

CITY OF NEWPORT
DEPARTMENT OF UTILITIES WATER DIVISION
WATER SUPPLY SYSTEM MANAGEMENT PLAN

EXECUTIVE SUMMARY

NOVEMBER 2018



Prepared for:

*City of Newport
Department of Utilities Water Division
70 Halsey Street
Newport, Rhode Island 02840*

Prepared by:

*C&E Engineering Partners, Inc.
342 Park Ave.
Woonsocket, Rhode Island 02895*

C&E Project No. J1806

Executive Summary

This Water Supply System Management Plan (WSSMP) Update has been prepared in accordance with the *Rules and Regulations for Water Supply System Management Planning* promulgated pursuant to the requirements and provisions of Chapter 46-15.3 of the Public Drinking Water Supply System Protection Act of 1997 RI General Laws, as amended. Other legislation that is applicable to the development of this Plan includes the Federal Safe Drinking Water Act [42 U.S.C. § 300f et seq.], RI General Law Chapter 46-13 – Public Drinking Water Supply, RI General Law Chapter 46-14 – Contamination of Drinking Water, administered by the Department of Health, RI General Law 45-22.2 – RI Comprehensive Planning and Land Use Act and State Guide Plan Element 721 both administered by the RI Statewide Planning Program.

This updated Plan maintains consistency with the goals and policies of the City of Newport Comprehensive Land Use Plan, Town of Middletown Comprehensive Community Plan, Town of Portsmouth Comprehensive Community Plan, Town of Little Compton Comprehensive Plan, Town of Tiverton Comprehensive Community Plan, State Guide Plan Element 721, Report 115 – *Rhode Island Water 2030*, State Guide Plan Element 121 – *Land Use 2025: Rhode Island State Land Use Policies and Plan* and the RI Water Resources Board (RIWRB) 2012 Strategic Plan.

This updated Plan, prepared by C&E Engineering Partners, Inc., utilizes the previous report prepared by Pare Corporation as the base document and the City of Newport Department of Utilities Water Division's documents to produce the 2018 Water Supply System Management Plan Update.

Introduction

The Newport Water Division (NWD), as a water purveyor supplying over 50 million gallons (MG) of water per year, is responsible for the preparation and adoption of a WSSMP. It is also required that the NWD update this WSSMP periodically, every five (5) years, or as otherwise stipulated in the Regulations. This document is proposed as the 2018 update of the WSSMP.

This WSSMP has been prepared to provide the proper framework to promote effective and efficient conservation, development, utilization and protection of the natural surface water resources of the State as utilized by the NWD. The strategies and goals presented in the RIWRB's 2012 Strategic Plan are shared by the NWD, and this WSSMP has been prepared to be consistent with those objectives.

Further, the overall goals are consistent with State Guide Plan Element 721, Report 115 – *Rhode Island Water 2030* and State Guide Plan Element 121 – *Land Use 2025: Rhode Island State Land Use Policies and Plan*. Its purpose is to outline the objectives of the Water Supply System Management Planning process for the NWD water distribution system, and to serve as a guide to employ the proper decision making processes.

Background

The original Newport water works system dates back to 1876. In 1881, the Newport Water Works Company was incorporated and was succeeded by the Newport Water Corporation in 1929. The City of Newport (City) has owned and operated the water system since 1936. The City Charter indicates the City's legal authority to own and operate the water system. The water system is currently known as the Newport Water Division (NWD). The NWD currently maintains an office at 70 Halsey Street, in Newport, RI. The NWD is a division of the City of Newport Department of Utilities, which is responsible for the day-to-day operations and maintenance of the water system.

The NWD is operated as an enterprise fund and is responsible for their own financial accounting independent of the City's overall budget. The NWD is regulated by the Rhode Island Public Utilities Commission (RIPUC) and serves customers in the City of Newport and the Towns of Middletown and Portsmouth. The NWD sells water on a wholesale basis to the Portsmouth Water and Fire District (PWFD) as well as the Newport Naval Station (NSN) as a bulk retail customer.

The NWD draws its water supply from nine (9) surface reservoirs located throughout Aquidneck Island and in the neighboring towns of Tiverton and Little Compton. Raw water is treated at the two (2) water treatment facilities – the Station No. 1 Water Treatment Plant (WTP) on Bliss Mine Road in Newport and the Lawton Valley WTP off of West Main Road in Portsmouth.

