

**Water Supply System Management Plan
Executive Summary**

North Tiverton Fire District

May 2012

(Updated October 2014)

Executive Summary

(1) Introduction

The North Tiverton Fire District (NTFD) is pleased to submit to the Water Resources Board (WRB) its Water Supply System Management Plan (WSSMP) in accordance with Rhode Island General Law 46-15.3-5.1, Public Drinking Water Supply System Protection. This Executive Summary contains the information pursuant to Rhode Island General Law 46-15.3-7.5 (c).

This WSSMP builds upon the last submittal by NTFD dated May 2007 and includes all pertinent data through 31 December 2011. The following components, and their sub-components, are addressed in the plan to the extent that they are relevant to NTFD: System Goals and Description, Supply Management, Demand Management, System Management, Emergency Management, Drought Management, and Financial Management. Highlights of the NTFD's accomplishments identified in WSSMP are listed below.

- Completed the last phase of a major capital improvement plan with the complete refurbishment of the State Avenue Pumping Station and the replacement of nearly three quarters of a mile of water main as part of the Hilton Street Area Water Main Replacement project. The earlier phase of the plan included the construction of the Stafford Road Pumping Station and the two-million gallon water tank on Pocasset Avenue. The emergency interconnection with the Stone Bridge Fire District along Fish Road to the Industrial Park was also constructed during the initial phase.
- Upgraded its entire computing and billing system, replaced its entire fleet of two service vehicles, and added a compressor to its inventory of major tools.
- Increased the volume of water sold from 143.2 million gallons per year in 2006 to 167.9 million gallons per year in 2011 (+17.2%).
- Maintained per capita Average Daily Demand in the district at 44.9 gallons for residential customers in 2011, well below the Water Resources Board's target of 65 gallons.
- Reduced non-account water to 5.1% and leakage to 0.04% of all purchased water in 2011.
- Determined sufficient water availability and capability to distribute for the 5-year and 20-year planning periods based upon projected population growth.
- Negotiated a new water supply contract with the City of Fall River, MA.
- Maintained the same water rates since FY09 through FY12 while its two suppliers, The City of Fall River and the Stone Bridge Fire District, have increased their price of water to NTFD by 17.5% and 25.9% respectively, over the same time period.
- Implemented electronic read meters to 63.3% of accounts in a continuing effort that is expected to be completed by the end of 2016.

- Maintained an overall balanced budget while steadily increasing funds in the stabilization and reserve accounts.
- Initiated improvements to its meter-read to bill-mail cycle in anticipation of the transition from a four-month to a quarterly billing cycle beginning in January of 2014.
- Included reporting data in the WSSMP in accordance the Water Resources Board's Water Use and Efficiency Act Rule which was adopted May 16, 2011.
- Moved its administrative office into a newly refurbished handicap-accessible building across the street from its old headquarters.

The October 2014 Update incorporates responses to comments resulting from review by the Water Resources Board of the May 2012 WSSMP submittal.

(2) Background

North Tiverton Fire District (NTFD) was established by legislation titled "An Act to Incorporate the North Tiverton Fire District and to Furnish a Supply of Water for the Town of Tiverton" which was signed into Rhode Island state law on April 24, 1926. The Act became effective on November 3, 1926 with its approval by the qualified electors of the town on November 2, 1926 and its approval by the Tiverton Town Council on the following day. The Act has been amended in each of the following years: 1927, 1940, 1947, 1948, 1951, 1956, 1975, 1982, 1993, 2002, 2003, and 2009. The 2003 amendment (H-6273) is the last to include the full text of the Act. The 2009 amendment delineates the exact boundaries of the district. The former Tiverton Water Authority (TWA) was dissolved and incorporated into the North Tiverton Fire District by legislative action in July of 2003 and took effect upon the transfer of assets in June of 2004.

NTFD is an independent quasi-municipal agency providing water for drinking and fire protection purposes within a designated service area in the Town of Tiverton, Rhode Island. Its owners are the qualified electors (members of the district) that own property within the boundaries of the district. In addition to taxing authority, NTFD has the powers generally incident to a corporation.

(3) General System Description

A general system description is contained in the following paragraphs.

(i) Water Supply Sources

NTFD purchases treated water from two suppliers, the City of Fall River and the Stone Bridge Fire District. NTFD has no surface water sources of its own. There are two primary metered

interconnections between NTFD and the City of Fall River, and three primary metered interconnections between NTFD and the Stone Bridge Fire District.

