

PARE PROJECT NO. 07004.00

**TOWN OF CUMBERLAND
DEPARTMENT OF PUBLIC WORKS
WATER DEPARTMENT**

**WATER SUPPLY SYSTEM MANAGEMENT PLAN
5-YEAR UPDATE
EXECUTIVE SUMMARY**

PREPARED FOR:

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
WATER RESOURCES BOARD

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SUBMITTED MAY 2007



EXECUTIVE SUMMARY

This Water Supply Systems Management Plan (WSSMP) has been prepared as required under Rhode Island General Laws 46-15.3, as amended and titled "The Water Supply System Management Planning Act" (Act). The legislative authority to effectuate the goals and policies of this Act has been conferred to the Rhode Island Water Resources Board (RIWRB). To this end, the RIWRB has promulgated the Rules and Regulations for Water Supply System Management Planning, October 2002, as amended to implement the provisions of the Act.

Under this legislation, the Town of Cumberland – Cumberland Water Department (CWD), as a water purveyor supplying over 50 million gallons of water per year is responsible for the preparation and adoption of a WSSMP. It is also required that the CWD update this WSSMP periodically and every five years, or as otherwise stipulated in the Regulations.

This WSSMP has been prepared to provide the proper framework to promote the effective and efficient conservation, development, utilization and protection of the natural water resources of the State as utilized by the CWD. Further, the overall goals shall be consistent with State Guide Plan Element 721, "Water Supply Policies for Rhode Island." The purpose of this WSSMP is to outline the objectives of the Water Supply System Management Planning process for the CWD, and to serve as a guide to employ the proper decision making processes.

The WSSMP contains a detailed description of the water system and includes the policies and procedures related to the general operation and management of the water system. The Emergency Management section relates to the vulnerability assessment of the water system for use in emergency planning. It shall be incumbent upon the CWD to implement the recommendations and procedures outlined in this WSSMP in order to comply with the overall requirements of the Act.

Background

The CWD was established by legislation of the General Assembly of the State of Rhode Island in 1893. In 1929, the Town of Cumberland (Town), utilizing Sneece Pond as its supply installed a pump station, a 0.35 million gallon tank and transmission and distribution piping in and around Nate Whipple Highway and Mendon Road. By the early 1940's, the system had been expanded to service the area of Cumberland Hill, and also to the adjoining Town of Lincoln to serve the



village of Albion and the Berkshire Hathaway Mill Complex. In the 1950's, with the formation of the Lincoln Water System, these portions of water service were turned over to Lincoln. An emergency interconnection is still maintained with the Town of Lincoln to this day.

In the 1950's the CWD constructed a water treatment plant at Sneece Pond and expanded its service area to include Ashton, Berkley, Upper Lonsdale, Monastery Heights, Diamond Hill, Arnold Mill and Grants Mill areas of Town. The CWD is currently performing upgrades to the water and treatment systems at Sneece Pond which are scheduled for completion in 2007/08. In the mid to late 1960's and 1970's the Town developed new well supplies in Cumberland Hill, Arnold Mills and at Martin and Lennox Street. These wells have since been abandoned due to contamination from a neighboring site. In 1955, the Marshall Avenue Pump Station was constructed. This station at the interconnection with the Pawtucket Water Supply Board (PWSB) is designed to boost water purchased from Pawtucket into the Cumberland System. Upgrade of this station was performed in the early 1990's to increase overall capacity and reliability. The CWD currently relies on the wholesale interconnection with PWSB as a significant source of supply.

Water System Description

The CWD water supply and distribution system is classified by the Rhode Island Department of Health as a "Community" Public Water Supply System. As such, the system is required to conform to applicable rules and regulations of the RIDOH and the Federal Safe Drinking Water Act (SDWA). The water system currently maintains full compliance with the stipulations of these rules and regulations.

The existing Cumberland Water Supply Distribution System was developed primarily from the original water supply system that originated in 1929. Improvements to the infrastructure have been implemented over the years to maintain and upgrade the system to keep pace with increasingly stringent water quality regulations. The water quality has consistently been rated as good to excellent with occasional exceedance of secondary water quality standards for iron and manganese at several of the supply wells and color from the surface water supply of Sneece Pond.