Water System Description

The NWD water system consists of nine (9) surface water reservoirs, two (2) treatment plants, five (5) water storage facilities, raw and treated water booster pump stations and approximately 200 miles of distribution piping. There are 14,895 customer service accounts within the water system, including ten (10) connections with the NSN. The NWD also maintains a wholesale connection with the PWFD where water is sold to the PWFD on a wholesale basis.

The NWD's raw water supply is obtained entirely from surface water through a system of nine (9) ponds and storage reservoirs. A network of pipelines and pumping stations interconnects these reservoirs. All of these reservoirs are actively used. Half of the total system storage is comprised of Nonquit Pond in Tiverton and the Watson Reservoir in Little Compton. These reservoirs are utilized for water quality reasons and when water levels in the remaining seven (7) reservoirs are low. The seven (7) remaining reservoirs are located on Aquidneck Island, where the water system's treatment facilities are also located. More information about each reservoir is included in Table 1.

Reservoir	Location	Surface Area (Acres)	Watershed Area (Sq. Miles)	Storage Capacity (MG)	Usable Storage (MG)
Watson Reservoir	Little Compton	371.0	3.34	1,755.1	1,677.4
Nonquit Pond	Tiverton	196.0	6.88	565.3	403.0
St. Mary's Pond	Portsmouth	102.6	0.75	205.5	189.0
Sisson Pond	Portsmouth	60.5	0.70	117.0	117.0
Lawton Valley Reservoir	Portsmouth	82.3	1.23	421.6	421.6
North Easton Pond and South Easton Pond	Newport	260.2	4.13	685.1	650.8
Gardiner Pond and Paradise Pond	Middletown	134.0	2.95*	526.2	458.9

*Includes the watershed area of the Maidford River, which can be diverted to Paradise Pond and Gardiner Pond.

The City of Newport completed a Water Treatment Plant Compliance Evaluation to assess the physical condition of both WTPs and their ability to meet current and future drinking water regulations. Of particular concern was the inability of the WTPs to comply with new regulations for total trihalomethanes (TTHMs). The Water Treatment Compliance Evaluation also determined that the Lawton Valley WTP was beyond its useful life and could not cost-effectively be upgraded and the Station No. 1 WTP also needed upgrading to restore its treatment capacity to 9 million gallons per day (MGD) because it could only reliably treat up to 6 MGD without compromising finished water quality.

The existing Lawton Valley WTP has been replaced with a new treatment plant facility and the Station No. 1 WTP has undergone extensive upgrades. This work was performed in order to comply with the requirements of a 2008 Consent Agreement between the City and the Rhode Island Department of Health

(RIDOH) which stated that the NWD was to eliminate the release of TTHMs into the water system by December 31, 2014. Both the new Lawton Valley WTP and the upgraded Station No. 1 WTP were online and providing a high quality of drinking water to NWD water system customers by September 2014.

As part of the design/build project, the treatment processes were standardized at both treatment plants. The treatment processes at both facilities now consist of the following:

- Preoxidation using chlorine dioxide
- Clarification using dissolved air flotation (DAF)
- Granular media filtration
- Advanced treatment for the reduction of TTHMs
- Disinfection using chlorine
- pH adjustment

The NWD water system has eight (8) pump stations. Five (5) of these pump stations pump raw water between the reservoirs and the WTPs and the remaining three (3) pump stations pump finished water to the water system's storage facilities. Table 2 provides a summary of both raw water and finished water pump stations in the system, including the infrastructure components they serve, the number and type of pumps used and their capacities.