(ii) Water Treatment Facilities

Water purchased from the City of Fall River and the Stone Bridge Fire District meets the drinking water quality standards of State of Rhode Island's Department of Health. NTFD tests water quality as it enters into its distribution system from both sources at its three pumping stations. Chlorine, fluoride, and sodium hexametaphosphate are added, as required. There is no need for additional treatment facilities to maintain or improve water quality from NTFD's supply sources.

(iii) Storage Facilities

NTFD has three water storage facilities that form part of its distribution system: a one-million gallon ground-level reservoir on Hambly Road, a two-million gallon standpipe tank on Pocasset Avenue, and a one-million gallon standpipe tank on Quintal Drive.

The Pocasset Avenue tank receives water from the pumping stations at State Avenue and Carey Lane. This tank feeds the Hambly Road reservoir and also feeds directly into the distribution system. The Quintal Drive tank receives water pumped directly from the Stone Bridge Fire District's Treatment Plant.

(iv) Pumping Stations

NTFD has three pressure boosting pumping stations: one at State Avenue, one at Carey Lane, and one at Stafford Road. These three pumping stations are integrated into the two separate pressure zones of NTFD's water distribution system. The State Avenue and Carey Lane pumping stations feed the NT pressure zone and the Pocasset Avenue storage facility. The Stafford Road pumping station feeds the TWA pressure zone and the Quintal Drive storage facility.

(v) Raw Water and Finished Water Transmission Facilities

The NTFD distribution system consists of approximately 47.7 miles of transmission line pipe for finished water, and no transmission line pipes for raw water. The system was initially developed in the late 1920's with the majority of the piping installed between 1940 and 1980. Pipe lines are primarily unlined cast iron or cement lined ductile iron. NTFD has implemented an infrastructure rehabilitation program that has resulted in significant improvements to the system's operational efficiency. Portions of the distribution system pipe are replaced each year. NTFD maintains a database of pipe segments by street which contains

the following information: pipe size, pipe length, pipe material, and year pipe was installed. Pipe lines are categorized for replacement as Urgent, High, Medium, or Low priority based upon several factors. These factors include water quality, water volume, frequency of breaks, adequacy for fire protection, etc. There currently are no pipe lines classified as Urgent need of replacement.

There are two primary transmission lines in NTFD's water distribution system. The first primary transmission line delivers water from the State Avenue and Carey Lane pumping stations along Main Road, also called Route 138. The second primary transmission line delivers gravity fed water to Industrial Way through Fish Road to the Pocasset Avenue storage facility.

(vi) Distribution Facilities Including Low to High Service

This section is not applicable to North Tiverton Fire District.

(vii) Planned Extensions

There are no plans to extend the boundaries of the North Tiverton Fire District service areas. The NT service area is almost at maximum capacity for service connections with little room for expansion. Most of the TWA service area does not have access to water mains due to its rural environment. Residents and commercial enterprises obtain water primarily from private wells. Eligible areas for future service connections are those few individual locations that currently have access to an existing water main or an occasional new housing development that has one installed.

(viii) Interconnections

NTFD has five primary water interconnections, two with the City of Fall River and three with the Stone Bridge Fire District. The interconnections with the City of Fall River are at the State Avenue Pumping Station and the Stafford Road Pumping Station. The interconnections with the Stone Bridge Fire District are at the Carey Lane Pumping Station, North Brayton Road, and Quintal Drive. All five of these interconnections are metered.

(ix) Populations Served and Projections

According to the 2000 and 2010 United States Census, the Town of Tiverton's population increased from 15,260 to 15,780 over the last ten years. This is an increase of only 3.4%. The NT service area's estimated population increased from 6,078 to 6,135, of which 5,999 (97.8%) are provided water, and 136 are eligible to be served. The TWA service area's estimated population increased from 6,694 to 7,059, of which only 1,567 (22.2%) are provided water, and 5,492 are eligible to be served. The population

estimates were derived by mapping both 2000 and 2010 United States Census data to the service areas of the North Tiverton Fire District by census tract, block group, and block.

Based upon three different growth scenarios (Current Trend of 3.41%, Moderate Increase of 5.0%, and High Increase of 7.0%) over the next two decades, estimates of the town’s projected population are shown in the table for the 5-year and 20-year planning periods. The Population Projection of 16,891 in 2030, based upon the Current Growth Trend, is within 50 (2.97%) people of the Town’s Population projection of 16,841 as detailed in the Town of Tiverton’s Comprehensive Community Plan, last revised in 2009.

