

**GREENVILLE WATER DISTRICT
WATER SUPPLY MANAGEMENT PLAN FIVE YEAR PROGRESS
REPORT, UPDATED JANUARY 13th 2016**

(EXECUTIVE SUMMARY)

This progress report and supplemental update of necessary components and updated WSSMP issued as part of this submission represent the minor alterations (mostly usage data) with no significant system component updates. The Greenville Water District has made no major upgrades or updates since the approval of the 2007 plan, but this document included updates and progress on a 3.2 million dollar emergency connection plan currently I progress. Moving forward, the next 5 year update will include new facilities and distribution upgrades and will at that time require a comprehensive update of this plan.

Section 1 – Statement of Goals

The Greenville Water District's primary mission is to operate a water system for the benefit of and to meet the legitimate needs of the customers in the service area. In accordance with that mission the District's objectives are to:

1. Promote the efficient use of water through:
 - Efficient operation of the system in accordance with industry and state standards
 - Efficient use of water by the customers through effective metering and public information programs regarding wise use of water
2. Comply with all applicable laws and regulations.
3. Protect the integrity of existing source of supply connection to the Providence Water Supply Board.
4. Cooperate with the overall goals of the Town of Smithfield as outlined in the Town Comprehensive Plan
5. Provide for service to all locations within the service area.
6. Conform to the overall goals for water suppliers established in the State Guide Plan 721.

The District has adopted an additional goal to improve consistency of supply through interconnection of the transmission system with alternate suppliers. The District is implementing this goal through:

1. Developing engineering evaluations for alternative connections.
2. Requesting authority from the Town of Smithfield to connect to the Town system as an emergency interconnection which has been approved.

3. Developing a potential interconnection with the Town of Johnston's transmission system.

Water Supply Management Plan Progress Report

This section is to amend and update the approved Plan (2007) as required by the regulations. An updated system map with up to date progress is attached to this document. The map reflects the ongoing improvements that are currently underway and continuing work in progress.

Project Need / Background

The Greenville Water District currently did not have an emergency interconnection with any water system and relied solely on the primary supplier, Providence Water Supply Board. The Greenville Water District also had one storage tank that supplies water during peak demands and emergency situations. Installing an emergency interconnection between the Greenville Water District addressed the vulnerability to any failure of either systems single connection to Providence Water Supply Board. Additionally, the installation of a redundant water tank now provides the Smithfield Water Supply Board and the Greenville Water District with back up storage in the event that either tank for either system goes off line. This meets a critical public health and safety need for both systems. The interconnect is identified in the Town of Smithfield Comprehensive Community Plan and has been identified by the Rhode Island Water Resources Board as a beneficial interconnection in the northern region of Rhode Island.

Project Description

The project consists of approximately 4100' of new water main, a new 1 MG storage tank, and upgrades to the existing Mapleville Road pump station. Once completed, this station will pump to the new Burlingame Tank. The 12" PVC water main will be installed on Mann School Road from Colwell Road to Burlingame Road. Additional water main will be installed on an access road to the tank site off of Burlingame Road. The new water tank will be collocated alongside and interconnected to the Town of Smithfield's Burlingame Road .3 MG storage tank. Pump station upgrades will include bringing the below ground structure at the Mapleville Road storage tank above ground. There will be electrical upgrades and SCADA system updates to monitor and control the emergency connection.

Update

The majority of the project is now completed.

Phase 1 – 4100’ of 12” PVC water main	Status: Completed
Phase 2 – Construction of IMG Tank	Status: Completed
Phase 3 – Upgrade of Pump Station	Status: Substantially Completed

We anticipate the completion of the project to be late fall 2015. I have attached some supplemental data relevant to the connection as part of this document (system map with improvements).

Section 2 - System Description

Legal

The Greenville Water District is an independent water district providing water to a specific service area in the Greenville section of Smithfield. Water is also supplied to a small section of the Town of Johnston that abuts the service area and Smithfield. The District is established under state law with full authority to manage its business, as approved by qualified voters of the district. The Greenville Water District was incorporated as a quasi-municipal corporation in accordance with the Rhode Island Public Laws, 1955, Page 684, as amended.

As a wholesale customer of the Providence Water Supply Board, the Greenville Water District is also subject to various sections of the legislation that establishes and provides powers to the Providence Water Supply Board (Chapter 1278 of the Rhode Island Public Laws of 1915, as amended).