TABLE 2 PUMP STATIONS				
Pump Station	From	To	Pump Type	Pump Capacity
<i>Raw Water Pump Stations</i>				
Sakonnet River Pump Station	Nonquit Pond, Watson Reservoir	Lawton Valley WTP, St. Mary's Pond, Bailey's Brook	Horizontal, Constant Speed	1 @ 6 MGD 2 @ 8 MGD
St. Mary's Pump Station	St. Mary's Pond	Lawton Valley WTP	Vertical Turbine, Constant Speed	1 @ 5 MGD 1 @ 7.5 MGD
Lawton Valley Low Lift Pump Station	Lawton Valley Reservoir	Lawton Valley WTP	Horizontal, Constant Speed	1 @ 2 MGD 1 @ 4 MGD
Paradise Pump Station	Paradise Pond, Gardiner Pond	Station No. 1 WTP	Horizontal, Variable Speed	2 @ 4.5 MGD
Station No. 1 Low Lift Pump Station	North Easton Pond, South Easton Pond	Station No. 1 WTP	Vertical Turbine, Variable Speed	2 @ 2 MGD 2 @ 4 MGD
<i>Finished Water Pump Stations</i>				
Lawton Valley Finished Water Pump Station	Lawton Valley WTP Clearwells	Lawton Valley Storage Tanks	Vertical, Constant Speed	3 @ 6 MGD
Station No. 1 Finished Water Pump Station	Station No. 1 Clearwells	Distribution System, Reservoir Road Tank	Horizontal, Constant & Variable Speed	3 @ 3 MGD 1 @ 6 MGD
Station No. 1 Finished Water Pump Station	Station No. 1 Clearwells	Lawton Valley WTP	Horizontal, Constant Speed	2 @ 2.5 MGD
Forest Avenue Pump Station	Medium Pressure Zone	High Pressure Zone	Horizontal, Constant Speed	2 @ 1 MGD

The NWD's water system is presently served by four (4) storage facilities in addition to the clearwells at the WTPs. These storage facilities are located within three (3) pressure zones in the distribution system: the high pressure zone, the medium pressure zone and the low pressure zone. Table 3 provides a summary of the storage facilities in the water system.

TABLE 3 FINISHED WATER STORAGE FACILITIES						
Storage Facility	Pressure Zone	Total Capacity (MG)	Overflow Elevation (ft)	Bottom Elevation (ft)	Height (ft)	Volume (gal/ft)
Lawton Valley Elevated Tank	Medium	1.75	251	177	74	23,650
Lawton Valley Standpipe #1	Medium	2.0	251	181	70	28,570
Reservoir Road Tank	Low	3.0	175	135	40	75,000
Goulart Lane Standpipe	High	1.5	333.5	263.5	70	21,430

The transmission and distribution system consists of approximately 200 miles of active, in-service water mains. The service area population is estimated to be 40,000 people. This includes the entire population of Newport, approximately 75% of the population of Middletown and a very small portion of Portsmouth's population.

There are two (2) working interconnections with the PWFD, which is a neighboring water supply that serves a large portion of the Town of Portsmouth outside of the NWD service area. Currently, the PWFD obtains all of its water supply from the NWD. The primary interconnection, located at the Lawton Valley WTP site, currently draws water from the Lawton Valley Standpipe #1 to supply the PWFD system. The other interconnection is located at Mitchell Lane and is for emergency purposes only. Wholesale water sales are made to the PWFD through an agreement and contract that went into effect in May 1983 but expired on December 31, 1995. The terms of this agreement, except for billing rates, are still followed by both the NWD and the PWFD despite the expiration of the agreement. The agreement requires that the NWD provide up to 450 MG of potable water to the PWFD each year and 2.25 MG on a maximum day. It also requires that the PWFD purchase at least 500,000 gallons each day with a minimum annual purchase of 191 MG.

Total system production for Fiscal Year 2018 was 1,965.10 MG, while total demand in the NWD system was 1,243.76 MG over this same time period. 369.71 MG was sold to the PWFD in Fiscal Year 2018. Each of these estimates is somewhat lower than in previous years.

Average Day Demand (ADD) for Fiscal Year 2018 was 5.38 MGD. Given the estimated service area population, the current generalized per capita system demand was estimated to be 134.42 gallons per capita per day (gpcd). Residential average annual water use is 41.71 gpcd for Fiscal Year 2018.

There were 14,895 active accounts in Fiscal Year 2018. Ten (10) customers currently qualify as major users, with a historical annual demand of at least 3 MG. The US Navy, Housing Authority of Newport and Landings Apartment Community are typically the largest customers in the system. The service connections for Fiscal Year 2018 are indicated in Table 4.

