,820	\$229,880	\$82,757	\$31,034	\$45,976	\$734,466	\$36,723
1762010	HIGHLAND VILLAGE DISTRICT	34	0.0482	1a	513	\$615,633	\$659,959	\$263,984	\$175,989	\$63,356	\$23,759	\$35,198	\$562,285	\$28,114
2082080	LITTLE MILL WOODS	34	0.0487	2	608	\$730,158	\$870,348	\$348,139	\$232,093	\$83,553	\$31,333	\$46,419	\$741,537	\$37,077
1332020	DARBY FIELD COMMONS	34	0.0490	3	610	\$731,872	\$872,392	\$348,957	\$232,638	\$83,750	\$31,406	\$46,528	\$743,278	\$37,164
612080	REDFIELD ESTATES	34	0.0490	1a	516	\$619,277	\$663,865	\$265,546	\$177,031	\$63,731	\$23,899	\$35,406	\$565,613	\$28,281
1831010	ORFORD VILLAGE DIST	34	0.0490	1b	610	\$731,872	\$859,218	\$343,687	\$229,125	\$82,485	\$30,932	\$45,825	\$732,054	\$36,603
993030	FROST TRAILER PARK	35	0.0504	2	617	\$740,297	\$882,435	\$352,974	\$235,316	\$84,714	\$31,768	\$47,063	\$751,834	\$37,592
1031010	HAMPSTEAD AREA WATER	35	0.0504	2	617	\$740,297	\$882,435	\$352,974	\$235,316	\$84,714	\$31,768	\$47,063	\$751,834	\$37,592
1372020	STONEHENGE APT TRUST	35	0.0504	2	617	\$740,297	\$882,435	\$352,974	\$235,316	\$84,714	\$31,768	\$47,063	\$751,834	\$37,592
1712010	APPLETON GARDENS	35	0.0504	2	617	\$740,297	\$882,435	\$352,974	\$235,316	\$84,714	\$31,768	\$47,063	\$751,834	\$37,592
1932150	BLUEBERRY KNOLL ESTATES	35	0.0504	2	617	\$740,297	\$882,435	\$352,974	\$235,316	\$84,714	\$31,768	\$47,063	\$751,834	\$37,592
1972070	PEU/CLEARWATER ESTATES	35	0.0504	2	617	\$740,297	\$882,435	\$352,974	\$235,316	\$84,714	\$31,768	\$47,063	\$751,834	\$37,592
1332040	CEDAR WOOD ESTATES	35	0.0504	3	617	\$740,297	\$882,435	\$352,974	\$235,316	\$84,714	\$31,768	\$47,063	\$751,834	\$37,592
2542040	BRAEMAR WOODS CONDOS	35	0.0504	3	617	\$740,297	\$882,435	\$352,974	\$235,316	\$84,714	\$31,768	\$47,063	\$751,834	\$37,592
354010	CARDIGAN MOUNTAIN SCH	35	0.0504	1a	522	\$626,406	\$671,507	\$268,603	\$179,068	\$64,465	\$24,174	\$35,814	\$572,124	\$28,606
1612030	FAR ECHO HARBOR	35	0.0504	1a	522	\$626,406	\$671,507	\$268,603	\$179,068	\$64,465	\$24,174	\$35,814	\$572,124	\$28,606
1482010	MARLBOROUGH ESTATES	35	0.0504	1b	617	\$740,297	\$869,109	\$347,644	\$231,762	\$83,434	\$31,288	\$46,352	\$740,481	\$37,024
394010	IMMACULATE CONCEPTION SCH	36	0.0518	2	624	\$748,485	\$892,194	\$356,878	\$237,918	\$85,651	\$32,119	\$47,584	\$760,150	\$38,007
2232190	THE VINEYARDS	36	0.0518	1a	528	\$633,334	\$678,934	\$271,573	\$181,049	\$65,178	\$24,442	\$36,210	\$578,451	\$28,923
2453010	SUGAR HILL MANOR MHP	37	0.0533	0	630	\$756,449	\$756,449	\$302,579	\$201,720	\$72,619	\$27,232	\$40,344	\$644,494	\$32,225
1752070	SARGENT WOODS	37	0.0533	2	630	\$756,449	\$901,687	\$360,675	\$240,450	\$86,562	\$32,461	\$48,090	\$768,237	\$38,412
1932080	STONEBRIDGE VILLAGE	37	0.0533	2	630	\$756,449	\$901,687	\$360,675	\$240,450	\$86,562	\$32,461	\$48,090	\$768,237	\$38,412
162160	COW HILL WELLHOUSE	37	0.0533	1b	630	\$756,449	\$888,071	\$355,228	\$236,819	\$85,255	\$31,971	\$47,364	\$756,636	\$37,832
2232140	JEWETT HILL	38	0.0547	0	637	\$764,199	\$764,199	\$305,680	\$203,787	\$73,363	\$27,511	\$40,757	\$651,098	\$32,555
32010	LEDGES AT NEWFOUND LAKE	38	0.0547	1a	539	\$646,630	\$693,188	\$277,275	\$184,850	\$66,546	\$24,955	\$36,970	\$590,596	\$29,530
2082060	CORNERSTONE ESTATES	38	0.0547	1a	539	\$646,630	\$693,188	\$277,275	\$184,850	\$66,546	\$24,955	\$36,970	\$590,596	\$29,530
1843020	SANDY RIDGE ESTATES	38	0.0547	1b	637	\$764,199	\$897,170	\$358,868	\$239,245	\$86,128	\$32,298	\$47,849	\$764,389	\$38,219
262050	PEU/WHITE ROCK SENIOR LIVING	39	0.0562	2	643	\$771,749	\$919,925	\$367,970	\$245,313	\$88,313	\$33,117	\$49,063	\$783,776	\$39,189
224010	GLENCLIFF HOME FOR THE ELDERLY	39	0.0562	1a	544	\$653,018	\$700,036	\$280,014	\$186,676	\$67,203	\$25,201	\$37,335	\$596,430	\$29,822
694010	THE INN AT SPRUCE WOOD	39	0.0562	1a	544	\$653,018	\$700,036	\$280,014	\$186,676	\$67,203	\$25,201	\$37,335	\$596,430	\$29,822
861010	FREEDOM WATER PCT	39	0.0562	1a	544	\$653,018	\$700,036	\$280,014	\$186,676	\$67,203	\$25,201	\$37,335	\$596,430	\$29,822
861010	FREEDOM WATER PCT	39	0.0562	1a	544	\$653,018	\$700,036	\$280,014	\$186,676	\$67,203	\$25,201	\$37,335	\$596,430	\$29,822
2542170	PEU/LAMPLIGHTER VILLAGE	39	0.0562	1b	643	\$771,749	\$906,033	\$362,413	\$241,609	\$86,979	\$32,617	\$48,322	\$771,940	\$38,597
762040	MELLING GLEN	40	0.0575	0	649	\$778,380	\$778,380	\$311,352	\$207,568	\$74,724	\$28,022	\$41,514	\$663,180	\$33,159
1691010	NEW HAMPTON VILLAGE PCT	40	0.0575	2	649	\$778,380	\$927,829	\$371,132	\$247,421	\$89,072	\$33,402	\$49,484	\$790,510	\$39,526
112080	WALNUT RIDGE/BRYANT WOODS	40	0.0576	2	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$33,433	\$49,530	\$791,249	\$39,562
413020	CONNECTICUT RIVER MHP	40	0.0576	2	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$33,433	\$49,530	\$791,249	\$39,562
802040	PEU/FOREST RIDGE	40	0.0576	2	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$33,433	\$49,530	\$791,249	\$39,562
874020	COLONIAL POPLIN NURSING HOME	40	0.0576	2	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$33,433	\$49,530	\$791,249	\$39,562
2232180	WIGGIN FARM WINTERBERRY	40	0.0576	2	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$33,433	\$49,530	\$791,249	\$39,562
2452010	PEU/DANIELS LKE	40	0.0576	2	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$33,433	\$49,530	\$791,249	\$39,562
2525010	HIGH MOWING SCHOOL	40	0.0576	2	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$33,433	\$49,530	\$791,249	\$39,562
2542160	HADLEIGH WOODS	40	0.0576	2	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$33,433	\$49,530	\$791,249	\$39,562
664020	DUBLIN SCH	40	0.0576	3	649	\$779,108	\$928,696	\$371,478	\$247,652	\$89,155	\$3			