Organization

The owners of the Greenville District are the qualified taxpayers of the Town of Smithfield living in the District's service area. The qualified taxpayers are eligible to vote for the Executive Committee that consists of seven members, and the ten other officers of the District consisting of:

- 1 - Moderator
- 1 - Clerk
- 1 - Treasurer
- 3 - Tax Assessors
- 1 - Tax Collector
- 3 - Members of Board of Canvassers

The Executive Committee manages the business, property and affairs of the District. The Executive Committee elects a Chairman and Vice-Chairman from its own membership, establishes policy, approves budgets and employs a full time Superintendent who is in charge of the day to day operations of the District, including supervision of the District's staff. The Superintendent is responsible to the Executive Committee for all operations of the District's water system. The current staff, in addition to the Superintendent, includes three full time workers, one Transmission & Distribution Technician, one Meter Reader/Maintenance, and one Executive Secretary. Employees of the District other than the Superintendent are represented by Teamsters Local 251.

The District maintains its offices at 630 Putnam Pike, Greenville, Rhode Island 02828, and the telephone number is 401-231-1433.

System Overview

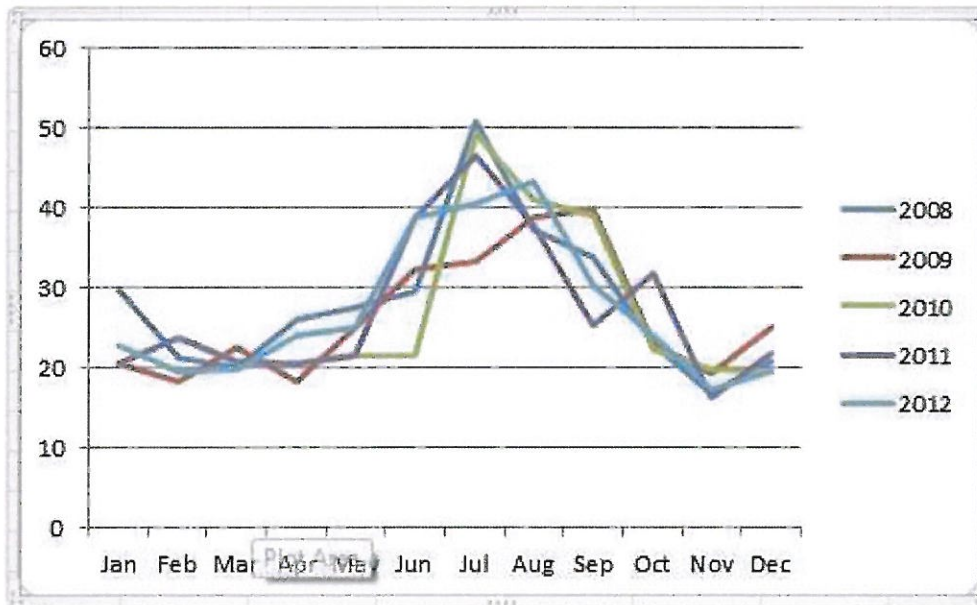
The Greenville Water District's water system has a shape that is like a large tree. The roots of the system are the connection point to the Providence Water Supply Board system, located near the intersection of Route 44 and George Waterman Road in the Town of Johnston. From the connection, the trunk of the system (major transmission line) proceeds westerly in Route 44 to a major pumping station on Route 44 (Putnam Pike) just east of the Route 44 intersection with Interstate 295. After passing under I295, the transmission proceeds westerly on Putnam Pike to eventually branch out to the various streets and roads consisting of the village of Greenville. The pattern resembles the branches of a large tree. Near the westerly extremis of the system and at a significantly higher elevation, a tall water storage tank is installed to allow for supply during peak

demands, emergency situations, and as a hydraulic head for the fire protection system in the service area. Water is delivered to the storage facility from two pumping stations, one located adjacent to the storage tank, and one located on Putnam Pike at the Waterman Lakes housing facility. Generally the system water volume and pressure is provided from continuous pumping at the primary pumping station just east of I295 with the storage facility providing flow and pressure during high demand periods. Appendix C includes a map describing the service area and a schematic representation of the water system.

Water Supply Source

The Greenville Water District continues to obtain all of its water supply by direct wholesale purchase from the Providence Water Supply Board. The District has one connection with Providence Water that is described in Figure 1 including an update for 2011 delivery from Providence to the District.

(Figure 1)



Treatment Facilities

The District does not provide any treatment to its water beyond that treatment provided to the wholesale water by Providence Water.