Source of supply for the system is obtained from three (3) distinct sources; these include the wholesale purchase of water from the Pawtucket Water Supply Board (surface water); Sneece



Pond (surface water) and a total of four (4) well stations. Upwards of 50-70% of source water is obtained from Pawtucket and is supplemented from the remaining sources in town. The CWD is currently in negotiations with the PWSB on a new long term contract and agreement. A conventional water treatment plant process treats the source waters from both PWSB and Sneeceh Pond. The treatment plant at Sneeceh Pond includes pre-chlorination, alum coagulation, mixing and flocculation, sedimentation, filtration, post chlorination and final pH adjustment.

The CWD supply is currently obtained from the following sources: Sneeceh Pond Reservoir, Abbott Run Wells #2 and #3, and Manville Wells #1 and #2. Sneeceh Pond is a natural body of water located in the northwest section of town adjacent to Nate Whipple Highway. The surface area of the reservoir is approximately 46 acres, with a safe yield of 0.75 mgd. Source water at the well stations is also treated and includes the following: disinfection by addition of sodium hypochlorite, pH adjustment for corrosion control through addition of caustic, and fluoride. The transmission and distribution system consists of upwards of 120 miles of asbestos cement, cast and ductile iron water mains ranging in size from 6 to 20 inches that were installed predominately in the 1940's through the 1960's. New and replacement main installations consist predominately of cement lined ductile iron and polyvinyl chloride pipe materials.

The service district is divided into three pressure zones, each of which operates independently of the other. The low service area includes the villages of Ashton, Berkley, Monastery, Diamond Hill, Arnold Mills and Grants Mills. The Thompson Hill and Monastery storage tanks service this area and establish the hydraulic grade of the low service area at approximately 370 feet Mean Sea Level (MSL). The combined usable storage capacity of these tanks is equal to 1.5 million gallons (MG). The low service district also supplies a small portion of an area in northern Pawtucket (approx. 350 residences) known as Cumberland Terrace.

The area known as Cumberland Hill in the north -- northwestern section of Town defines the high service district. The Coppermine and the recently constructed Highland Park II storage tanks service this area and establish the hydraulic grade of approximately 480 feet MSL. The combined usable storage capacity of these tanks is equal to 3.75 MG.

The extra high service consists of the area of Fisher Road and Ski Valley, an isolated area in northeastern Cumberland. The Fisher Road storage tank, with a usable storage volume of 0.2 MG



and overflow elevation equal to 485 feet MSL services this area. Generally, the entire distribution system is maintained at a pressure between 30 – 120 psi.

The source and distribution system is 100% metered. The water department staff is responsible for the daily operation and maintenance of the water system that also includes metering and billing of customers. The Town of CWD is operated as an “Enterprise Fund Agency” within the municipal corporation of the Town of Cumberland. The Town has established enterprise funds for operations that are organized to be self-supporting through user charges. It is the intent that all costs of providing the services to the general public on a continuing basis be financed or recovered fully through user charges.

Policy and Procedure

The service population is comprised of residential, commercial, industrial and government customers of which there are approximately 7,941 metered accounts. The service population is approximately 19,938 residents served by the CWD. Isolated portions of the Town that number approximately 5,134 in the Valley Falls District are served by the Pawtucket Water Supply Board system. The remaining 4,630 residents are served via private well supplies. There exist eight (8) major users who each consume more than 3.0 million gallons per year. Together these eight large users account for approximately 10% of the total system demand. Current average day demand is 2.86 MG with a maximum day demand of 5.57 MG. Under projected water use for the 5- and 20-year planning periods, it is expected that the average day demand will be equal to 3.36 MG and 3.80 MG, respectively. Correspondingly, maximum day demand projections are 6.55 MG for the 5-year and 7.41 MG for the 20-year planning periods. These projections are based primarily on population projections and do not account for significant water savings potentially realized through demand management strategies. A 15% allowance for unaccounted water has been considered in the projections.