EPA ID	System Name	Summed Safe Yields (gpm) of all wells serving the facility	Est Capacity, MGD (based on Summed Safe Yield)	Treatment Process Master Code	Steps 1 & 2 est SF from MG capacity & Treatment Provided, SF	Step 3, est total developed cost as \$M from sf	Step 4, adj by treatment process for 2010 total developed cost	Mechanical/Process	Electrical/Instrumentation	Architectural	Structural	Civil	Total 20-Year Component Replacement Cost	Annual
43040	CATAMOUNT HILL	42	0.0605	1a	559	\$671,244	\$719,573	\$287,829	\$191,886	\$69,079	\$25,905	\$38,377	\$613,076	\$30,654
162140	RIVERSIDE COBB FARM	43	0.0619	0	667	\$800,127	\$800,127	\$320,051	\$213,367	\$76,812	\$28,805	\$42,673	\$681,708	\$34,085
702020	BRANDYWINE	43	0.0619	0	667	\$800,127	\$800,127	\$320,051	\$213,367	\$76,812	\$28,805	\$42,673	\$681,708	\$34,085
1932070	VALLEY FIELD APTS NORTHLAND	43	0.0619	2	667	\$800,127	\$953,751	\$381,501	\$254,334	\$91,560	\$34,335	\$50,867	\$812,596	\$40,630
2342010	175 ESTATES	43	0.0619	2	667	\$800,127	\$953,751	\$381,501	\$254,334	\$91,560	\$34,335	\$50,867	\$812,596	\$40,630
2542060	PEU/HARDWOOD HTS BIRCH HILL	43	0.0619	2	667	\$800,127	\$953,751	\$381,501	\$254,334	\$91,560	\$34,335	\$50,867	\$812,596	\$40,630
2361010	TROY WATER WORKS	44	0.0632	1a	568	\$682,125	\$731,238	\$292,495	\$194,997	\$70,199	\$26,325	\$38,999	\$623,015	\$31,151
512130	WOODLAND GROVE	44	0.0634	1a	569	\$682,684	\$731,838	\$292,735	\$195,157	\$70,256	\$26,346	\$39,031	\$623,526	\$31,176
882420	STONEWALL VILLAGE	45	0.0648	0	678	\$813,340	\$813,340	\$325,336	\$216,891	\$78,081	\$29,280	\$43,378	\$692,966	\$34,648
1672020	COPPLE CROWN VILLAGE DISTRICT	45	0.0648	2	678	\$813,340	\$969,502	\$387,801	\$258,534	\$93,072	\$34,902	\$51,707	\$826,016	\$41,301
882130	BROADVIEW CONDOS	45	0.0648	1a	574	\$688,211	\$737,762	\$295,105	\$196,737	\$70,825	\$26,559	\$39,347	\$628,573	\$31,429
2401030	N WALPOLE VILLAGE DIST/HIGH	45	0.0648	1b	678	\$813,340	\$954,862	\$381,945	\$254,630	\$91,667	\$34,375	\$50,926	\$813,542	\$40,677
1031010	HAMPSTEAD AREA WATER	46	0.0662	2	683	\$819,728	\$977,116	\$390,847	\$260,564	\$93,803	\$35,176	\$52,113	\$832,503	\$41,625
1272020	ANNS LANDING	46	0.0662	2	683	\$819,728	\$977,116	\$390,847	\$260,564	\$93,803	\$35,176	\$52,113	\$832,503	\$41,625
1932200	SWEET HILL ESTATES	46	0.0662	1a	578	\$693,616	\$743,557	\$297,423	\$198,282	\$71,381	\$26,768	\$39,656	\$633,510	\$31,676
612140	HI AND LO ESTATES	47	0.0677	2	688	\$825,979	\$984,567	\$393,827	\$262,551	\$94,518	\$35,444	\$52,510	\$838,851	\$41,943
1212090	HIGH PASTURES AT BLACK MTN	47	0.0677	1a	582	\$698,905	\$749,227	\$299,691	\$199,794	\$71,926	\$26,972	\$39,959	\$638,341	\$31,917
751010	ENFIELD WATER DEPT	48	0.0691	3	693	\$832,098	\$991,861	\$396,744	\$264,496	\$95,219	\$35,707	\$52,899	\$845,066	\$42,253
2462050	PILLSBURY LAKE/PENINSULA	48	0.0691	3	693	\$832,098	\$991,861	\$396,744	\$264,496	\$95,219	\$35,707	\$52,899	\$845,066	\$42,253
732040	18 HUGHES LN/EFFINGHAM	48	0.0691	1a	587	\$704,083	\$754,777	\$301,911	\$201,274	\$72,459	\$27,172	\$40,255	\$643,070	\$32,154
612210	OLD COACH VILLAGE	50	0.0720	2	703	\$843,963	\$1,006,004	\$402,401	\$268,268	\$96,576	\$36,216	\$53,654	\$857,115	\$42,856
612210	OLD COACH VILLAGE	50	0.0720	2	703	\$843,963	\$1,006,004	\$402,401	\$268,268	\$96,576	\$36,216	\$53,654	\$857,115	\$42,856
1031010	HAMPSTEAD AREA WATER	50	0.0720	2	703	\$843,963	\$1,006,004	\$402,401	\$268,268	\$96,576	\$36,216	\$53,654	\$857,115	\$42,856
1053030	TAYLOR RIVER ESTATES	50	0.0720	2	703	\$843,963	\$1,006,004	\$402,401	\$268,268	\$96,576	\$36,216	\$53,654	\$857,115	\$42,856
1202010	FRANCOEUR APT/HUDSON MOTOR INN	50	0.0720	2	703	\$843,963	\$1,006,004	\$402,401	\$268,268	\$96,576	\$36,216	\$53,654	\$857,115	\$42,856
1392220	ROLLING MEADOWS CONDOS III	50	0.0720	2	703	\$843,963	\$1,006,004	\$402,401	\$268,268	\$96,576	\$36,216	\$53,654	\$857,115	\$42,856
2082090	WATERFORD VILLAGE ESTATES	50	0.0720	2	703	\$843,963	\$1,006,004	\$402,401	\$268,268	\$96,576	\$36,216	\$53,654	\$857,115	\$42,856
1031010	HAMPSTEAD AREA WATER	50	0.0720	3	703	\$843,963	\$1,006,004	\$402,401	\$268,268	\$96,576	\$36,216	\$53,654	\$857,115	\$42,856
921020	GORHAM HILL SPRING	50	0.0720	1a	595	\$714,122	\$765,539	\$306,216	\$204,144	\$73,492	\$27,559	\$40,829	\$652,239	\$32,612
1203010	HUDSON MOBILE HOME ESTS	50	0.0720	1a	595	\$714,122	\$765,539	\$306,216	\$204,144	\$73,492	\$27,559	\$40,829	\$652,239	\$32,612
1732010	MOODY POINT	50	0.0720	1a	595	\$714,122	\$765,539	\$306,216	\$204,144	\$73,492	\$27,559	\$40,829	\$652,239	\$32,612
2542070	VILLAGES OF WINDHAM	50	0.0720	1a	595	\$714,122	\$765,539	\$306,216	\$204,144	\$73,492	\$27,559	\$40,829	\$652,239	\$32,612
1392040	PEU/PINEHAVEN WATER TRUST	50	0.0720	1b	703	\$843,963	\$990,812	\$396,325	\$264,217	\$95,118	\$35,669	\$52,843	\$844,172	\$42,209
583030	COTTON FARMS MHP	51	0.0734	2	708	\$849,718	\$1,012,864	\$405,146	\$270,097	\$97,235	\$36,463	\$54,019	\$862,960	\$43,148
512230	MELODY PINES CONDOS	52	0.0749	3	713	\$855,362	\$1,019,592	\$407,837	\$271,891	\$97,881	\$36,705	\$54,378	\$868,692	\$43,435