Transmission, Storage, and Pumping Facilities

The transmission systems include piping, one primary pumping station and two pressure boosting pumping stations that essentially are integrated into one distribution system. Pumping and finished water storage remain the same as the approved plan.

Interconnections

The Greenville Water District has recently completed an interconnection with the Town of Smithfield via Log Road. Both connections are serviced through its primary supplier, the Providence Water Supply Board.

This project is part of a larger three phase project which also includes an additional water tank and pumping station. Portions of this project are now complete and it is anticipated that full completion will be early 2016.

Service Area

The District's service boundaries were established by the 1955 Act as amended in 1982 and the Connor's Farm area was added by 98-H 8494A enacted 7/7/98. The boundaries of the District include approximately 7.8 square miles of area with a perimeter of approximately 13 miles located in the southwestern portion of the Town of Smithfield (Greenville) and a small section of the portion of the Town of Johnston which is adjacent to the District.

The Greenville Water District does not currently provide water service to all of the buildings and facilities within the boundaries of the District. At this time less than ten residential buildings within the District boundaries are supplied from private wells.

The District has no plans to change its service area for the foreseeable future.

Population Served

The population served by the District was obtained from the 2010 Census Block information as well as information on economic levels and other demographics. In coordination with the US Census information the Rhode Island Statewide Planning information and projections were used to identify the population served.

Master Meters

Greenville Water continues to utilize the master meter described in the approved plan at the connection with Providence. The meter is read weekly and was last calibrated in December 2011.

Distribution Meters

Greenville Water meters 100% of the water distributed to its customers. Currently all customers are billed on a quarterly basis along with commercial and industrial accounts. The District has been installing radio read meters over the last 10 years. Currently all commercial industrial and high user accounts are radio read meters. It is anticipated that all residential accounts will be converted to radio read meters within the next five (5) years. Currently 100% of the customer meters are equipped for remote reading.

System Production Data

The Greenville Water District obtains water solely from one connection with the Providence Water Supply Board. Historical analysis at this connection is reported for 2008- 2012 by month in Figure 1 on Page 4 of the executive summary.

Water Use

The water used in the District continues to be primarily residential type use. Commercial, industrial and government use account for less than 30% of the total use. The largest portion of other than residential use is commercial (approximately 28% of the 30%) and much of that use is similar to residential use in that it is for nursing homes and other residential type users. Figure 6 indicates the historic use including a breakdown of residential, other, and system (including unaccounted water) use. Greenville Water has only two multi- family housing units and includes that usage as residential usage. There is minimal industrial usage and the actual number of commercial and governmental accounts has been static for a number of years. (See Figure 2 below)

(Figure 2)
 Historic Water Use

DESCRIPTION	2012 MG	2011 MG	2010 MG	2009 MG	2008 MG
Purchased from Providence	330.6	336.7	316.5	336.7	339.9
Billed to Residential	247	256.3	238.9	250	255
Billed to Commercial/Industrial/Government	62	64	60	62	61
Fire Fighting/ System Use Non-Account	1%	1%	1%	1%	1%
% Accounted For Water	92%	94%	93%	91%	91%
% Unaccounted For Water	6	7	6	8	8

Major Users

The District serves the same three (3) Major Users identified in the approved plan.

Water Conservation Programs

The Greenville Water District makes available free water device conservation kits and promotes these kits through advertisements in the local newspaper and through information included with the water bills. In addition the Superintendent currently provides presentations in the school systems, coordinates drinking water projects with high school students for the RI Science & Engineering State Fair. He further provides technical assistance and science equipment to students who are working on projects as requested by school administrators. These programs are well received by the students and teachers and have been featured in local newspapers. The Greenville Water District also provides a quarterly newsletter to all of its residents promoting conservation and the value of water.

Needed Improvements

The Greenville Water District has completed the development of a hydraulic model (developed by Pare Engineering) to assist the District in the identification of hydraulic weaknesses in the system as well as to assist in the decision making process regarding system improvements and extensions. As a result of the hydraulic evaluation the District has identified major projects to strengthen the hydraulic capabilities, including the improvement of fire flows, of the distribution system including:

- Development of an Emergency Connection with the Town of Smithfield in the area of Routes 116 and Route 5 on the northern portion of the system;
- Complete the Cedar Swamp Road loop;
- Rehabilitate/replace sections of the system based on hydraulic and maintenance considerations.