TABLE 4 NUMBER OF ACCOUNTS FISCAL YEAR 2018	
Residential	12,731
Commercial	2,029
Governmental	134
Other	1
TOTAL	14,895

During the period of 2008 to 2015, all of the residential, commercial and governmental meters were replaced throughout the system through a radio-read meter conversion program. All meters within the water system were replaced with radio-read meters. The installation of the radio-read meters has increased the accuracy and efficiency of meter reading. Beginning in 2015, all meters are read and billed monthly (i.e. twelve (12) times per year).

As indicated in the NWD’s Demand Management Strategy and associated updates, all meters within the water system are in the range of 3 to 8 years old as a result of the radio-read meter conversion program. Meters that are 2-inches in size and smaller have an anticipated useful life of at least 15 years. At that time, the NWD will begin testing and replacing meters as necessary. These smaller meters comprise a majority of the active meters in the system. In accordance with American Water Works Association (AWWA) guidelines, larger meters are tested more frequently based on their size.

It is the intent of the NWD to eliminate any major identifiable deficiencies present in the NWD water distribution system. The NWD’s ongoing Capital Improvement Program continues to modify and improve the system by replacing meters, water mains, hydrants, etc. In 2014, the NWD completed the construction of the new Lawton Valley WTP and upgrades to the Station No. 1 WTP. As part of the WTP construction and upgrade project, a new 1.75 MG elevated tank was constructed on the Lawton Valley WTP site while the existing 4 MG storage tank and the existing Lawton Valley WTP were demolished. In 2015, the NWD relocated the Gardiner Pond to Paradise Pond raw water main and replaced the existing 30-inch main with a new 30-inch PVC main in order to restore the hydraulic capacities and safe yields of Gardiner Pond and Paradise Pond. In 2017, the Lawton Valley Standpipe #1 was rehabilitated including complete interior and exterior coatings rehabilitation, the installation of a hydrodynamic mixing system and various structural and site improvements at the tank site, which is located on the Lawton Valley WTP site. In 2018, deficiencies in the NWD’s embankment dams were corrected. During the period of 2008 to 2015, all of the residential, commercial and governmental meters were replaced throughout the system through a radio-read meter conversion program. To reinforce the NWD’s commitment to improve the

system's reliability and operating efficiency, in 2014 a system-wide leak detection survey was performed where it was found that there were 17 leaks within the distribution system. These leaks were repaired and the NWD currently owns leak detection equipment and performs surveys when a leak is suspected within the water system.

Water Quality Protection Component

The Water Quality Protection Plan (WQPP), originally prepared in 1989, was most recently updated in June 2010 and was incorporated into the WSSMP. The WQPP identified that water in the watershed is generally of good quality but that the watershed is at a significant pollution risk due to land development and commercial uses. Thirteen (13) response actions were identified, which the NWD will continue to implement to maintain good water quality in the reservoirs. They are:

1. Land acquisition and ownership
2. Updating the GIS database
3. Sampling, trend analysis, modeling and research
4. Input on State regulations
5. Land use, land development and construction standards
6. Public education and outreach
7. Sanitary wastewater and stormwater management improvements
8. Improvements to minimize impacts from transportation infrastructure
9. Improved practices with herbicides, pesticides and fertilizer usage
10. Minimizing impacts from animal populations
11. Minimizing impacts from uncontrolled releases of hazardous materials
12. Minimizing impacts from commercial and industrial activities
13. Implementation of strategies toward improving water quality of impaired waters

The Source Water Assessment Plan (SWAP), originally prepared in 2003 by the University of Rhode Island Cooperative Extension and updated by the NWD in May 2010, was also reviewed and incorporated into the WSSMP along with updates to reflect current conditions in the watershed. North Easton Pond, South Easton Pond, Paradise Pond and the Lawton Valley Reservoir were identified as being at extreme risk based on evaluation of the six (6) risk indicators established for surface water supplies. The other reservoirs were identified as being at high, medium or low risk. In general, the risks to the reservoirs have not worsened since the original Source Water Assessment in 2003 and the NWD has taken several actions, including those listed previously, to protect water quality in the reservoirs and their watersheds.