Total available water supply (purchased and produced) is determined to be in the range of 8.69 – 8.94 mgd. It is anticipated that existing supply sources will be more than adequate to meet anticipated future maximum demands. It is envisioned that by encouraging existing and future users to use available and practical methods of water conservation, including re-circulation and reuse in industrial processes, it will be possible to maintain or reduce these projections and forgo any potential need to develop new or alternate sources of supply.



Water quality protection is an important aspect to the CWD as the sources of supply continue to be affected by growth, potential pollution sources, and increases in demand. The water supply for the CWD is obtained from a combination of surface and groundwater sources. The surface water supply consists of Sneece Pond and the groundwater sources are wells located near the Blackstone River and Abbott Run Brook. In addition, the PWSB, the primary wholesaler of water to the CWD, has surface and groundwater supply sources located in part in the Town of Cumberland along Abbott Run Brook. The CWD and PWSB are both working in conjunction with the Town of Cumberland's Planning Department on the development of zoning regulations for a Drinking Water Quality Protection Overlay District for sources of water supply within the Town of Cumberland.

For the previous eleven years, 1995-2005, the CWD has exhibited unaccounted water volume percentage range of 15.8-33.2, respectively, which is significantly above the goal of 15% identified in the State Guide Plan Element 721. The CWD, in consideration of reducing these percentages, is committed to reducing this unaccounted water volume. The CWD has a five year schedule for the implementation and development of the following programs:

- main break tracking system
- tracking of flows from the semi-annual flushing program
- leak detection program
- hydraulic model completion/utilization.

The CWD currently has the infrastructure in place to act in some of these programs immediately and will do so. Ultimately, the CWD plans on having all these programs in place within five years. The CWD will strive to achieve the recommended 15% unaccounted water by the end of this five year period.

Given the current goal of achieving a 15% unaccounted water volume and the long-term goal of reducing this value to 10%, the CWD is also prepared to implement appropriate system management strategies to maintain compliance with these goals. The CWD shall employ demand management procedures of a suitable nature to promote the ultimate goal of permanent long-term savings through efficient water use. Water use trends can be affected significantly by changes in water use practices, which can occur as result of technologic changes and demand management and/or water conservation policy and practice. This is to be achieved through a combination of



measures that promote efficient water use, recycling, conservation, retrofit and new installation of low flow plumbing fixtures, public education and appropriate use of fees, rates and charges. It is the ultimate goal to minimize peak demand use requirements and to minimize average day demand use requirements.

The CWD shall continue to employ proper system management procedures including programs for meter management (source and distribution), leak detection and repair, implementation of a prevention maintenance plan, infrastructure rehabilitation, and a billing rate schedule which promotes efficient and non-wasteful water use. It is intended that the financial management of the system will be one in which normal operation, maintenance and rehabilitation will be funded through operating revenue from the customer base. Where possible, the CWD shall seek alternate funding sources such as State and Federal grants, for major improvement projects. The CWD has recently adopted an Infrastructure Replacement Fund (IRF) which is a surcharge placed on the customer rate schedule which is aimed at collecting fees for replacement and upgrade of aged infrastructure.

The Emergency Management section of the Plan establishes the responsibilities and authority within the CWD for responding to most probable emergencies and outlines specific tasks for carrying out functional and constructive solutions based on a review of the potential emergencies and risks. The procedures outlined are consistent with the goals of the State Emergency Water Supply System Management Plan. It is also intended that this document provide guidance to ensure that the primary aspects of recovery from an emergency are addressed in an organized manner to aid in an efficient response and in maintaining drinking water quality and quantity.

The CWD continues to maintain close working relationship with the PWSB and the Town of Lincoln with regard to the interconnections and need for emergency use specifically in times of drought. The CWD main goal is the implementation of research programs and water savings program to reduce unaccounted for water. The CWD has recently contracted with B&E Consulting to perform a rate study to reestablish rates to help offset the 3 million dollar deficit to the Town of Cumberland's General Fund. This WSSMP was developed in conjunction with the 2003/04 Comprehensive Plan and is consistent with the aspects of the 2003/04 Comprehensive Plan.