Town of Tiverton Population Projections

Year	Current Trend 3.41% Growth	Moderate Increase 5.0% Growth	High Increase 7.0% Growth
2010 (Actual)	15,780	15,780	15,780
2015 (Projection)	16,051	16,178	16,340
2030 (Projection)	16,891	17,435	18,142

Based upon these projections, the projected NT and TWA service area residential populations with supplied drinking water are shown in the tables for the 5-year and 20-year planning periods. Using current data, the percentage of residential population supplied drinking water in the NT and TWA service areas is 98.8% and 20.4% respectively. These percentages are not expected to change in the future as nearly all of NT service area residential homes, in a mostly urban setting, have access to district water mains and approximately 20% of TWA service area residential homes, in a mostly rural setting, have access to district water mains. The estimates of population supplied with water are utilized later in this report to calculate total projected future water use.

NT Population Projections (with Supplied Water)

Year	Current Trend 3.41% Growth	Moderate Increase 5.0% Growth	High Increase 7.0% Growth
2010 Calculated	6,135 (6,060)	6,135 (6,060)	6,135 (6,060)
2015 Projection	6,240 (6,164)	6,290 (6,213)	6,353 (6,275)
2030 Projection	6,567 (6,487)	6,779 (6,696)	7,053 (6,967)

TWA Population Projections (with Supplied Water)

Year	Current Trend 3.41% Growth	Moderate Increase 5.0% Growth	High Increase 7.0% Growth
2010 Calculated	7,059 (1,440)	7,059 (1,440)	7,059 (1,440)

2015 Projection	7,180 (1,465)	7,237 (1,476)	7,310 (1,490)
2030 Projection	7,556 (1,541)	7,799 (1,591)	8,116 (1,656)

(x) Major Users

NTFD’s only one major water user is the Tiverton Power Authority (TPA) which produces electricity. It is classified as an Industrial user. Its average annual projected future water use is shown in the table. TPA’s annual water usage for 2011 was 16.1 MG.

(xi) Metering

The NTFD has five master meters, two measuring water at the primary interconnections with the City of Fall River and three measuring water at the primary interconnections with the Stone Bridge Fire District.

100% of NTFD’s over 3,000 accounts are metered. This includes all residential, commercial, government accounts, as well as its one industrial account. NTFD sells water to two commercial water companies that supply water for pools. These companies fill their trucks at local hydrants using temporary meters intended for this purpose.

NTFD has only one major user, the Tiverton Power Authority. Its two meters were installed in 2001 and the entire plant was officially incorporated into North Tiverton Fire District in 2006. Both meters are read monthly and checked annually.

NTFD began the conversion from manual read to electronic read meters on April 13, 2004. As of the end of 2011, 1,921 (63.3%) of NTFD’s 3,036 meters have been converted. At the installation rate of between 200 and 250 meters per year, NTFD anticipates the conversion to be completed by the end of 2016. The meter conversion rate is almost entirely based upon available funding.

(xii) Legal agreements

NTFD has legal agreements with its two suppliers of water, the City of Fall Fiver and the Stone Bridge Fire District.

(xiii) Leakage

Non-account water is defined as the total of all purchased water minus all water sold within a given period of time, typically a year. All water purchased from the Stone Bridge Fire District and the City of Fall River is metered. Non-account water, or unmetered water, is therefore the total of all metered water purchases minus the total of all metered water sales. This includes water in the following categories: Fire

Fighting, Water Main Flushing, Water Quality Testing, Construction, Theft, Meter Error, Water Main or Service Breaks. The amount of NTFD's non-account or unmetered water for 2011 is 9.1MG, 5.1% of water purchased from all sources.

Leakage is defined as the total of all non-account or unmetered water for the year minus all non-account or unmetered water estimated by specific category, as identified above. NTFD's total leakage for 2011 is estimated to be 77.3 KG. 0.85% of all unmetered water or 0.04% of water purchased from all sources. NTFD has instituted a leak detection program , and is aggressive in repairing any leaks, either to water mains or service connections, as rapidly as possible upon identification.