Sea level rise is another potential risk to certain critical infrastructure components in the water system. The Newport Department of Utilities is proactive at evaluating the potential impacts of sea level rise on critical infrastructure, including within the water system. In 2014, the NWD issued a Request for Proposals for inspection and design services of the dams and spillways at North Easton Pond and South Easton Pond and the Lawton Valley Reservoir. One element of this project was to identify possible impacts to North Easton Pond and South Easton Pond from climate change, sea level rise, storm surge and flooding. Potential improvements to mitigate the impacts associated with these risks were also identified for future implementation. Additionally, the Newport Department of Utilities routinely updates and implements a Capital Improvement Plan which includes improvements to both water and wastewater infrastructure, when appropriate, to be better prepared for the potential effects of sea level rise.

Anticipated Future Demands

Projections are made for the 5 year planning period year of 2023 and 20 year projections are made for the year 2038. Several factors must be considered and evaluated in order to predict as accurately as possible future water system demands. Changes in population density, industrial use, economic development, changes in the service area, land use, water quality and water use rates should all be included. The 5 and 20 year projections were made based on a review of current conditions, historical trends and the findings of the 2010 US Census, Rhode Island Statewide Planning (RISWP) Technical Paper 162 – *Rhode Island Population Projections 2010 – 2040* and the 2017 City of Newport Comprehensive Land Use Plan as well as the most recent Comprehensive Plans of the various communities serviced by the NWD. *Appendix D – Water Supply and Demand Estimating, Aquidneck Region* of the RI Water Resources Board 2012 Strategic Plan was also consulted to predict the future demands of the water system. The demands projected for the 5 and 20 year planning periods as well as the current ADD are summarized in Table 5.

TABLE 5 PROJECTED WATER DEMANDS					
		5 Year Projections (2023)		20 Year Projections (2038)	
Category	2018 ADD	Annual Use	ADD	Annual Use	ADD
Residential	1.67 MGD	584.66 MG	1.60 MGD	511.58 MG	1.40 MGD
Commercial	1.15 MGD	403.70 MG	1.11 MGD	353.24 MG	0.97 MGD
Industrial	0.54 MGD	188.72 MG	0.52 MGD	165.13 MG	0.45 MGD
Government	0.05 MGD	16.93 MG	0.05 MGD	14.82 MG	0.04 MGD
Total	3.41 MGD	1,194.01 MG	3.28 MGD	1,044.77 MG	2.86 MGD

The combined treatment capacity of the two (2) WTPs is 16 MGD, which can meet the anticipated ADD in a 20 year planning horizon.

Available Water

The NWD completed bathymetric surveys and performed a Safe Yield Study of all nine (9) reservoirs, the findings of which were summarized in a report entitled *Reservoirs Safe Yield Analysis* (amended in March 2011). The yield from each reservoir was estimated during average hydrologic conditions, a drought with a 20 year recurrence interval and the drought of record (May 1964 to April 1966). Table 6 summarizes the estimated yields from the reservoirs under each of these conditions.

TABLE 6 ESTIMATED YIELDS FROM NWD RESERVOIRS			
Reservoir	Yield (MGD)		
	Drought of Record	20 Year Recurrence	Average Hydrologic Conditions
North Easton Pond and South Easton Pond	1.799	2.498	3.198
Paradise Pond and Gardiner Pond	1.313	1.720	2.292
Lawton Valley Reservoir	0.679	0.788	0.977
Sisson Pond	0.322	0.443	0.554
St. Mary's Pond	0.342	0.466	0.617
Nonquit Pond	3.019	2.765	4.665
Watson Reservoir	1.924	1.800	2.300
Total	9.398	10.480	14.603

Total system yield during the drought of record and 20 year critical dry period were estimated to be approximately 9.4 MGD and 10.5 MGD, respectively. These estimates are somewhat more conservative than those presented in previous WSSMPs, which were 9.8 MGD and 12.1 MGD, respectively. Total system yield during average hydrologic conditions was estimated to be 14.6 MGD. The 2012 RIWRB Strategic Plan indicates that safe yield for the NWD's surface water reservoirs is 12.2 MGD and 14.1 MGD for the Aquidneck Region as a whole (1.9 MGD safe yield from PWF's Stafford Pond).