1972040	BRANCH RIVER APARTMENTS	52	0.0749	3	713	\$855,362	\$1,019,592	\$407,837	\$271,891	\$97,881	\$36,705	\$54,378	\$868,692	\$43,435
2312070	CHOCORUA MEADOWS	52	0.0749	1a	603	\$723,768	\$775,879	\$310,352	\$206,901	\$74,484	\$27,932	\$41,380	\$661,049	\$33,052
202040	WESTVIEW MEADOWS	53	0.0763	2	717	\$860,898	\$1,026,191	\$410,476	\$273,651	\$98,514	\$36,943	\$54,730	\$874,314	\$43,716
692020	STAGECOACH FARMS	54	0.0770	0	720	\$863,627	\$863,627	\$345,451	\$230,301	\$82,908	\$31,091	\$46,060	\$735,810	\$36,791
1392310	PEU/MINISTERIAL HILLS	54	0.0778	1b	722	\$866,331	\$1,017,073	\$406,829	\$271,219	\$97,639	\$36,615	\$54,244	\$866,546	\$43,327
2232160	BURNHAVEN	55	0.0792	0	726	\$871,664	\$871,664	\$348,666	\$232,444	\$83,680	\$31,380	\$46,489	\$742,658	\$37,133
2232050	STRATHAM GREEN CONDOS	55	0.0792	2	726	\$871,664	\$1,039,024	\$415,609	\$277,073	\$99,746	\$37,405	\$55,415	\$885,248	\$44,262
841010	FRANCONIA VILLAGE WATER	55	0.0792	1a	615	\$737,562	\$790,666	\$316,267	\$210,844	\$75,904	\$28,464	\$42,169	\$673,648	\$33,682
1031010	HAMPSTEAD AREA WATER	55	0.0792	1a	615	\$737,562	\$790,666	\$316,267	\$210,844	\$75,904	\$28,464	\$42,169	\$673,648	\$33,682
1101010	PRECINCT OF HAVERHILL CORNER	55	0.0792	1a	615	\$737,562	\$790,666	\$316,267	\$210,844	\$75,904	\$28,464	\$42,169	\$673,648	\$33,682
2232010	GLEN GARRY CONDOS	55	0.0792	1a	615	\$737,562	\$790,666	\$316,267	\$210,844	\$75,904	\$28,464	\$42,169	\$673,648	\$33,682
2361010	TROY WATER WORKS	55	0.0792	1a	615	\$737,562	\$790,666	\$316,267	\$210,844	\$75,904	\$28,464	\$42,169	\$673,648	\$33,682
153030	BARRINGTON OAKS	55	0.0792	1b	726	\$871,664	\$1,023,334	\$409,333	\$272,889	\$98,240	\$36,840	\$54,578	\$871,880	\$43,594
1932180	TUXBURY MEADOWS	56	0.0799	2	729	\$874,294	\$1,042,159	\$416,864	\$277,909	\$100,047	\$37,518	\$55,582	\$887,919	\$44,396
1842030	INDIAN MOUND GOLF CLUB	56	0.0806	1a	618	\$741,993	\$795,417	\$318,167	\$212,111	\$76,360	\$28,635	\$42,422	\$677,695	\$33,885
2542140	PEU/CASTLE REACH	56	0.0806	1a	618	\$741,993	\$795,417	\$318,167	\$212,111	\$76,360	\$28,635	\$42,422	\$677,695	\$33,885
2303010	PINE GROVE MOBILE HOME PARK	57	0.0814	1a	620	\$744,179	\$797,760	\$319,104	\$212,736	\$76,585	\$28,719	\$42,547	\$679,692	\$33,985
262020	WHITE ROCK WATER	57	0.0821	1a	622	\$746,346	\$800,083	\$320,033	\$213,355	\$76,808	\$28,803	\$42,671	\$681,671	\$34,084
1591010	MONROE WATER DEPT	58	0.0835	1a	626	\$750,623	\$804,668	\$321,867	\$214,578	\$77,248	\$28,968	\$42,916	\$685,577	\$34,279
1932090	GREENFIELD HILL ESTATES	58	0.0835	1a	626	\$750,623	\$804,668	\$321,867	\$214,578	\$77,248	\$28,968	\$42,916	\$685,577	\$34,279
432020	OAK HILL	59	0.0850	2	743	\$892,068	\$1,063,346	\$425,338	\$283,559	\$102,081	\$38,280	\$56,712	\$905,970	\$45,299
1481010	MARLBOROUGH WATER WORKS	60	0.0864	0	747	\$896,953	\$896,953	\$358,781	\$239,188	\$86,108	\$32,290	\$47,838	\$764,204	\$38,210
702030	MAPLEVALE AND CRICKET HILL	60	0.0864	2	747	\$896,953	\$1,069,168	\$427,667	\$285,112	\$102,640	\$38,490	\$57,022	\$910,931	\$45,547
773010	KINGSTOWNE MHP	60	0.0864	2	747	\$896,953	\$1,069,168	\$427,667	\$285,112	\$102,640	\$38,490	\$57,022	\$910,931	\$45,547
882400	YACHT CLUB VISTA	60	0.0864	2	747	\$896,953	\$1,069,168	\$427,667	\$285,112	\$102,640	\$38,490	\$57,022	\$910,931	\$45,547
2542180	PEU/SPRUCE POND ESTS	60	0.0864	2	747	\$896,953	\$1,069,168	\$427,667	\$285,112	\$102,640	\$38,490	\$57,022	\$910,931	\$45,547
1752020	MEADOWVIEW APARTMENTS	60	0.0864	3	747	\$896,953	\$1,069,168	\$427,667	\$285,112	\$102,640	\$38,490	\$57,022	\$910,931	\$45,547
1852040	PROLYN TOWNHOUSE APARTMENTS	60	0.0864	3	747	\$896,953	\$1,069,168	\$427,667	\$285,112	\$102,640	\$38,490	\$57,022	\$910,931	\$45,547
2232040	PENINSULA AT WINDING BROOK	60	0.0864	3	747	\$896,953	\$1,069,168	\$427,667	\$285,112	\$102,640	\$38,490	\$57,022	\$910,931	\$45,547
612220	AUTUMN WOODS	60	0.0864	1a	632	\$758,961	\$813,606	\$325,442	\$216,962	\$78,106	\$29,290	\$43,392	\$693,192	\$34,660
753020	DANIELS ACRES	60	0.0864	1a	632	\$758,961	\$813,606	\$325,442	\$216,962	\$78,106	\$29,290	\$43,392	\$693,192	\$34,660
1852060	HIGHLAND APARTMENTS	60	0.0864	1a	632	\$758,961	\$813,606	\$325,442	\$216,962	\$78,106	\$29,290	\$43,392	\$693,192	\$34,660
2082070	MILL PINE VILLAGE	60	0.0864	1a	632	\$758,961	\$813,606	\$325,442	\$216,962	\$78,106	\$29,290	\$43,392	\$693,192	\$34,660
2232110	TURNBERRY	60	0.0864	1a	632	\$758,961	\$813,606	\$325,442	\$216,962	\$78,106	\$29,290	\$43,392	\$693,192	\$34,660
2392010	BEVERLY HILLS WATER	60	0.0864	1a	632	\$758,961	\$813,606	\$325,442	\$216,962	\$78,106	\$29,290	\$43,392	\$693,192	\$34,660
2422010	SOUTH MAIN STREET WATER DIST	60	0.0867	1a	633	\$759,779	\$814,483	\$325,793	\$217,195	\$78,190	\$29,321	\$43,439	\$693,940	\$34,697
202010	LAKELAND	61	0.0878	1a	636	\$763,026	\$817,963	\$327,185	\$218,124	\$78,524	\$29,447	\$43,625	\$696,905	\$34,845
1842020	INDIAN MOUND SHOPPING CENTER	61	0.0878	1a	636	\$763,026	\$817,963	\$327,185	\$218,124	\$78,524	\$29,447	\$43,625	\$696,905	\$34,845
142010	PEU/LOCKE LAKE	62	0.0893	2	755	\$906,48								