(xiv) Demand Management

Based upon the Water Resources Board's 2010 Annual Report, NTFD has the second highest water rate in the state. The high rate is primarily due to the high price NTFD pays for water from its suppliers. The consequence of the high water rate is that it inherently promotes and encourages water conservation, a behavioral characteristic typically not well practiced in a suburban community with large lawns and numerous pools. NTFD's 44.9 gallons per capita Average Daily Demand (ADD) for 2011 is evidence of the general practice of water conservation by the water users of the district. This figure is well within the 65 gallon per capita ADD target established by the Water Resources Board.

Additional measures to promote conservation include the following: conservation message printed on all users' water bills, conservation pamphlets available to users, and conservation retrofit kits available to users. NTFD routinely donates to the Tiverton Conservation Commission for its work on the Stafford Pond Watershed Program, which teaches water preservation and conservation to all fourth graders at the Pocasset, Fort Barton and Ranger schools.

(xv) Supply Management

NTFD purchases treated water from two sources, the City of Fall River and the Stone Bridge Fire District.

The City of Fall River obtains its water from North Watuppa Pond, located to the east of the city. North Watuppa Pond, with a volume of about 8 billion gallons, has a watershed area of approximately 9.2 square miles and a safe daily yield reported to be between 8.5 and 9.0 MGD. North Watuppa Pond has been utilized as a potable water supply since the late 1870's. Copicut Reservoir, with a volume of about 3 billion gallons, was developed by the city as an additional source of supply in 1975. Water is pumped from Copicut Reservoir, which has a watershed area of about 5.8 square miles, on an as-needed basis to maintain the level in North Watuppa Pond. The safe daily yield of Copicut Reservoir is reported to be

					(Actual)		
Fall River	600 ¹	600 ¹	1,600 ³	1,600 ³	509.3	541.4	608.4
Stone Bridge	700 ²	700 ²	750 ⁴	750 ⁴			
Total	1,300	1,300	2,350	2,350	509.3	541.4	608.4

Notes: 1. 600 KG is based upon contractual availability. The City of Fall River encourages NTFD to purchase all of the water it can.

2. 700 KG is based upon historical usage. Stone Bridge Fire District encourages NTFD to purchase all of the water it can.

3. 800 KG is for each of the State Avenue Pumping Station and the Stafford Road Pumping Station.

4. 350 KG is for Carey Lane Pumping Station, and 200 KG is for each of the Quintal Drive metered connection and the North Brayton Road metered connection.

(xvii) Safe Yield

North Watuppa Pond has a safe daily yield reported to be between 8.5 and 9.0 MGD. The safe daily yield of Copicut Reservoir is reported to be between 6 and 6.5 MGD. Stafford Pond is reported to have a safe daily yield between 2.0 and 2.5 MGD.

(xviii) Anticipated Future Demands

Other than the addition of the occasional house, business, or housing development, North Tiverton Fire District has no anticipated future demands on its water treatment or distribution systems. There is a potential for the addition for a large mixed-use plaza off of Souza Road. NTFD is currently working with the Town and the engineering company for the developers to ensure proper tie-in to the NTFD water systems. There is adequate water to supply the needs of this future demand.

(xix) Capital Improvement

North Tiverton Fire District is at the end of a seven-year capital improvement program that began with the acquisition of the Tiverton Water Authority in 2004. Since then, NTFD has put a new 2-million gallon water tank into operation, constructed the Stafford Road Pump Station, expanded into a newly acquired and renovated administrative office building, refurbished and upgraded the State Avenue Pump Station, replaced nearly three quarters of a mile of 90-year old water main in the north end of the district, upgraded its entire computer and billing system, and purchased two new replacement service vehicles. Over the next five years, NTFD anticipates the following improvements.

(1) Replacement of approximately one quarter of a mile of street water main per year.

(2) Upgrades to two pumps at the Carey Lane Pump Station.

- (3) Replacement of nearly two miles of water main on Fish Road.
- (4) Painting of Quintal Drive water tank.

(xx) Rate Structure

NTFD’s water rate structure is a flat rate consumption charge based upon metered water usage, which includes a fixed charge for minimum usage. NTFD charges for initial water meters, service installations, applications, and inspections. Late fees are applied to water bills that are 45 days past due. The flat rate charged for water consumption is as follows.

Flat Rate Water Consumption Charge	\$4.10 per CCF
Minimum Fee	\$15 per Billing Period
Flat Rate Consumption Charge for Tiverton Power Authority	\$10.80 per 1,000 gallons
(The Flat Rate for TPA includes all district taxes.)	