The Emergency Connection project was developed recognizing the extreme vulnerability of the system to any failure of the single interconnection to Providence and/or the associated transmission line and primary pump station on Putnam Pike. Currently this project was approved and is currently under construction. To date, the interconnect on Mann School Road has been completed along with the Burlingame Road Storage Reservoir. The Greenville Water District has completely funded this project without any financial assistance from the Town of Smithfield for an emergency connection.

Completion of the Cedar Swamp Road loop is on hold pending coordination with planned road rehabilitation.

The additional storage and the high-pressure zone are under consideration for development is in the design phase and scheduled for completion in November of 2013.

Section – 3 Water Quality Protection Component

This section is not a required portion of the Greenville Water District's Water Supply Management plan; however, the District collects the fees and taxes associated with the program and forwards said fees and taxes to the Providence Water Supply Board and the Rhode Island Water Resources Board.

Section- 4 Mapping

A system map is included in Appendix C, this map includes the emergency interconnect project which is now substantially complete.

Section 5 - Supply Management

General

The Greenville Water District is entirely dependent upon the Providence Water Supply Board to protect the water supply for the District.

Anticipated Future Demands

Anticipated future demands are developed based upon several factors including:

- historic trends for water usage
- anticipated population changes
- effects of conservation efforts and residential retrofit program
- building code changes and efficiency of water using facilities and equipment (both system and user facilities and equipment
- regulations adopted by state agencies regulating the use of water
- service area zoning and municipal policies
- known or anticipated major water user considerations

The assumptions and calculations for the anticipated five (5) and twenty (20) year planning horizons are included in Appendix D. Figure 3 is a summary of the anticipated demands.

(Figure 3)

Summary of Anticipated Water Demands

Year	Actual/Est	MGD	MGY
2009	Actual	0.92	336.7
2010	Actual	0.87	316.5
2011	Actual	0.92	336.7
2012	Actual	0.91	330.6
2025	Estimated	1.08	396.2

Available Water

The water available to the District is limited by state law and agreements with the Providence Water Supply Board. Currently the agreement with Providence has expired; however negotiations are underway with Providence to complete a new wholesale purchase agreement. State law continues to prevail as to the amount of water available to the District. Chapter 1278 of the Public Laws of 1915 as amended provide for Providence to supply 150 gallons per capita per day on a monthly basis. Therefore the Greenville Water District calculates the safe yield of its system at 150 gallons per capita per day. For the year ending

December 31, 2011 the safe yield is 1.294 mgd. Figure 12 compares the 2011 available water to the 2011 water use. Figure 13 compares the anticipated future demand to the available water in the 5 and 20 year planning scenarios. A new demand management strategy has been adopted by the state of Rhode Island and has been attached to this document and has been implemented. (See figure 4 below)

(Figure 4)
Available Water vs Anticipated Water Use

Planning Year	Estimated Available (MGD)	Estimated Demand (MGD)
2016 (5 yr)	1.29	0.96
2032(20 yr)	1.41	1.08

Alternative Supplies

At the present time the Greenville Water District has two water supplies on the north and east ends of the water system. Both water supplies are from the same source which is Providence Water Supply Board. The District has the ability to use the Town of Smithfield interconnect for emergencies; however, it is not anticipated that this interconnect could be used to augment existing supplies without significant capital investment to improve the hydraulic capabilities of the Burlingame Road pumping station. This station is currently part of the Smithfield Water Supply Board. The District is currently in consolidation talks with the Town of Smithfield which would increase the likelihood of this project being completed. The District has additionally entered into discussions with the Town of Johnston to develop an interconnection; this situation is currently in the early stages and considerable engineering evaluation would be required prior to considering the undertaking of this interconnection. This connection would further strengthen the distribution system of the Smithfield area by providing an interconnect to the low service side of the Providence Water Supply Board. All current connections to the three water districts in Smithfield are supplied by the high service side of the Providence Water Supply Board. The District considers its connection to Providence to be sufficient for the five (5) and (20) year planning scenarios.

Supply Augmentation Studies

The District does not currently have any plans to augment supplies except on an emergency basis through an existing connection with the Town of Smithfield and a proposed connection with the Town of Johnston.

The District has no plans or intentions to activate the previously abandoned wells.

Section 6 – Demand Management

The District continues its program, implemented in 1992, to improve the efficiency of water use through:

- Supply Management Techniques
- Metering
- Leak Detection and Repair
- Pressure Reduction
- Demand Management Techniques
- Pricing
- Public Education
- Regulation and Legislation
- Retrofit
- Reuse and Recycling
- Peak Usage Reduction

A copy of the Demand Management Strategy has been added as an addendum to this document

Residential Retrofit Program

Figure 14 identifies the historical distribution of Residential Retrofit Kits. The District has provided annual notification to all of its customers through its Consumer Confidence Report and also through its quarterly newsletter. Individuals pick up the kits without charge at the District office and are provided with information on installation.