EPA ID	System Name	Summed Safe Yields (gpm) of all wells serving the facility	Est Capacity, MGD (based on Summed Safe Yield)	Treatment Process Master Code	Steps 1 & 2 est SF from MG capacity & Treatment Provided, SF	Step 3, est total developed cost as \$M from sf	Step 4, adj by treatment process for 2010 total developed cost	Mechanical/Process	Electrical/Instrumentation	Architectural	Structural	Civil	Total 20-Year Component Replacement Cost	Annual
1973060	LEISURE VILLAGE	66	0.10	0	771	\$924,655	\$924,655	\$369,862	\$246,575	\$88,767	\$33,288	\$49,315	\$787,806	\$39,390
162250	BARTLETT PLACE	66	0.10	2	771	\$924,655	\$1,102,188	\$440,875	\$293,917	\$105,810	\$39,679	\$58,783	\$939,064	\$46,953
612070	GLEN RIDGE DEV	68	0.10	2	778	\$933,331	\$1,112,531	\$445,012	\$296,675	\$106,803	\$40,051	\$59,335	\$947,876	\$47,394
862020	PINE LANDING CONDOS	68	0.10	2	778	\$933,331	\$1,112,531	\$445,012	\$296,675	\$106,803	\$40,051	\$59,335	\$947,876	\$47,394
2392030	MICHAWANIC VILLAGE CONDOS	68	0.10	2	778	\$933,331	\$1,112,531	\$445,012	\$296,675	\$106,803	\$40,051	\$59,335	\$947,876	\$47,394
774010	EPSOM HEALTHCARE CTR	68	0.10	1a	658	\$789,742	\$846,603	\$338,641	\$225,761	\$81,274	\$30,478	\$45,152	\$721,306	\$36,065
952020	GRAY LEDGES	69	0.10	2	781	\$937,574	\$1,117,589	\$447,035	\$298,024	\$107,289	\$40,233	\$59,605	\$952,185	\$47,609
1031010	HAMPSTEAD AREA WATER	69	0.10	2	781	\$937,574	\$1,117,589	\$447,035	\$298,024	\$107,289	\$40,233	\$59,605	\$952,185	\$47,609
493020	MOUNTAIN VIEW PARK ESTATES	70	0.10	0	785	\$941,756	\$941,756	\$376,703	\$251,135	\$90,409	\$33,903	\$50,227	\$802,376	\$40,119
152090	PEPPERIDGE WOODS	70	0.10	2	785	\$941,756	\$1,122,573	\$449,029	\$299,353	\$107,767	\$40,413	\$59,871	\$956,433	\$47,822
162050	NORTH LEDGE	70	0.10	1a	664	\$796,871	\$854,245	\$341,698	\$227,799	\$82,008	\$30,753	\$45,560	\$727,817	\$36,391
2052030	LANCASTER FARMS	70	0.10	1a	664	\$796,871	\$854,245	\$341,698	\$227,799	\$82,008	\$30,753	\$45,560	\$727,817	\$36,391
2542150	PEU/FLETCHER CORNER ESTATES	70	0.10	1b	785	\$941,756	\$1,105,622	\$442,249	\$294,832	\$106,140	\$39,802	\$58,966	\$941,990	\$47,099
912040	BRIAR COURT ESTATES	71	0.10	1b	788	\$945,879	\$1,110,462	\$444,185	\$296,123	\$106,604	\$39,977	\$59,225	\$946,114	\$47,306
2052070	AUTUMN WOODS	72	0.10	1b	790	\$947,919	\$1,112,856	\$445,143	\$296,762	\$106,834	\$40,063	\$59,352	\$948,154	\$47,408
774030	MEADOW BROOK	72	0.10	1a	670	\$803,799	\$861,672	\$344,669	\$229,779	\$82,721	\$31,020	\$45,956	\$734,145	\$36,707
512260	DAVIS HILL	74	0.11	2	798	\$957,907	\$1,141,825	\$456,730	\$304,487	\$109,615	\$41,106	\$60,897	\$972,835	\$48,642
1031010	HAMPSTEAD AREA WATER	75	0.11	2	801	\$961,421	\$1,146,014	\$458,405	\$305,604	\$110,017	\$41,256	\$61,121	\$976,404	\$48,820
162210	MOUNTAINSIDE AT ATTITASH	75	0.11	2	802	\$961,809	\$1,146,476	\$458,590	\$305,727	\$110,062	\$41,273	\$61,145	\$976,797	\$48,840
1722020	SLOPE N SHORE CLUB	75	0.11	2	802	\$961,809	\$1,146,476	\$458,590	\$305,727	\$110,062	\$41,273	\$61,145	\$976,797	\$48,840
1993010	MONADNOCK TENANTS	75	0.11	1a	678	\$813,838	\$872,434	\$348,974	\$232,649	\$83,754	\$31,408	\$46,530	\$743,314	\$37,166
2312060	CHOCORUA WOODS	75	0.11	1a	678	\$813,838	\$872,434	\$348,974	\$232,649	\$83,754	\$31,408	\$46,530	\$743,314	\$37,166
2401010	WALPOLE WATER DEPT	75	0.11	1a	678	\$813,838	\$872,434	\$348,974	\$232,649	\$83,754	\$31,408	\$46,530	\$743,314	\$37,166
1392250	PEU/AVERY ESTATES	76	0.11	2	805	\$965,658	\$1,151,065	\$460,426	\$306,951	\$110,502	\$41,438	\$61,390	\$980,707	\$49,035
603010	LONGWOODS MHP	78	0.11	0	811	\$973,208	\$973,208	\$389,283	\$259,522	\$93,428	\$35,035	\$51,904	\$829,173	\$41,459
512250	SACO WOODS CONDOS	78	0.11	2	811	\$973,208	\$1,160,064	\$464,026	\$309,350	\$111,366	\$41,762	\$61,870	\$988,374	\$49,419
732040	18 HUGHES LN/EFFINGHAM	79	0.11	1b	814	\$976,910	\$1,146,893	\$458,757	\$305,838	\$110,102	\$41,288	\$61,168	\$977,153	\$48,858
112080	WALNUT RIDGE/BRYANT WOODS	80	0.12	2	817	\$980,566	\$1,168,835	\$467,534	\$311,689	\$112,208	\$42,078	\$62,338	\$995,847	\$49,792
1562030	BADGER HILL	80	0.12	2	817	\$980,566	\$1,168,835	\$467,534	\$311,689	\$112,208	\$42,078	\$62,338	\$995,847	\$49,792
1972010	PEU/LIBERTY TREE ACRES	80	0.12	2	817	\$980,566	\$1,168,835	\$467,534	\$311,689	\$112,208	\$42,078	\$62,338	\$995,847	\$49,792
203090	LAKES REGION MHP COOP II	80	0.12	1a	691	\$829,710	\$889,449	\$355,780	\$237,186	\$85,387	\$32,020	\$47,437	\$757,811	\$37,891
2003030	PARADISE ESTATES	80	0.12	1a	691	\$829,710	\$889,449	\$355,780	\$237,186	\$85,387	\$32,020	\$47,437	\$757,811	\$37,891
1652020	CHALK POND WATER	81	0.12	1a	694	\$832,765	\$892,724	\$357,090	\$238,060	\$85,702	\$32,138	\$47,612	\$760,601	\$38,030
2212010	BOW LAKE ESTATES	82	0.12	0	822	\$985,965	\$985,965	\$394,386	\$262,924	\$94,653	\$35,495	\$52,585	\$840,043	\$42,002
102010	ROPEWALK SERVICES	83	0.12	3	826	\$991,266	\$1,181,589	\$472,636	\$315,090	\$113,433	\$42,537	\$63,018	\$1,006,714	\$50,336
612170	MAPLE HAVEN	83	0.12	1a	699	\$838,764	\$899,155	\$359,662	\$239,775	\$86,319	\$32,370	\$47,955	\$766,080	\$38,304
2533010	SOUTH PARRISH	84	0.12	1a	700	\$840,241	\$900,738	\$360,295	\$240,197	\$86,471	\$32,427	\$48,039	\$767,429	\$38,371
882060	WINNSTOCK CONDOS	84	0.12	2	829	\$994,747	\$1,185,738	\$474,295	\$316,197	\$113,831	\$42,687	\$63,239	\$1,010,249	\$50,512
112080	WALNUT RIDGE/BRYANT WOODS	85	0.12	2	832	\$998,186	\$1,189,838	\$475,935	\$317,290	\$114,224	\$42,834	\$63,458	\$1,013,742	\$50,687
72070	SOUHEGAN WOODS	85	0.12	1a	704	\$844,619	\$905,432	\$362,173	\$241,449	\$86,921	\$32,596	\$48,290	\$771,428	\$38,571
1901010	PITTSBURG WATER DEPT	85	0.12	1a	704	\$844,619	\$905,432	\$362,173	\$241,449	\$86,921	\$32,596	\$48,290	\$771,428	\$38,571
774010	EPSOM HEALTHCARE CTR	86	0.12	2	835	\$1,001,586	\$1,193,890	\$477,556	\$318,371	\$114,613	\$42,980	\$63,674	\$1,017,195	\$50,860
192010	BEDFORD WATER	86	0.12	1a	706	\$847,496	\$908,515	\$363,406	\$242,271	\$87,217	\$32,707	\$48,454	\$774,055	\$38,703
1212130	EAGLE BROOK	88	0.13	0	840	\$1,008,268	\$1,008,268	\$403,307	\$268,871	\$96,794	\$36,298	\$53,774	\$859,044	\$42,952
1481010	MARLBOROUGH WATER WORKS	89	0.13	0	843	\$1,011,552	\$1,011,552	\$404,621	\$269,747	\$97,109	\$36,416	\$53,949	\$861,842	\$43,092
762080	VILLAGES ON THE LAMPREY	90	0.13	0	846	\$1,014,799	\$1,014,799	\$405,920	\$270,613	\$97,421	\$36,533	\$54,123	\$864,609	\$43,230
22010	WILDWOOD DEV	90	0.13	2	846	\$1,014,799	\$1,209,641	\$483,856	\$322,571	\$116,126	\$43,547	\$64,514	\$1,030,614	\$51,531
1932060	MOONGATE FARM	90	0.13	2	846	\$1,014,799	\$1,209,641	\$483,856	\$322,571	\$116,126	\$43,547	\$64,514	\$1,030,614	\$51,531
2572010	JACK O LANTERN CONDOS	90	0.13	3	846	\$1,014,799	\$1,209,641	\$483,856	\$322,571	\$116,126	\$43,547	\$64,514	\$1,030,614	\$51,531
1141020	EMERALD LAKE	91	0.13	1a	718	\$861,394	\$923,414	\$369,366	\$246,244	\$88,648	\$33,243	\$49,249	\$786,749	\$39,337
153050	BARRINGTON MOBILE HOME ESTATES	95	0.14	1a	727	\$871,973	\$934,755	\$373,902	\$249,268	\$89,736	\$33,651	\$49,854	\$796,411	\$39,821
2011010	ROLLINSFORD WATER AND SEWER	100	0.14	2	871	\$1,045,422	\$1,246,143	\$498,457	\$332,305	\$119,630	\$44,861	\$66,461	\$1,061,713	\$53,086
1051010	AQUARION WATER/NH	100	0.14	1a	737	\$884,587	\$948,278	\$379,311	\$252,874	\$91,035	\$34,138	\$50,575	\$807,933	\$40,397
1101020	NO HAVERHILL WATER AND LIGHT	100	0.14	1a	737	\$884,587	\$948,278	\$379,311	\$252,874	\$91,035	\$34,138	\$50,575	\$807,933	\$40,397
2011010	ROLLINSFORD WATER AND SEWER	103	0.15	1a	743	\$891,857	\$956,071	\$382,428	\$254,952	\$91,783	\$34,419	\$50,990	\$814,572	\$40,729
612230	RAND SHEPARD HILL	104	0.15	3	880	\$1,056,541	\$1,259,397	\$503,759	\$335,839	\$120,902	\$45,338	\$67,168	\$1,073,006	\$53,650
162400	EAGLE RIDGE RESORT	104	0.15	1a	745	\$894,233	\$958,618	\$383,447	\$255,631	\$92,027	\$34,510	\$51,126	\$816,742	\$40,837
881020	GUNSTOCK ACRES VILLAGE DIST	104	0.15	1a	745	\$894,233	\$958,618	\$383,447	\$255,631	\$92,027	\$34,510	\$51,126	\$816,742	\$40,837
1031010	HAMPSTEAD AREA WATER	105	0.15	1a	747	\$896,586	\$961,141	\$384,456	\$256,304	\$92,270	\$34,601	\$51,261	\$818,892	\$40,945
2542030	PEU/W AND E	107	0.15	2	888	\$1,065,086	\$1,269,583	\$507,833	\$338,555	\$121,880	\$45,705	\$67,711	\$1,081,684	\$54,084
112060	THE COMMONS OF ATKINSON	110	0.16	0	894	\$1,073,123	\$1,073,123	\$429,249	\$286,166	\$103,020	\$38,632	\$57,233	\$914,301	\$45,715
732040	18 HUGHES LN/EFFINGHAM	110	0.16	1a	757	\$908,027	\$973,405	\$389,362	\$259,575	\$93,447	\$35,043	\$51,915	\$829,341	\$41,467
341030	WATERVILLE ESTATE VLG DIST/W	110	0.16	1b	894	\$1,073,123	\$1,259,846	\$503,938	\$335,959	\$120,945	\$45,354	\$67,192	\$1,073,389	\$53,669
1403030	FREEDOM HILL	111	0.16	2	896	\$1,075,753	\$1,282,298	\$512,919	\$341,946	\$123,101	\$46,163	\$68,389	\$1,092,518	\$54,626
862030	FREEDOM VILLAGE CONDOS	112	0.16	2	899	\$1,078,360	\$1,285,405	\$514,162	\$342,775	\$123,399	\$46,275	\$68,555	\$1,095,165	\$54,758
862010	LOV WATER	115	0.17	2	905	\$1,086,042	\$1,294,563	\$517,825	\$345,217	\$124,278	\$46,604	\$69,043	\$1,102,967	\$55,148
2232030	SALT RIVER CONDOS	115	0.17	2	905	\$1,086,042	\$1,294,563	\$517,825	\$345,217	\$124,278	\$46,604	\$69,043	\$1,102,967	\$55,148
2053020	ACKERMAN RETIREMENT PARK	115	0.17	1a	766	\$918,959	\$985,124	\$394,050	\$262,700	\$94,572	\$35,464	\$52,540	\$839,326	\$41,966
2542010	PEU/GOLDEN BROOK	115	0.17	1a	766	\$918,959	\$985,124	\$394,050	\$262,700	\$94,572	\$35,464	\$52,540	\$839,326	\$41,966
112080	WALNUT RIDGE/BRYANT WOODS	118	0.17	2	911	\$1,093,034	\$1,302,897	\$521,159	\$347,439	\$125,078	\$46,904	\$69,488	\$1,110,068	\$55,503
112080	WALNUT RIDGE/BRYANT WOODS	118	0.17	2	911	\$1,093,527	\$1,303,485	\$521,394	\$347,596	\$125,135	\$46,925	\$69,519	\$1,110,569	\$55,528
512080	REBECCA LANE WATER SYS	120	0.17	1a	775	\$929,426	\$996,344	\$398,538	\$265,692	\$95,649	\$35,868	\$53,138	\$848,885	\$42,444
762120	WOODLANDS	120	0.17	1a	775	\$929,426	\$996,344	\$398,538	\$265,692	\$95,649	\$35,868	\$53,138	\$848,885	\$42,444
1461010	VILLAGE DISTRICT OF EIDELWEISS	120	0.17	1a	775	\$929,426</								