The projected ADD may be as high as 3.28 MGD in a 5 year (2023) planning period and 2.86 MGD in a 20 year (2038) planning period, while the RIWRB Strategic Plan suggests that the ADD may be around 8.1 MGD in a 20 year planning period however, current population trend data suggests a decline in the population of the NWD service area in the next 20 years resulting in a decrease in the ADD in the 20 year planning period. These estimates are well within the estimated safe yield of the NWD reservoirs, even during drought conditions.

Supply Management

The NWD does not currently have any inactive or abandoned water supply sources in their system. All nine (9) of their surface water reservoirs are actively used for storage and/or distribution. Improvements have been implemented over the years to increase supply capacity without developing new sources, but the NWD maintains land holdings in other areas for potential future development, should this someday be a consideration. However, at this time it does not appear that alternative sources of supply or supply augmentation studies need to be investigated or implemented.

The NWD is open to new and innovative measures and supports customers considering wastewater recycling or using non-potable water, provided these measures comply with the City of Newport Code of Ordinances Chapter 13.06 – Cross-Connection Control Program. The NWD can help facilitate some of these customers through its Major Users Technical Assistance Program, such as assisting with water use audits and surveys.

Demand Management

The NWD has undertaken measures to achieve permanent and long-term water savings by implementing the following demand management techniques.

- Installation of water saving low-flow plumbing devices.
- Promote water recycling and efficient use. The NWD will consult RI State Guide Plan Element

721, Report 115 – *Rhode Island Water 2030* periodically for applicable water reuse and recycling programs that may be able to be implemented by the NWD.

- Public education on water conservation/water supply issues.
- Use of fees, rates and charges appropriately.
- Water use regulations and restrictions.

The *Rules and Procedures Governing the Water Use and Efficiency Act for Major Public Water Suppliers* (Act) was enacted in 2011 to establish efficient water use targets for all major water suppliers in Rhode Island. The Act also required that major suppliers complete a demand management strategy (DMS), documenting how they would meet each of the specified goals.

The NWD submitted their DMS in August 2012 and responded to comments from the Water Resources Board in June 2013 and DMS Progress Reports were submitted in 2014 and 2015, which demonstrated that the NWD is in general compliance with several requirements of the Act. This includes the residential average annual water use goal of 65 gpcd, which was 41.71 gpcd for Fiscal Year 2018. The NWD estimates non-billed water from various uses, such as firefighting and hydrant flushing and meets the metering and billing requirements stipulated in the Act. The DMS also outlined strategies that the NWD uses to promote efficient indoor and outdoor water, such as:

- Educational and informational programs for its customers including providing “Preventing Wasted Water” pamphlets and a “Water Wheel” pamphlet that depicts typical water use by fixture.
- Additional educational information regarding efficient water use provided on the Newport Department of Utilities website, in bill stuffers and on the annual Consumer Confidence Report.
- Complimentary indoor conservation/audit kits, which include a flow meter, flush volume calculator, drip gauge and leak detection kit.
- Complimentary outdoor conservation kits that include a soil moisture meter, rain gauge and hose nozzle and timer.

Leakage was estimated to be 10.56% in Fiscal Year 2018, slightly above the 10% target for leakage. The NWD completed a leak detection survey with an outside contractor during Fiscal Year 2014, which resulted in the identification of 17 leaks and approximately 306,720 to 501,120 gallons per day (gpd) in

water losses. The survey was completed in spring 2014 and the leaks have since been repaired. NWD staff will continue to periodically perform in-house leak detection surveys with its own equipment.

System Management

Goals of system management include the following:

- Maintaining non-account water use to below 15% of total system demand in accordance with State Guide Plan Element 721.
- Reducing leakage to below 10% of system demand.
- Establishing a preventative maintenance program.
- Maintaining compliance with the applicable requirements of the *Rules and Procedures Governing the Water Use and Efficiency Act for Major Public Water Suppliers*.

Leak detection surveys have historically been performed throughout the NWD system by outside consultants, most recently in 2014. A total of 17 leaks, yielding approximately 306,720 – 501,120 gpd in wasted water, were identified and subsequently repaired by NWD staff following this survey. The leakage rate was estimated to be approximately 10.56% in Fiscal Year 2018, but leaks have subsequently been repaired and current leakage may be less. The NWD has recently upgraded their leak detection equipment to the Correlux C-3 ProPlus System.