Each kit contains:

- Leak detection tablets
- Water Faucet Aerator
- Low flow showerhead
- Toilet Tank Bag
- Instructions for use and installation

- The District does not provide installation

services.

Leak Detection and Repair Program/Meter Improvement Program

The District's has a Leak Detection and Repair program and the system has been surveyed twice, once by CA Turner and Associates in 2007 and by Atlantic States Rural Water in 2012. No evidence of leakage was found. This is corroborated by Non-account water being consistently below 10%, well within the state guideline. The District anticipates continuing the services of the Rural Water Association to complete future leak detection programs on as as-needed basis. Meter Improvement programs are the same as included in the approved plan. (See figure 5 below.)

(Figure 5)

Distribution of Residential Retrofit Kits

Year	Number of kits distributed
2012	36
2011	14
2010	19
2009	16
2008	31
2004	*3100

**In 2004 the Greenville Water District embarked on an aggressive program to distribute conservation to all customers in the district. In previous years, the kits were made available at no charge and were available to pick up in the District Office.*

Major Users Technical Assistance Program

The Major User Technical Assistance Program is not specifically included in the Water Conservation Program; however, all of the elements of the specified program are applicable to the major users.

Elements of the technical assistance

The District provides assistance on efficient use of water to its major users using in-house resources. An informal visit to each major user by a District staff member is conducted. Any actions recommended are provided to the major user. Each Major User visited approximately annually.

Section 7 – System Management

Non-Account Water

The District maintains a policy (as identified in the Goals statements) of complying with all Federal and State regulations, policies, and guidelines. As such the District strives to maintain Non-Account Water below the 15% guideline identified in the State Guide Plan. The District also has identified its long-term goal of reducing Non-Account Water to 10% as recommended by the Water Supply Management Plan regulations. Accordingly Figure 15 provides a historical representation of Non-Account Water for the District. A three year calculation of non-account water is also provided since the meter readings may not be coincident within a year and the three year average is a better indicator of trends than a one year calculation. (See figure 6)

(Figure 6)

Historical Non-Account Water

Calendar Year	% Non-Account Water (including 1% Fire Fighting Allowance)	
	Annual Basis	Three Year Trend
2012	8.0%	7.3%
2011	8.0%	7.0%
2010	6.0%	6.6%
2009	7.0%	7.2%
2008	6.0%	7.4%

Meter Installation, Maintenance, and Replacement (MIMR) Plan

The District maintains a policy of metering 100% of the users of water and in fact has historically metered 100% of the users.

Residential Meters

The District has completed the installation of remote reading meters for 100% of the service connections in the District.

The District continues to test meters on a schedule such that each meter is or replaced no less frequently than every fifteen (15) years.

Currently all customers are billed on a quarterly basis along with commercial and industrial accounts. The District has been installing radio read meters over the last 10 years. Currently all commercial industrial and high user accounts are radio read meters. It is anticipated that all residential accounts will be converted to radio read meters within the next five (5) years.

Major Users

Meters for major users are tested and calibrated annually.

Master Meter

The District has one Master Meter at the connection to the Providence Water Supply Board. This connection at George Waterman Road and Route 44 contains a Venturi meter that is tested and calibrated annually. The meter is read monthly and the District is billed monthly for water used in the previous month.

Preventative Maintenance Plan

The District maintains logs at each of the pumping stations identifying maintenance tasks and the frequency of each task. The District intends to consolidate the logs and manufacturer's information into a formal written Preventative Maintenance Plan.

Section 8 – Emergency Management

(This section has been revised to eliminate much of the excess explanations of emergencies. The Emergency Response Action Plan has been reviewed and it has been determined that the only changes required are to the volumes of water corresponding to the emergency requirement.)

Plan Summary

Emergency Management including a Vulnerability Assessment for the District is included in this section. The Emergency Response Action Plan changes developed from the water demand changes are included in Appendix E.

Upon identification of critical water system components, the goal of emergency management is to present emergency response scenarios that minimize impacts to the water system and its users. This shall include general responses for specific identified tiered water conditions, specific responses for identified disaster/emergency events, and responses tailored to addressing the losses of particular critical components.

Other portions of the Emergency Management Plan consist of emergency preparedness planning, requirements for training, and guidelines for periodic updates of these documents.