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162240	THE SEASONS AT ATTITASH	130	0.19	2	935	\$1,121,676	\$1,337,038	\$534,815	\$356,543	\$128,356	\$48,133	\$71,309	\$1,139,156	\$56,958
803020	EXETER RIVER MOBILE HOME PARK	130	0.19	2	935	\$1,121,676	\$1,337,038	\$534,815	\$356,543	\$128,356	\$48,133	\$71,309	\$1,139,156	\$56,958
2271020	GEORGES MILLS WATER WORKS	130	0.19	1b	935	\$1,121,676	\$1,316,848	\$526,739	\$351,159	\$126,417	\$47,407	\$70,232	\$1,121,954	\$56,098
112070	WATER WHEEL ESTATES	135	0.19	2	944	\$1,132,645	\$1,350,113	\$540,045	\$360,030	\$129,611	\$48,604	\$72,006	\$1,150,296	\$57,515
1732030	GREAT BAY WATER SYS	135	0.19	1a	799	\$958,392	\$1,027,396	\$410,958	\$273,972	\$98,630	\$36,986	\$54,794	\$875,342	\$43,767
2361010	TROY WATER WORKS	135	0.19	1a	799	\$958,392	\$1,027,396	\$410,958	\$273,972	\$98,630	\$36,986	\$54,794	\$875,342	\$43,767
582010	COLBY POND	140	0.20	2	953	\$1,143,215	\$1,362,712	\$545,085	\$363,390	\$130,820	\$49,058	\$72,678	\$1,161,031	\$58,052
2312030	WHITE LAKE ESTATES	140	0.20	1a	806	\$967,336	\$1,036,984	\$414,794	\$276,529	\$99,550	\$37,331	\$55,306	\$883,510	\$44,176
2082050	STONEFORD	142	0.21	2	957	\$1,148,155	\$1,368,601	\$547,440	\$364,960	\$131,386	\$49,270	\$72,992	\$1,166,048	\$58,302
2194010	COOS COUNTY FARM	144	0.21	2	960	\$1,151,403	\$1,372,472	\$548,989	\$365,993	\$131,757	\$49,409	\$73,199	\$1,169,346	\$58,467
284010	ROCKINGHAM COUNTY COMPLEX	150	0.22	2	969	\$1,163,267	\$1,386,615	\$554,646	\$369,764	\$133,115	\$49,918	\$73,953	\$1,181,396	\$59,070
284010	ROCKINGHAM COUNTY COMPLEX	150	0.22	2	969	\$1,163,267	\$1,386,615	\$554,646	\$369,764	\$133,115	\$49,918	\$73,953	\$1,181,396	\$59,070
1932170	RAINBOW RIDGE	150	0.22	2	969	\$1,163,267	\$1,386,615	\$554,646	\$369,764	\$133,115	\$49,918	\$73,953	\$1,181,396	\$59,070
2353010	RODGERS DEV	150	0.22	3	969	\$1,163,267	\$1,386,615	\$554,646	\$369,764	\$133,115	\$49,918	\$73,953	\$1,181,396	\$59,070
771010	EPSOM VILLAGE DIST	150	0.22	1a	820	\$984,303	\$1,055,173	\$422,069	\$281,379	\$101,297	\$37,986	\$56,276	\$899,007	\$44,950
1191020	HOPKINTON VILLAGE PCT	150	0.22	1a	820	\$984,303	\$1,055,173	\$422,069	\$281,379	\$101,297	\$37,986	\$56,276	\$899,007	\$44,950
432010	VILLAGES AT CHESTER CONDOS	158	0.23	1a	831	\$997,082	\$1,068,871	\$427,549	\$285,032	\$102,612	\$38,479	\$57,006	\$910,679	\$45,534
761010	EPPING WATER AND SEWER DEPT	160	0.23	1a	833	\$1,000,175	\$1,072,188	\$428,875	\$285,917	\$102,930	\$38,599	\$57,183	\$913,504	\$45,675
1722010	SEASONS AT LAKE SUNAPEE	165	0.24	1a	840	\$1,007,743	\$1,080,300	\$432,120	\$288,080	\$103,709	\$38,891	\$57,616	\$920,416	\$46,021
2082040	PINE ACRES CONDOS	165	0.24	1a	840	\$1,007,743	\$1,080,300	\$432,120	\$288,080	\$103,709	\$38,891	\$57,616	\$920,416	\$46,021
1713010	VAILLANCOURT MOBILE HOME PARK	170	0.24	2	1000	\$1,199,645	\$1,429,977	\$571,991	\$381,327	\$137,278	\$51,479	\$76,265	\$1,218,341	\$60,917
201010	BELMONT WATER DEPT	170	0.24	1a	846	\$1,015,084	\$1,088,171	\$435,268	\$290,179	\$104,464	\$39,174	\$58,036	\$927,121	\$46,356
2441010	WATERVILLE VALLEY WATER DIST	180	0.26	0	1014	\$1,216,258	\$1,216,258	\$486,503	\$324,335	\$116,761	\$43,785	\$64,867	\$1,036,252	\$51,813
1021010	HALES LOCATION	180	0.26	1a	858	\$1,029,141	\$1,103,240	\$441,296	\$294,197	\$105,911	\$39,717	\$58,839	\$939,960	\$46,998
2531010	WINCHESTER WATER DEPT	190	0.27	1a	869	\$1,042,438	\$1,117,494	\$446,997	\$297,998	\$107,279	\$40,230	\$59,600	\$952,105	\$47,605
1921020	MERIDEN VILLAGE WATER DIST	195	0.28	1a	874	\$1,048,826	\$1,124,342	\$449,737	\$299,824	\$107,937	\$40,476	\$59,965	\$957,939	\$47,897
1461010	VILLAGE DISTRICT OF EIDELWEISS	200	0.29	0	1039	\$1,246,880	\$1,246,880	\$498,752	\$332,501	\$119,701	\$44,888	\$66,500	\$1,062,342	\$53,117
803030	EXETER RIVER LANDING	200	0.29	2	1039	\$1,246,880	\$1,486,281	\$498,752	\$332,501	\$119,701	\$44,888	\$66,500	\$1,062,342	\$53,117
343020	SIX FLAGS MHP	200	0.29	1a	879	\$1,055,053	\$1,131,016	\$452,407	\$301,604	\$108,578	\$40,717	\$60,321	\$963,626	\$48,181
1051010	AQUARION WATER/NH	200	0.29	1a	879	\$1,055,053	\$1,131,016	\$452,407	\$301,604	\$108,578	\$40,717	\$60,321	\$963,626	\$48,181
1871010	PETERBOROUGH WATER WORKS	200	0.29	1a	879	\$1,055,053	\$1,131,016	\$452,407	\$301,604	\$108,578	\$40,717	\$60,321	\$963,626	\$48,181
2111010	SEABROOK WATER DEPT	200	0.29	1a	879	\$1,055,053	\$1,131,016	\$452,407	\$301,604	\$108,578	\$40,717	\$60,321	\$963,626	\$48,181
411010	CHARLESTOWN WATER WORKS	210	0.30	1a	889	\$1,067,052	\$1,143,879	\$457,552	\$305,034	\$109,812	\$41,180	\$61,007	\$974,585	\$48,729
91010	ANTRIM SEWER AND WATER DEPT	215	0.31	1a	894	\$1,072,838	\$1,150,083	\$460,033	\$306,689	\$110,408	\$41,403	\$61,338	\$979,870	\$48,994
2351020	LOCHMERE VILLAGE DIST	238	0.34	1a	915	\$1,097,833	\$1,176,877	\$470,751	\$313,834	\$112,980	\$42,368	\$62,767	\$1,002,699	\$50,135
1151020	HINSDALE WATER DEPT/DOWNTOWN	240	0.35	1a	917	\$1,099,891	\$1,179,083	\$471,633	\$314,422	\$113,192	\$42,447	\$62,884	\$1,004,579	\$50,229
771010	EPSOM VILLAGE DIST	250	0.36	1a	925	\$1,109,930	\$1,189,845	\$475,938	\$317,292	\$114,225	\$42,834	\$63,458	\$1,013,748	\$50,687
1731010	NEWMARKET WATER WORKS	250	0.36	1a	925	\$1,109,930	\$1,189,845	\$475,938	\$317,292	\$114,225	\$42,834	\$63,458	\$1,013,748	\$50,687
1731010	NEWMARKET WATER WORKS	250	0.36	1a	925	\$1,109,930	\$1,189,845	\$475,938	\$317,292	\$114,225	\$42,834	\$63,458	\$1,013,748	\$50,687
2221010	NORTH STRATFORD WATER DEPT	272	0.39	1a	942	\$1,130,853	\$1,212,274	\$484,910	\$323,273	\$116,378	\$43,642	\$64,655	\$1,032,858	\$51,643
612150	DREW WOODS	273	0.39	1b	1114	\$1,337,315	\$1,570,008	\$628,003	\$418,669	\$150,721	\$56,520	\$83,734	\$1,337,647	\$66,882
801010	EXETER WATER DEPT	280	0.40	1a	948	\$1,137,801	\$1,219,723	\$487,889	\$325,259	\$117,093	\$43,910	\$65,052	\$1,039,204	\$51,960
61010	ALTON WATER WORKS	300	0.43	1a	962	\$1,154,768	\$1,237,912	\$495,165	\$330,110	\$118,840	\$44,565	\$66,022	\$1,054,701	\$52,735
161020	LOWER BARTLETT WATER PCT	300	0.43	1a	962	\$1,154,768	\$1,237,912	\$495,165	\$330,110	\$118,840	\$44,565	\$66,022	\$1,054,701	\$52,735
301010	BRISTOL WATER WORKS	300	0.43	1a	962	\$1,154,768	\$1,237,912	\$495,165	\$330,110	\$118,840	\$44,565	\$66,022	\$1,054,701	\$52,735
1221010	JAFFREY WATER WORKS	300	0.43	1a	962	\$1,154,768	\$1,237,912	\$495,165	\$330,110	\$118,840	\$44,565	\$66,022	\$1,054,701	\$52,735
1871010	PETERBOROUGH WATER WORKS	300	0.43	1a	962	\$1,154,768	\$1,237,912	\$495,165	\$330,110	\$118,840	\$44,565	\$66,022	\$1,054,701	\$52,735
2401020	N WALPOLE VILLAGE DISTRICT/LOW	305	0.44	2	1141	\$1,369,530	\$1,632,480	\$652,992	\$435,328	\$156,718	\$58,769	\$87,066	\$1,390,873	\$69,544
1861010	PEMBROKE WATER WORKS	309	0.44	1a	968	\$1,162,038	\$1,245,704	\$498,282	\$332,188	\$119,588	\$44,845	\$66,438	\$1,061,340	\$53,067
1131010	HILL WATER WORKS	315	0.45	1a	972	\$1,166,767	\$1,250,774	\$500,310	\$333,540	\$120,074	\$45,028	\$66,708	\$1,065,660	\$53,283
2151010	SOMERSWORTH WATER WORKS	315	0.45	1a	972	\$1,166,767	\$1,250,774	\$500,310	\$333,540	\$120,074	\$45,028	\$66,708	\$1,065,660	\$53,283
2441010	WATERVILLE VALLEY WATER DIST	340	0.49	0	1168	\$1,401,104	\$1,401,104	\$560,442	\$373,628	\$134,506	\$50,440	\$74,726	\$1,193,741	\$59,687
1841010	OSSIPEE WATER DEPT	340	0.49	1a	988	\$1,185,550	\$1,270,909	\$508,364	\$338,909	\$122,007	\$45,753	\$67,782	\$1,082,815	\$54,141
651010	DOVER WATER DEPT	350	0.50	1a	994	\$1,192,678	\$1,278,551	\$511,421	\$340,947	\$122,741	\$46,028	\$68,189	\$1,089,326	\$54,466
811010	FARMINGTON WATER DEPT	350	0.50	1a	994	\$1,192,678	\$1,278,551	\$511,421	\$340,947	\$122,741	\$46,028	\$68,189	\$1,089,326	\$54,466
911010	GOFFSTOWN VILLAGE PCT	350	0.50	1a	994	\$1,192,678	\$1,278,551	\$511,421	\$340,947	\$122,741	\$46,028	\$68,189	\$1,089,326	\$54,466
911010	GOFFSTOWN VILLAGE PCT	350	0.50	1a	994	\$1,192,678	\$1,278,551	\$511,421	\$340,947	\$122,741	\$46,028	\$68,189	\$1,089,326	\$54,466
1241010	KEENE WATER DEPT	350	0.50	1a	994	\$1,192,678	\$1,278,551	\$511,421	\$340,947	\$122,741	\$46,028	\$68,189	\$1,089,326	\$54,466
1381010	LITTLETON WATER AND LIGHT DEPT	350	0.50	1a	994	\$1,192,678	\$1,278,551	\$511,421	\$340,947	\$122,741	\$46,028	\$68,189	\$1,089,326	\$54,466
211010	BENNINGTON WATER DEPT	360	0.52	1a	1000	\$1,199,607	\$1,285,978	\$514,391	\$342,928	\$123,454	\$46,295	\$68,586	\$1,095,653	\$54,783
2041010	RYE WATER DIST	365	0.53	1a	1002	\$1,202,999	\$1,289,615	\$515,846	\$343,897	\$123,803	\$46,426	\$68,779	\$1,098,752	\$54,938
2391010	SANBORNVILLE WATER DEPT	370	0.53	1a	1005	\$1,206,345	\$1,293,202	\$517,281	\$344,854	\$124,147	\$46,555	\$68,971	\$1,101,808	\$55,090
513100	MOUNTAIN VALE VILLAGE MHP	390	0.56	1a	1016	\$1,219,291	\$1,307,080	\$522,832	\$348,555	\$125,480	\$47,055	\$69,711	\$1,113,632	\$55,682
851010	FRANKLIN WATER WORKS	390	0.56	1a	1016	\$1,219,291	\$1,307,080	\$522,832	\$348,555	\$125,480	\$47,055	\$69,711	\$1,113,632	\$55,682
951010	VILLAGE DIST OF EASTMAN	392	0.56	2	1202	\$1,442,467	\$1,719,421	\$687,768	\$458,512	\$165,064	\$61,899	\$91,702	\$1,464,947	\$73,247
1181020	HOOKSETT VILLAGE WATER PCT	400	0.58	1a	1021	\$1,225,518	\$1,313,755	\$525,502	\$350,335	\$126,120	\$47,295	\$70,067	\$1,119,319	\$55,966
1351010	LINCOLN WATER WORKS	400	0.58	1a	1021	\$1,225,518	\$1,313,755	\$525,502	\$350,335	\$126,120	\$47,295	\$70,067	\$1,119,319	\$55,966
1851010	PEU/WILLIAMSBURG	400	0.58	1a	1021	\$1,225,518	\$1,313,755	\$525,502	\$350,335	\$126,120	\$47,295	\$70,067	\$1,119,319	\$55,966
1951010	PORTSMOUTH WATER WORKS	400	0.58	1a	1021	\$1,225,518	\$1,313,755	\$525,502	\$350,335	\$126,120	\$47,295	\$70,067	\$1,119,319	\$55,966
2111010	SEABROOK WATER DEPT	400	0.58	1a	1021	\$1,225,518	\$1,313,755	\$525,502	\$350,335	\$126,120	\$47,295	\$70,067	\$1,119,319	\$55,966
2521010	WILTON WATER WORKS	400	0.58	1a	1021	\$1,225,518	\$1,313,755	\$525,502	\$350,335	\$126,120	\$47,295	\$70,067	\$1,119,319	\$55,966
411010	CHARLESTOWN WATER WORKS	410												