The NWD currently performs sound preventive maintenance (PM) practices on the major supply, treatment, storage and distribution components of the water system. Routine inspections are performed by NWD staff while detailed inspections of some components, such as storage tanks, are performed by contractors hired by the NWD.

The NWD is in general compliance with the *Rules and Procedures Governing the Water Use and Efficiency Act for Major Public Water Suppliers*.

Emergency and Drought Management

The Emergency Management section of this Plan (Volume II) generally establishes the following:

- Responsibilities and authority within the NWD and City of Newport for responding to most probable emergencies.

- Most probable causes for emergencies and their potential impacts to the system.
- System components that are vulnerable to damage or incapacitation based on the most likely causes for emergency.
- Specific tasks for carrying out functional and constructive solutions based on a review of the potential emergencies and the associated system risks.

Drought is one specific type of emergency that is treated separately, as it can impact the system over an extended period of time. RI State Guide Plan Element 721, Report 115 – *Rhode Island Water 2030* identifies five (5) drought phases. The NWD monitors drought conditions in its own supply reservoirs and assigns drought conditions, as follows:

- **Watch:** Reservoirs on Aquidneck Island are less than 50% capacity and Nonquit Pond/Watson Reservoir are less than 75% capacity.
- **Warning:** Reservoirs on Aquidneck Island are less than 40% capacity and Nonquit Pond/Watson Reservoir are less than 60% capacity.
- **Emergency:** Reservoirs on Aquidneck Island are less than 30% capacity and Nonquit Pond/Watson Reservoir are less than 40% capacity.

During a drought event, the NWD will work with State Officials to institute stricter water conservation measures in accordance with RI State Guide Plan Element 721, Report 115 – *Rhode Island Water 2030*. The NWD has historically imposed water use restrictions as a way of reducing demand during drought conditions. Odd/even outdoor water use restrictions are not typically required during normal periods, but have been imposed during drought conditions. These restrictions start off on a voluntary basis as Drought Watch conditions approach but would transition to mandatory as drought conditions worsen. Violators are warned, while repeat violations might result in water shut off. Mandatory termination of outdoor and other non-essential water uses are imposed during Drought Emergency conditions.

The NWD’s drought triggers and water reduction goals and responses for each stage of drought are consistent with RI State Guide Plan Element 721, Report 115 – *Rhode Island Water 2030* guidelines.

Implementation and Financial Management

While the water system is considered to be in good condition with few deficiencies, infrastructure maintenance, rehabilitation and replacement is inevitable. Implementation of these system improvements

is through the NWD's 5 year Capital Improvement Program (CIP), which is reviewed and updated annually as part of the budgeting process for the Newport Water Fund, per City Ordinance. The Water Fund and all water rates are subject to review and approval by the RIPUC.

All of the projects listed in the current CIP are paid out of the Water Fund through money allocated by water use rates. Occasionally, projects are financed through a Drinking Water State Revolving Fund (SRF) loan from the RI Clean Water Finance Agency. Servicing the debt from these loans would follow for several years but are not paid out of the capital improvement portion of the Water Fund. System operation and maintenance costs, capital costs and debt payments are made through water use rates as well.

In December 2015, the NWD submitted a General Water Rate Filing with the RIPUC (Docket 4595) to increase rates. The basis of this rate increase was for debt service, capital projects and operation and maintenance expenses so the City could embark on an extensive Capital Improvement Program. This filing increased water rates by approximately 2.7% for the PWFD for Fiscal Year 2016. The NWD is planning on submitting a new rate filing in October 2018.

Coordination

This WSSMP was developed in conjunction with reviews of the Newport Comprehensive Land Use Plan and the Comprehensive Plans for the Towns of Portsmouth, Middletown, Tiverton and Little Compton. Also, any updates to each of the comprehensive plans or other planning initiatives that may warrant discussion in this WSSMP Update were reviewed. The NWD maintains close coordination with each community as well as the PWFD, its neighboring water supplier and their wholesale customer. While the current wholesale agreement is expired, the NWD has and will continue to work in good faith with the PWFD to establish an updated wholesale agreement.