Consistency With Other Local Plans

This plan establishes the relative responsibility and authority within the District organization for responding to the most probable emergencies, and outlines specific tasks for carrying out functional and constructive solutions based on a review of such potential emergencies and risks.

The procedures set forth are consistent with the goals of the State Emergency Water Supply Management Plan and are as follows:

1. Establish situational parameters for involvement in water emergencies.
2. Identify courses of action that should be taken in the most probable types of water emergency.
3. Define responsibility and determine levels where state action is appropriate.
4. Describe communication responsibilities and procedures among state agencies, water suppliers, and other entities so that public communication and warnings of emergency situations is accomplished in a timely and efficient manner.
5. Define common terminology used during water emergencies.

Adherence to these guidelines should ensure that primary aspects of recovery are addressed in an organized manner, thus enabling a more efficient response and in turn helping to maintain drinking water quantity as well as quality.

Emergency/Disaster Events

General

The potential emergency/disaster events that could affect the District's water system components include those

natural causes (i.e. weather, earthquakes, etc.); those caused by manmade events (i.e. civil disorder, strike, etc.) or those caused by accidental occurrences (i.e. vehicle accidents, equipment failure, etc.). The following is a general description of the anticipated potential emergencies/disasters, along with the typical type of effects that could be expected to result from such events.

Section 9 – Drought Management

The District has included voluntary odd-even lawn watering in its revised Rules and Regulations to assist in reducing the peaking requirements during the summer months.

As a wholesale customer of the Providence Water Supply Board, the District will comply with any demand restrictions imposed by Providence.

Section 10 - Implementation Schedule, Responsible Entities, and Projected Costs

Figure 7 identifies the activities and responsibilities for implementation of the elements of this Plan.

(Figure 7)
Implementation of Plan Elements

Plan Element	Scheduled Completion Date	Source of Funding	Responsibility for Completion	Status
Complete Installation of Remote Meter Reading Devices	NA	Annual Budget	Superintendent	Complete
Implement Quarterly Billing for all Customers	Completed October 2008	Annual Budget	Superintendent	Complete
Complete Major Users Technical Assistance Visits	Completed	Annual Budget	Superintendent	Complete
Conduct Mock Emergency Response Drill	NA	Annual Budget	Superintendent	Complete
Pursue Emergency Connection	Completed	Annual Budget	Superintendent	Complete
Complete Colwell Road loop	NA	Capital Plan	Superintendent	Complete
Complete Cedar Swamp Road loop	NA	Capital Plan	Superintendent	On hold pending coordination with road rehabilitation
Construct additional distribution storage	Completed	Capital Plan	Board	Complete
Construct additional distribution storage for fire flow and EC	Completed	Capital Plan	Board	Complete
Rehab/Replace distribution system	On-going	Annual Budget	Superintendent	On-going

Section 11 – Financial Management

General

The District operates the water system in a financially sound manner, in fact the District has no sources of revenue other than those fees, rates, and charges levied against the customers of the water system. All costs of implementing the elements of this Plan will be paid for from the normal charges to the customers of the water system.

The District maintains a rate structure that includes a service charge based on the size of the meter and a consumption charge that is charged at a flat rate. Other charges to customers are based upon the actual cost of providing service; e.g. private fire protection, service installations, etc. This rate structure is fully in compliance with the State of Rhode Island policies.

The district has no plans to go to an increasing block rate at this time, but will increase its efforts to educate customers on conservation measures. The district will upgrade its leak detection equipment and continue to upgrade large meters for increased accuracy. The district may also implement a mandatory outside watering schedule to help with peaking in the summer months.

Billing

General

Currently all customers are billed on a quarterly basis along with commercial and industrial accounts. The District has been installing radio read meters over the last 10 years. Currently all commercial industrial and high user accounts are radio read meters. It is anticipated that all residential accounts will be converted to radio read meters within the next five (5) years.

Section 12 - Coordination

This update and progress report was developed using the RI Statewide Planning information as well as the Town of Smithfield Comprehensive Plan. Research was conducted with particular respect to

population trends, commercial/industrial growth, and land use, was used to assure that this progress report provides for potential future demands.

The District had negotiated with the Town of Smithfield to implement an emergency interconnection between the two systems and the Town has approved the project that will make the project a reality. This project is scheduled for completion in November 2013.

The District will forward this update and progress report to the Town Planner of the Town of Smithfield for review and compliance with the Town's Comprehensive Plan.