EPA ID	System Name	Summed Safe Yields (gpm) of all wells serving the facility	Est Capacity, MGD (based on Summed Safe Yield)	Treatment Process Master Code	Steps 1 & 2 est SF from MG capacity & Treatment Provided, SF	Step 3, est total developed cost as \$M from sf	Step 4, adj by treatment process for 2010 total developed cost	Mechanical/Process	Electrical/Instrumentation	Architectural	Structural	Civil	Total 20-Year Component Replacement Cost	Annual	
1121010	COGSWELL SPRINGS WATER WORKS	450	0.65	0	1235	\$1,482,572	\$1,482,572	\$593,029	\$395,353	\$142,327	\$53,373	\$79,071	\$1,263,151	\$63,158	
1971010	RAYMOND WATER DEPT	450	0.65	2	1235	\$1,482,572	\$1,767,226	\$706,890	\$471,260	\$169,654	\$63,620	\$94,252	\$1,505,676	\$75,284	
511030	NORTH CONWAY WATER PCT	450	0.65	1a	1045	\$1,254,484	\$1,344,807	\$537,923	\$358,615	\$129,101	\$48,413	\$71,723	\$1,145,775	\$57,289	
1942010	TENNEY BROOK II	450	0.65	1a	1045	\$1,254,484	\$1,344,807	\$537,923	\$358,615	\$129,101	\$48,413	\$71,723	\$1,145,775	\$57,289	
1951010	PORTSMOUTH WATER WORKS	450	0.65	1a	1045	\$1,254,484	\$1,344,807	\$537,923	\$358,615	\$129,101	\$48,413	\$71,723	\$1,145,775	\$57,289	
1951010	PORTSMOUTH WATER WORKS	450	0.65	1a	1045	\$1,254,484	\$1,344,807	\$537,923	\$358,615	\$129,101	\$48,413	\$71,723	\$1,145,775	\$57,289	
161020	LOWER BARTLETT WATER PCT	480	0.69	1a	1059	\$1,270,356	\$1,361,822	\$544,729	\$363,152	\$130,735	\$49,026	\$72,630	\$1,160,272	\$58,014	
881020	GUNSTOCK ACRES VILLAGE DIST	490	0.71	1a	1063	\$1,275,427	\$1,367,258	\$546,903	\$364,602	\$131,257	\$49,221	\$72,920	\$1,164,903	\$58,245	
61010	ALTON WATER WORKS	495	0.71	1a	1065	\$1,277,924	\$1,369,934	\$547,974	\$365,316	\$131,514	\$49,318	\$73,063	\$1,167,184	\$58,359	
651010	DOVER WATER DEPT	500	0.72	2	1261	\$1,513,194	\$1,803,728	\$721,491	\$480,994	\$173,158	\$64,934	\$96,199	\$1,536,776	\$76,839	
511010	CONWAY VILLAGE FIRE DIST	500	0.72	1a	1067	\$1,280,395	\$1,372,584	\$549,033	\$366,022	\$131,768	\$49,413	\$73,204	\$1,169,441	\$58,472	
651010	DOVER WATER DEPT	500	0.72	1a	1067	\$1,280,395	\$1,372,584	\$549,033	\$366,022	\$131,768	\$49,413	\$73,204	\$1,169,441	\$58,472	
851010	FRANKLIN WATER WORKS	500	0.72	1a	1067	\$1,280,395	\$1,372,584	\$549,033	\$366,022	\$131,768	\$49,413	\$73,204	\$1,169,441	\$58,472	
851010	FRANKLIN WATER WORKS	500	0.72	1a	1067	\$1,280,395	\$1,372,584	\$549,033	\$366,022	\$131,768	\$49,413	\$73,204	\$1,169,441	\$58,472	
1181020	HOOKSETT VILLAGE WATER PCT	500	0.72	1a	1067	\$1,280,395	\$1,372,584	\$549,033	\$366,022	\$131,768	\$49,413	\$73,204	\$1,169,441	\$58,472	
1241010	KEENE WATER DEPT	520	0.75	1a	1075	\$1,290,041	\$1,382,924	\$553,169	\$368,780	\$132,761	\$49,785	\$73,756	\$1,178,251	\$58,913	
341010	CAMPTON VILLAGE PCT	538	0.77	1a	1082	\$1,298,410	\$1,391,895	\$556,758	\$371,172	\$133,622	\$50,108	\$74,234	\$1,185,895	\$59,295	
1871010	PETERBOROUGH WATER WORKS	540	0.78	1a	1083	\$1,299,322	\$1,392,873	\$557,149	\$371,433	\$133,716	\$50,143	\$74,287	\$1,186,728	\$59,336	
1721010	NEW LONDON SPRINGFIELD WATER	542	0.78	1a	1084	\$1,300,231	\$1,393,848	\$557,539	\$371,693	\$133,809	\$50,179	\$74,339	\$1,187,559	\$59,378	
921010	GORHAM WATER AND SEWER DEPT	550	0.79	1a	1087	\$1,303,835	\$1,397,711	\$559,084	\$372,723	\$134,180	\$50,318	\$74,545	\$1,190,850	\$59,542	
1221010	JAFFREY WATER WORKS	550	0.79	1a	1087	\$1,303,835	\$1,397,711	\$559,084	\$372,723	\$134,180	\$50,318	\$74,545	\$1,190,850	\$59,542	
651010	DOVER WATER DEPT	600	0.86	2	1305	\$1,566,185	\$1,866,893	\$746,757	\$497,838	\$179,222	\$67,208	\$99,568	\$1,590,592	\$79,530	
651010	DOVER WATER DEPT	600	0.86	2	1305	\$1,566,185	\$1,866,893	\$746,757	\$497,838	\$179,222	\$67,208	\$99,568	\$1,590,592	\$79,530	
651010	DOVER WATER DEPT	600	0.86	1a	1104	\$1,325,233	\$1,420,650	\$568,260	\$378,840	\$136,382	\$51,143	\$75,768	\$1,210,394	\$60,520	
651010	DOVER WATER DEPT	600	0.86	1a	1104	\$1,325,233	\$1,420,650	\$568,260	\$378,840	\$136,382	\$51,143	\$75,768	\$1,210,394	\$60,520	
1241010	KEENE WATER DEPT	600	0.86	1a	1104	\$1,325,233	\$1,420,650	\$568,260	\$378,840	\$136,382	\$51,143	\$75,768	\$1,210,394	\$60,520	
2111010	SEABROOK WATER DEPT	600	0.86	1a	1104	\$1,325,233	\$1,420,650	\$568,260	\$378,840	\$136,382	\$51,143	\$75,768	\$1,210,394	\$60,520	
101010	ASHLAND WATER DEPT	650	0.94	1a	1121	\$1,344,918	\$1,441,752	\$576,701	\$384,467	\$138,408	\$51,903	\$76,893	\$1,228,373	\$61,419	
101010	ASHLAND WATER DEPT	650	0.94	1a	1121	\$1,344,918	\$1,441,752	\$576,701	\$384,467	\$138,408	\$51,903	\$76,893	\$1,228,373	\$61,419	
481010	COLEBROOK WATER WORKS	650	0.94	1a	1121	\$1,344,918	\$1,441,752	\$576,701	\$384,467	\$138,408	\$51,903	\$76,893	\$1,228,373	\$61,419	
691010	UNH/DURHAM WATER SYS	650	0.94	1a	1121	\$1,344,918	\$1,441,752	\$576,701	\$384,467	\$138,408	\$51,903	\$76,893	\$1,228,373	\$61,419	
2111010	SEABROOK WATER DEPT	650	0.94	1a	1121	\$1,344,918	\$1,441,752	\$576,701	\$384,467	\$138,408	\$51,903	\$76,893	\$1,228,373	\$61,419	
2301020	WEST SWANZEY WATER	650	0.94	1a	1121	\$1,344,918	\$1,441,752	\$576,701	\$384,467	\$138,408	\$51,903	\$76,893	\$1,228,373	\$61,419	
1151010	NORTH HINSDALE WATER DEPT	675	0.97	1a	1128	\$1,354,200	\$1,451,702	\$580,681	\$387,121	\$139,363	\$52,261	\$77,424	\$1,236,850	\$61,843	
1361010	LISBON WATER DEPT	690	0.99	1a	1133	\$1,359,605	\$1,457,497	\$582,999	\$388,666	\$139,920	\$52,470	\$77,733	\$1,241,787	\$62,089	
1621010	PENNICHUCK WATER WORKS	695	1.00	1a	1134	\$1,361,381	\$1,459,400	\$583,760	\$389,173	\$140,102	\$52,538	\$77,835	\$1,243,409	\$62,170	
231010	BERLIN WATER WORKS	700	1.01	1a	1136	\$1,363,144	\$1,461,290	\$584,516	\$389,677	\$140,284	\$52,606	\$77,935	\$1,245,019	\$62,251	
851010	FRANKLIN WATER WORKS	700	1.01	1a	1136	\$1,363,144	\$1,461,290	\$584,516	\$389,677	\$140,284	\$52,606	\$77,935	\$1,245,019	\$62,251	
1241010	KEENE WATER DEPT	700	1.01	1a	1136	\$1,363,144	\$1,461,290	\$584,516	\$389,677	\$140,284	\$52,606	\$77,935	\$1,245,019	\$62,251	
201010	BELMONT WATER DEPT	710	1.02	1a	1139	\$1,366,632	\$1,465,030	\$586,012	\$390,675	\$140,643	\$52,741	\$78,135	\$1,248,205	\$62,410	
381010	CARROLL WATER WORKS	713	1.03	1a	1140	\$1,367,669	\$1,466,141	\$586,456	\$390,971	\$140,750	\$52,781	\$78,194	\$1,249,152	\$62,458	
511010	CONWAY VILLAGE FIRE DIST	750	1.08	1a	1150	\$1,380,111	\$1,479,479	\$591,792	\$394,528	\$142,030	\$53,261	\$78,906	\$1,260,516	\$63,026	
1201010	HUDSON WATER DEPT	750	1.08	1a	1150	\$1,380,111	\$1,479,479	\$591,792	\$394,528	\$142,030	\$53,261	\$78,906	\$1,260,516	\$63,026	
382010	ROSEBROOK WATER	800	1.15	1a	1163	\$1,395,983	\$1,496,494	\$598,597	\$399,065	\$143,663	\$53,874	\$79,813	\$1,275,013	\$63,751	
1181020	HOOKSETT VILLAGE WATER PCT	800	1.15	1a	1163	\$1,395,983	\$1,496,494	\$598,597	\$399,065	\$143,663	\$53,874	\$79,813	\$1,275,013	\$63,751	
1051010	AQUARION WATER/NH	826	1.19	1a	1170	\$1,403,848	\$1,504,926	\$601,970	\$401,313	\$144,473	\$54,177	\$80,263	\$1,282,197	\$64,110	
1531010	MERRIMACK VILLAGE DIST	850	1.22	1a	1176	\$1,410,892	\$1,512,476	\$604,991	\$403,327	\$145,198	\$54,449	\$80,665	\$1,288,630	\$64,431	
1051010	AQUARION WATER/NH	877	1.26	1a	1182	\$1,418,583	\$1,520,721	\$608,288	\$405,525	\$145,989	\$54,746	\$81,105	\$1,295,654	\$64,783	
1201010	HUDSON WATER DEPT	925	1.33	1a	1193	\$1,431,687	\$1,534,769	\$613,908	\$409,272	\$147,338	\$55,252	\$81,854	\$1,307,623	\$65,381	
511030	NORTH CONWAY WATER PCT	1000	1.44	1a	1209	\$1,450,860	\$1,555,322	\$622,129	\$414,753	\$149,311	\$55,992	\$82,951	\$1,325,135	\$66,257	
1531010	MERRIMACK VILLAGE DIST	1000	1.44	1a	1209	\$1,450,860	\$1,555,322	\$622,129	\$414,753	\$149,311	\$55,992	\$82,951	\$1,325,135	\$66,257	
1531010	MERRIMACK VILLAGE DIST	1000	1.44	1a	1209	\$1,450,860	\$1,555,322	\$622,129	\$414,753	\$149,311	\$55,992	\$82,951	\$1,325,135	\$66,257	
2571020	WOODSTOCK WATER DEPT	1000	1.44	1a	1209	\$1,450,860	\$1,555,322	\$622,129	\$414,753	\$149,311	\$55,992	\$82,951	\$1,325,135	\$66,257	
1951010	PORTSMOUTH WATER WORKS	1075	1.55	1a	1224	\$1,468,646	\$1,574,389	\$629,755	\$419,837	\$151,141	\$56,678	\$83,967	\$1,341,379	\$67,069	
251010	PENACOOK BOSCAWEN WATER PCT	1100	1.58	1a	1229	\$1,474,300	\$1,580,450	\$632,180	\$421,453	\$151,723	\$56,896	\$84,291	\$1,346,543	\$67,327	
1561010	MILFORD WATER UTILITIES DEPT	1100	1.58	1a	1229	\$1,474,300	\$1,580,450	\$632,180	\$421,453	\$151,723	\$56,896	\$84,291	\$1,346,543	\$67,327	
1781010	GROVETON WATER SYS	1200	1.73	1b	1473	\$1,767,644	\$2,075,214	\$830,086	\$553,390	\$199,221	\$74,708	\$110,678	\$1,768,082	\$88,404	
1531010	MERRIMACK VILLAGE DIST	1220	1.76	1a	1250	\$1,499,764	\$1,607,747	\$643,099	\$428,732	\$154,344	\$57,879	\$85,746	\$1,369,800	\$68,490	
2111010	SEABROOK WATER DEPT	1220	1.76	1a	1250	\$1,499,764	\$1,607,747	\$643,099	\$428,732	\$154,344	\$57,879	\$85,746	\$1,369,800	\$68,490	
2351010	TILTON NORTHFIELD WATER DIST	1300	1.87	1a	1263	\$1,515,383	\$1,624,491	\$649,796	\$433,198	\$155,951	\$58,482	\$86,640	\$1,384,066	\$69,203	
1861010	PEMBROKE WATER WORKS	1325	1.91	1a	1267	\$1,520,068	\$1,629,513	\$651,805	\$434,537	\$156,433	\$58,662	\$86,907	\$1,388,345	\$69,417	
301010	BRISTOL WATER WORKS	1380	1.99	1a	1275	\$1,530,070	\$1,640,235	\$656,094	\$437,396	\$157,463	\$59,048	\$87,479	\$1,397,480	\$69,874	
501010	CONCORD WATER DEPT	1388	2.00	1a	1276	\$1,531,492	\$1,641,759	\$656,704	\$437,802	\$157,609	\$59,103	\$87,560	\$1,398,779	\$69,939	
1941010	PLYMOUTH VIL WATER AND SEWER	1700	2.45	1a	1318	\$1,581,357	\$1,695,215	\$678,086	\$452,057	\$162,741	\$61,028	\$90,411	\$1,444,323	\$72,216	
511030	NORTH CONWAY WATER PCT	2100	3.02	1a	1361	\$1,633,324	\$1,750,924	\$700,370	\$466,913	\$168,089	\$63,033	\$93,383	\$1,491,787	\$74,589	
ESTIMATED TOTAL								\$477,258,705						\$406,624,417	\$20,331,221