Based upon the Water Resources Board’s 2010 Annual Report, NTFD has the second highest water rate in the state. The high rate is primarily due to the high price NTFD pays for water from its suppliers. The consequence of the high water rate is that it inherently promotes and encourages water conservation, and eliminates the need for a graduated or marginal water rate structure. NTFD’s Average Daily Demand (ADD) for 2011 is 44.9 gallons per capita, well below the 65 gallon per capita ADD target established by the WRB.

NTFD’s tax rate structure is based upon the Town of Tiverton’s valuation of assessed property (land, building, and tangibles), which includes a minimum fixed charge for taxes. Exemptions are given to the elderly and to veterans based upon the Town of Tiverton’s exemption process. Late fees are applied to tax bills that are 30 days past due.

Tax Rate	\$0.78 per \$1,000 of Assessed Value
Minimum Tax	\$2.00 per Annual Billing

(xxi) Financial Management

NTFD is an independent quasi-municipal water agency structured as a public corporate entity under the laws of Rhode Island. NTFD is self-supporting through the revenue it receives from water user charges, fees, and taxes. The aggregate budget for NTFD is prepared to incorporate revenue from water charges, fees and tax revenue. Also included are the costs of all operating expenses, payments on bonds, and the

cost of improving the treatment and distribution systems of the district. Water and tax rates are established by the Administrative Board, and tax rates are subject to approval by the members of the North Tiverton Fire District at the Annual Meeting held every June. The primary objective is to keep the water and tax rates as low as practical, while continuing to maintain a balanced budget, continuing to provide a high quality water product to our customers, and continuing to implement incremental improvements to the treatment and distribution systems over time.

Excess funds from the operating budget are held in NTFD's reserve accounts. The reserve accounts are the source of funds for cash flow stability, major improvement projects, and in the event of emergencies. In recent years, NTFD has utilized its reserve accounts only for purposes of stabilizing cash flow between billing cycles. Outside agencies are the source of funds for major improvement projects that typically require large amounts of up-front capital. The external agencies that are a source of funds for NTFD are the United States Department of Agriculture Rural Development (USDA RD) which has provided low interest loans with up to 45% project grant funds to rural areas of 10,000 population or less, and the Rhode Island Clean Water Finance Agency (RICWFA) which has provided low interest loans.

As of fiscal year-end 2011, NTFD's total long-term debt is \$3,523,667, spread over six loans, five with United States Department of Agriculture Rural Development (USDA RD) and one with Rhode Island Clean Water Finance Agency (RICWFA). Annual payments (interest and principle) over all six loans total to \$231,500.

NTFD's financial statements are prepared by Aceto & Associates (CPA) and financial audits are conducted annually by Carlucci & Dugan (CPA) in accordance with *Government Auditing Standards* issued by the Comptroller General of the United States for submittal to the USDA.

(xxii) Emergency Management

Varying degrees of emergency response depend on the scope of the situation and type of disaster or crisis. North Tiverton Fire District has an up-to-date Vulnerability Assessment (VA) and Emergency Response Planning Guide (ERPG) for both the NT and TWA service areas. Section 3, *Events that Cause Emergencies*, of the ERPG contains an assessment of the risk of events that cause emergencies including hurricanes, ice storms, contamination & chemical spills, mechanical failures, and droughts. Section 6, *Response Actions for Specific Events*, of the ERPG contains steps to be taken related to six emergency situations, consistent with State Guide Element 721: Rhode Island Water 2030.

Water supply emergency responses during different emergency conditions will depend upon the nature of the disaster or crisis, as it impacts the water sources of the City of Fall River and the Stone Bridge Fire District. During a drought situation, the level of service will be impacted when North Watuppa Pond or Stafford Pond falls less than 30 inches below full pond.

(xxiii) Water Supply Source Protection

North Tiverton Fire District has no water surface or ground water supply sources of its own. It purchases all of its water from the City of Fall River and the Stone Bridge Fire District at the drinkable quality level in accordance with Rhode Island Department of Health standards.

Stone Bridge Fire District has completed a Water Quality Protection Plan (WQPP) in accordance with the Rhode Island Water Quality Protection Act of 1987, which has been approved by the Water Resources Board. Details related to source water quality protection are available in SBFDF's Water Supply System Master Plan.

There are no known issues related to water protection on the Watuppa Pond in the City of Fall River. The source is completely fenced and used exclusively for water supply purposes.

(xxiv) General Policies shall be developed

NTFD has no additional policies other than those described in the Executive Summary and the text of the WSSMP.