The total cost to replace these facilities in 2010 dollars was estimated to be \$477M for ground water pump/treatment facilities in the State of New Hampshire. Over the 20 year period, the Component Replacement Cost was determined to be \$407 M, summarized in Table G-4 below.

**TABLE G-4
PROJECTED GROUND WATER PUMP/TREATMENT FACILITY REPLACEMENT
COSTS IN NEW HAMPSHIRE**

Type of Treatment	Estimated Number of Water Systems in New Hampshire	Estimated 2010 Replacement Costs	Estimated 20-year Replacement Cost of System Components (2010) (\$)	Average Annual Expenditures for years 2010 through 2030 (\$/year)
Ground Water	506	\$477	\$407M	\$20.3

APPENDIX H
Booster Stations

APPENDIX H

BOOSTER STATIONS

H.1 METHODOLOGY FOR BOOSTER STATIONS

In general, because of their limited functions, booster stations tend to be of modest size. Moreover, the square foot footprint area of booster stations tends to be relatively similar because of the limited types of equipment they often house despite differences in pumping rates. Moreover, because booster stations exist to serve a limited number of customers located at higher elevations, stations located within large communities may be the same size and contain the same equipment as those set within smaller communities. As booster station capacities are not included in the DES database, capacity was not available for use in differentiating costs.

Collection of Known Project Costs: Cost information was compiled for a set of recent and historical booster stations. Six of these were from New Hampshire DES records and seven were from recent projects from Wright-Pierce records. These projects included construction costs and also other development costs (planning studies, engineering, financing, and administration) when these could be found which were combined to result in a "Total Developed Cost" for each facility. Table H-1 shows the cost set collected. Land purchase costs were not generally available and are therefore excluded from the analysis.

Indexing to Current Year and Averaging: Compiled example constructed project costs (Table H-1) were normalized to 2010 using a construction cost index (in this case the Engineering News Record's 20-City Construction Cost Average). After normalizing Total Developed Costs to the year 2010, they were averaged to determine a representative 2010 cost (\$430,000) to replace an existing booster station with a new one.

Table H-1: Cost Set for Example Booster Stations from New Hampshire and around New England

Enter Date and 20-City ENR CCI Index being used **8951**
 Enter Date for Index **Nov-10**

Name of Facility, Location, Project Number	Features	L (ft)	W (ft)	Square Footage	Project Year	ENR CCI	Actual Construction Cost	Development/E engineering Cost	Actual Total Developed Cost for Given Date	Actual Total Developed Cost indexed	Cost/SF
Silver Hill Booster Pump Station, Haverhill, MA - 11403 (Masonry Building)	Generator	36.7	21.7	794	11/5/2009	8592	\$539,395	\$92,400	\$631,795	\$658,193	\$795
York White Pines Booster - 7102	Generator	24.0	20.0	480	3/7/2001	6343	\$240,000	\$32,000	\$272,000	\$383,836	\$567
Millvale Village Booster Sta - Haverhill, Ma - 10480 (wood framed building; built by developer)	Generator	36.7	21.7	794	2004	7308	\$474,000	\$96,000	\$570,000	\$698,149	\$718
Knickerbocker Lake Intake and Pump Station, Boothbay Region Water Dist - 10510		30.0	22.0	660	4/19/2005	7355	\$590,775	\$62,311	\$653,086	\$794,803	\$990
East Boothbay Interconnection and Pump Station - 10259C	Generator	24.0	20.0	480	Feb-04	6862	\$410,000	\$63,000	\$473,000	\$616,995	\$985
Rye Water District Washington Rd Booster PS - 6606		12.7	14.7	186	10/10/1995	5471	\$94,400	\$7,500	\$101,900	\$166,717	\$549
Lake Arrowhead Community (No. Waterboro) Tank & Booster PS - 10109		11.3	9.3	106	2003	6782	\$170,175	\$25,400	\$195,575	\$258,123	\$1,849
Tilton/Northfield Water District Winter St Booster Sta Upgrade*				433	21/2010	8672	\$353,700	\$75,600	\$429,300	\$443,112	\$991
PWW Nashua *				475	2009	8566	\$251,993	\$10,000	\$261,993	\$273,768	\$552
Bristol WD Bristol*				334	2009	8566	\$465,000	\$74,000	\$539,000	\$563,225	\$1,614
Vista Ridge, Manchester*					2004	7115			\$240,000	\$301,931	-
Hackett Hill, Manchester*					1991	4835			\$105,000	\$194,386	-
Derryfield, Manchester*					1974	2020			\$55,000	\$243,715	-
Averages				474					\$430,535	\$961	
standard deviation				231					\$212,516	\$447	

* provided by NHDES

** Insufficient information to use

Assigning a 2010 Replacement Cost to Booster Station Inventory: Estimated costs are normally assigned by applying a model equation created from the dataset of costs derived from example constructed projects, as was done for the Surface Water Treatment and Ground Water Treatment Facilities. In the case of booster stations, there was no available linking factor recorded in the dataset to which a model could be applied (such building square footage). For this reason, The average of booster station total developed cost was assigned to each booster station in the NH database inventory of booster stations (\$430,000).

Adjustment by Building Asset Components:

The apportionment by Building Asset Component was made as described in Appendix E.

Adjustment by Service Life Factor: The next step in determining the 20-year need, is to assign a "service life" to the systems and equipment assets represented by each of the Building Asset Components. A calculation is made to adjust each estimated trade discipline cost by the expected service life of the asset. In the model, the 20 years of the cost period are divided by service life to create a ratio factor applied to each trade discipline division percent of cost. This is described in detail in Appendix E. The share of construction cost by skilled construction trade division and estimated service life for booster facilities is shown in Table H-2.

**TABLE H-2
COST AND EST SERVICE LIFE OF BOOSTER PUMP STATION COMPONENTS**

Division	Share of Cost by Construction Division	Assumed Replacement Cycle, yrs
Civil/Site	10%	75
Structural	15%	100
Architectural	15%	25
Process/Mechanical	35%	15
Electrical/Inst/Telemetry	25%	15
Total % of Construction Cost	100%	

Combining Components and Service Life to Arrive at a 20 Year Need: The steps described above are combined in the following way to determine the 20-year replacement costs:

20-Year Investment Need =

$$\sum[(\text{Total Developed Cost Indexed to 2010}) \times (\text{Bldg Assed Class \% Share of Cost}) \times \left(\frac{20 \text{ yr Horizon}}{\text{Bldg Asset Class. Service Life}}\right)]$$

The calculations and results are presented in the spreadsheet Table H-3 included in this Appendix. Cost results are presented in Table H-4, below. The 20-year costs are somewhat higher than the 2010 estimated replacement cost. This is most likely because a booster station has a smaller footprint compared to other facilities, such that the Building Assets with the longer service lives tend to make up a smaller proportion of the facility's cost.

TABLE H-4
PROJECTED BOOSTER STATION REPLACEMENT COSTS IN NEW HAMPSHIRE

Type of Treatment	Estimated Number of Booster Stations in New Hampshire	Estimated 2010 Replacement Costs	Estimated 20-year Replacement Cost (2010 \$)	Average Annual Expenditures for years 2010 through 2030 (\$/year)
Ground Water	115	\$43.4	\$48.3M	\$2.4

Table H-3: NEW HAMPSHIRE BOOSTER STATION DATASET COST ESTIMATE

Number of Stations 115
Estimated 2010 Booster Station Cost \$430,000
Date Nov-10
ENR 8951

20-YEAR INVENTORY COMPONENT REPLACEMENT
Estimated Replacement Year Cycle 15 15 25 100 75
Share of Construction Cost by Discipline 35% 25% 15% 15% 10%

EPA ID	System Name	Town	Booster Station	2010 Est Total Developed Cost	Mechanical/ Process	Electrical/ Instrumentation	Architectural	Structural	Civil	Total 20-Year Replacement Cost	Annual	
				\$49,450,000						TOTAL	\$48,296,167	\$2,414,808
43050	HOLIDAY ACRES	ALLENSTOWN	Lower pump house	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
192070	CABOT PRESERVE	BEDFORD	Main pumphouse	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
192050	POWDER HILL	BEDFORD	Main pumphouse	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
192080	LITTLE POND ESTATES	BEDFORD	County Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
231010	BERLIN WATER WORKS	BERLIN	Cates Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
231010	BERLIN WATER WORKS	BERLIN	Hill St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
231010	BERLIN WATER WORKS	BERLIN	Church St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
231010	BERLIN WATER WORKS	BERLIN	Guilmette St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
234010	NORTHERN NH CORRECTIONAL FAC	BERLIN	Main pumphouse	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
251010	PENACOOK BOSCAWEN WATER PCT	BOSCAWEN	Water St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
301010	BRISTOL WATER WORKS	BRISTOL	Hillside Ave	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
341030	WATERVILLE ESTATE VLG DIST/W	CAMPTON	Ski Bowl	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
341030	WATERVILLE ESTATE VLG DIST/W	CAMPTON	Great Brook	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
411010	CHARLESTOWN WATER WORKS	CHARLESTOWN	Summit Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
411010	CHARLESTOWN WATER WORKS	CHARLESTOWN	Stevens St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
411010	CHARLESTOWN WATER WORKS	CHARLESTOWN	Michael Ave	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
461010	CLAREMONT WATER DEPT	CLAREMONT	Bible Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
501010	CONCORD WATER DEPT	CONCORD	Mountain Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
501010	CONCORD WATER DEPT	CONCORD	Penacook St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
511030	NORTH CONWAY WATER PCT	CONWAY	Kearsarge Estates	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
611010	DERRY WATER DEPT	DERRY	Scobie Pond	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
611010	DERRY WATER DEPT	DERRY	Overlook	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
611010	DERRY WATER DEPT	DERRY	East Gate	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
611010	DERRY WATER DEPT	DERRY	Hillcrest	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
611010	DERRY WATER DEPT	DERRY	Lindlew	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
611010	DERRY WATER DEPT	DERRY	Old Coach	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
611010	DERRY WATER DEPT	DERRY	Pond Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
691010	UNH/DURHAM	DURHAM	Madbury Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
801010	EXETER WATER DEPT	EXETER	Epping Road	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
801010	EXETER WATER DEPT	EXETER	Hampton Road	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
851010	FRANKLIN WATER WORKS	FRANKLIN	Pleasant St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
851010	FRANKLIN WATER WORKS	FRANKLIN	Babbit Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
911010	GOFFSTOWN VILLAGE PCT	GOFFSTOWN	Tyler Dr	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
911020	GRASMERE WATER PCT/MAIN	GOFFSTOWN	Juniper Dr	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
921010	GORHAM WATER AND SEWER DEPT	GORHAM	Cascade	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
951010	VILLAGE DIST OF EASTMAN	GRANTHAM	Snow Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
951010	VILLAGE DIST OF EASTMAN	GRANTHAM	Anderson Pond	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1051010	AQUARION WATER/NH	HAMPTON	Mill Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1071010	HANOVER WATER DEPT	HANOVER	Balch Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1071010	HANOVER WATER DEPT	HANOVER	Greensboro	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	

EPA ID	System Name	Town	Booster Station	2010 Est Total Developed Cost	Mechanical/ Process	Electrical/ Instrumentation	Architectural	Structural	Civil	Total 20-Year Replacement Cost	Annual
1101040	WOODSVILLE WATER AND LIGHT	HAVERTHILL	Swiftwater	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1181010	CENTRAL HOOKSETT WATER PCT	HOOKSETT	Granite Hill 1	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1181010	CENTRAL HOOKSETT WATER PCT	HOOKSETT	Granite Hill 2	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1181010	CENTRAL HOOKSETT WATER PCT	HOOKSETT	Campbell	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1181010	CENTRAL HOOKSETT WATER PCT	HOOKSETT	Glencrest	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1181020	HOOKSETT VILLAGE WP	HOOKSETT	Heads Pond	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1201010	HUDSON WATER DEPT	HUDSON	Compass Point	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1201010	HUDSON WATER DEPT	HUDSON	Marsh Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1201010	HUDSON WATER DEPT	HUDSON	Old Windham Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1201010	HUDSON WATER DEPT	HUDSON	Melendy	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1221010	JAFFREY WATER WORKS	JAFFREY	Prospect	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1241010	KEENE WATER DEPT	KEENE	Chapman Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1241010	KEENE WATER DEPT	KEENE	Black Brook	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1241010	KEENE WATER DEPT	KEENE	Glenn Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1241010	KEENE WATER DEPT	KEENE	Fox Circle	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1241010	KEENE WATER DEPT	KEENE	Drummer Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1281010	LACONIA WATER WORKS	LACONIA	Weirs	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1281010	LACONIA WATER WORKS	LACONIA	Aqua Soleil 1	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1281010	LACONIA WATER WORKS	LACONIA	Aqua Soleil 2	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1321010	LEBANON WATER DEPT	LEBANON	Prospect Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1321010	LEBANON WATER DEPT	LEBANON	DHMC	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1351010	LINCOLN WATER WORKS	LINCOLN	Loon	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1351010	LINCOLN WATER WORKS	LINCOLN	Boyce Brook	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1371010	PEU/LITCHFIELD	LITCHFIELD	Darah	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1371010	PEU/LITCHFIELD	LITCHFIELD	Colonial Dr	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1381010	LITTLETON WATER AND LIGHT DEPT	LITTLETON	Mount Eustis	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1381010	LITTLETON WATER AND LIGHT DEPT	LITTLETON	Hospital	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1381010	LITTLETON WATER AND LIGHT DEPT	LITTLETON	Manns Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1461010	VILLAGE DISTRICT OF EIDELWEISS	MADISON	Jung Frau	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1461010	VILLAGE DISTRICT OF EIDELWEISS	MADISON	Reinach	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1461010	VILLAGE DISTRICT OF EIDELWEISS	MADISON	Oak Ridge	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1461010	VILLAGE DISTRICT OF EIDELWEISS	MADISON	Chocorua	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1461010	VILLAGE DISTRICT OF EIDELWEISS	MADISON	Summit	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	Massabesic	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	West Side	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	Cohas	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	Derryfield	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	Hackett Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	Akira Way	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	Currier Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	Vista Ridge	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1471010	MANCHESTER WATER WORKS	MANCHESTER	Wellington Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1521010	MEREDITH WATER DEPT	MEREDITH	Ladd Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1521010	MEREDITH WATER DEPT	MEREDITH	Eighteen Mile Point	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1531010	MERRIMACK VILLAGE DIST	MERRIMACK	Turkey Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1531010	MERRIMACK VILLAGE DIST	MERRIMACK	Belmont Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1561010	MILFORD WATER UTILITIES DEPT	MILFORD	Ledgewood	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1621010	PENNICHUCK WATER WORKS	NASHUA	Timberline	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998
1621010	PENNICHUCK WATER WORKS	NASHUA	Main Dunstable	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998

EPA ID	System Name	Town	Booster Station	2010 Est Total Developed Cost	Mechanical/ Process	Electrical/ Instrumentation	Architectural	Structural	Civil	Total 20-Year Replacement Cost	Annual	
1621010	PENNICHUCK WATER WORKS	NASHUA	High Pine	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1621010	PENNICHUCK WATER WORKS	NASHUA	Coburn Ave	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1621010	PENNICHUCK WATER WORKS	NASHUA	Shakespeare	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1621010	PENNICHUCK WATER WORKS	NASHUA	Skymeadow	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1621010	PENNICHUCK WATER WORKS	NASHUA	Orchard Ave	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1721010	NEW LONDON SPRINGFIELD WATER	NEW LONDON	Colby-Sawter	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1731010	NEWMARKET WATER DEPT		Folsom Dr	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2351010	TILTON NORTHFIELD WATER DIST	NORTHFIELD	Winter St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1851010	PEU/WILLIAMSBURG	PELHAM	Stonegate	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1871010	PETERBOROUGH WATER WORKS	PETERBOROUGH	Steele Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1871010	PETERBOROUGH WATER WORKS	PETERBOROUGH	Cheney	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1941010	PLYMOUTH VIL WATER AND SEWER	PLYMOUTH	Reservoir Road	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
1971010	RAYMOND WATER DEPT	RAYMOND	Sun Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2001010	ROCHESTER WATER DEPT	ROCHESTER	Gina Dr	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2001010	ROCHESTER WATER DEPT	ROCHESTER	Ten Rod Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2001010	ROCHESTER WATER DEPT	ROCHESTER	Richardson St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2041010	RYE WATER DIST	RYE	Washington Road	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2051010	SALEM WATER DEPT	SALEM	Manor Parkway	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2051010	SALEM WATER DEPT	SALEM	Nirvana	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2351010	TILTON NORTHFIELD WD	TILTON	Winter St	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2401010	WALPOLE WATER DEPT	WALPOLE	Reservoir Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2411010	WARNER VILLAGE WATER DIST	WARNER		\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2441010	WATERVILLE VALLEY WATER DIST	WATERVILLE	Cascade Ridge Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2501010	WHITEFIELD WATER	WHITEFIELD	Bray Hill	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2561010	WOLFEBORO WATER AND SEWER	WOLFEBORO	Kingswood	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
2561010	WOLFEBORO WATER AND SEWER	WOLFEBORO	Middleton Rd	\$430,000	\$200,667	\$143,333	\$51,600	\$12,900	\$11,467	\$419,967	\$20,998	
count = 115				\$49,450,000						Total 20-Yr & Ann	\$48,296,167	\$2,414,808

Component 20-Year Replacement Cost = $\sum [(\text{Current Yr Total Developed Cost}) \times (\text{Division \% Share}) \times (20 \text{ yr Horizon} / \text{Est'd Div Service Life})]$