

Newport Water and Stone Bridge Fire District Source Water Assessment

1. INTRODUCTION

This report summarizes the results of the Rhode Island Source Water Assessment Program for both Newport Water and Stone Bridge Fire District drinking water supply areas. The study area includes the watersheds for 10 public drinking water reservoirs located in the towns of Newport, Middletown, Portsmouth, Little Compton and Tiverton.

The goal of Rhode Island's Source Water Assessment Program is to better protect drinking water supplies at their source by evaluating threats to future water quality and making this information available to water suppliers, town officials, and landowners. Because the vast majority of land in reservoir watersheds and groundwater recharge areas is privately owned, the assessment is designed to generate information municipal officials can use to support local planning and regulation of land use in drinking water supply watersheds and aquifers. The assessment provides a consistent framework for identifying and ranking threats to all Rhode Island public water supplies following three basic steps:

- Inventory and map potential sources of pollution within wellhead protection areas or reservoir watersheds;
- Assess the risk associated with these potential sources of contamination and rank the susceptibility of the water supply;
- Identify practical steps town officials and residents can take to reduce pollution risks and make results available.

This assessment was conducted by the University of Rhode Island Cooperative Extension in cooperation with the Rhode Island Department of Health and numerous water suppliers, municipal officials and local volunteers dedicated to protecting local drinking water supplies. Participants in the mapping and assessment phases of the program attended a series of workshops to help identify potential sources of contamination within the study areas. Assessment volunteers reviewed draft products and helped to identify alternative management options for better protection of local drinking water supplies.

What is Source Water?

Source water is untreated water from streams, lakes, and interconnected underground aquifers that recharge public and private wells and replenish drinking water supply reservoirs.

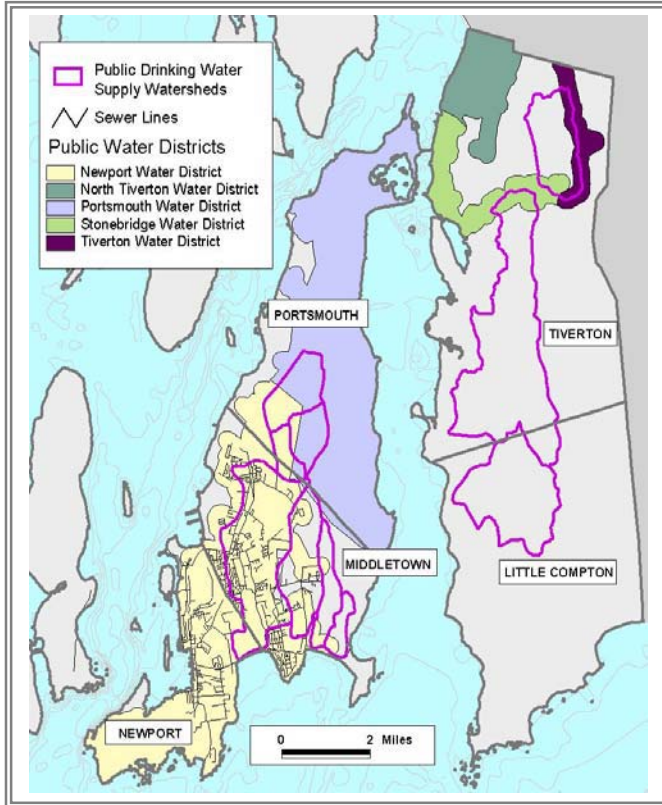
While some treatment is usually necessary for public drinking water supplies, preventing drinking water contamination at the source makes good sense. Keeping headwater streams and groundwater recharge areas free of pollution:

- *Safeguards public health,*
- *Reduces treatment costs,*
- and*
- *Protects environmental quality.*

U.S. Environmental Protection Agency Source Water Protection Program

The Newport Water and the Stone Bridge Fire District Source Water Assessment

Map 1: Public Water and Sewer Utilities



The City of Newport Water Division

owns nine surface water reservoirs located within five Rhode Island municipalities. Newport Water provides water services to residents and business in the three communities on Aquidneck Island: the district provides public drinking water to 100 percent of residents and businesses in Newport, 75 percent in the town of Middletown, and 3 percent in the town of Portsmouth. In addition, Newport Water provides Portsmouth Water and Fire District with 60 percent of that district's supply, serving the majority of residents and businesses in Portsmouth. In total, Newport Water supplies public drinking water to over 16,000 customers. The net available supply from its nine reservoirs is 11 million gallons a day (mgd).

The Newport Water study area includes the watersheds for its 9 reservoirs: Lawton Valley Reservoir, St. Mary's Pond, Sisson Pond, Easton Reservoir (North & South Ponds), Gardiner Pond, Nelson Pond,

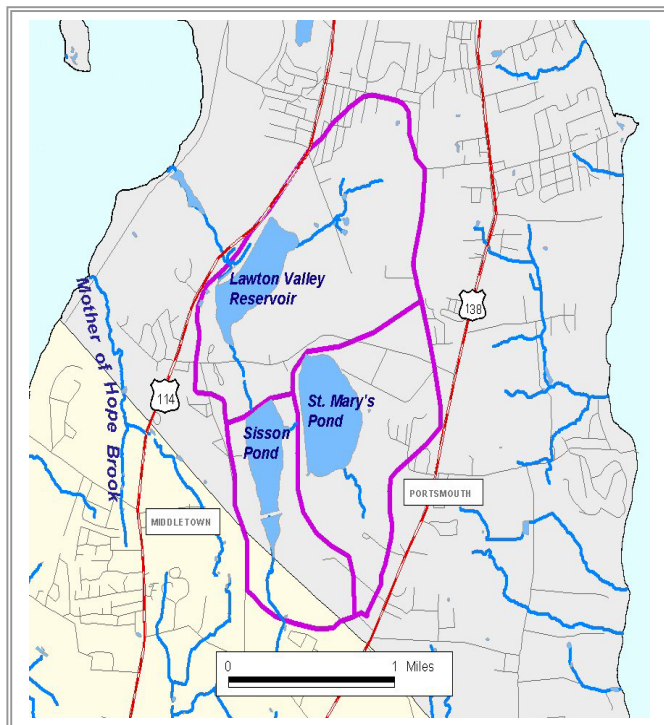
Nonquit Pond and Watson Pond. Newport Water relies on a state-of-the art treatment plant to treat water contaminated with polluted runoff, algae and sediment. All of the public drinking water supplies on Aquidneck Island have been placed on the state's 303(d) List of Impaired Waterbodies for biodiversity impacts.

Newport Water's distribution system is comprised of two interconnected systems. The Station 1 system draws source water from North and South Easton ponds, which are fed by Bailey Brook. Station 1 is also supplemented seasonally by Nelson Pond and Gardiner Pond. Station 1 distributes water to the City of Newport, Middletown and the U.S. Navy Base. The Lawton Valley-Portsmouth system draws from Lawton Valley Reservoir, St. Mary's Pond and Sisson Pond. The system is supplemented seasonally by Watson Pond in Little Compton and Nonquit Pond in Tiverton. This distribution system services Middletown, the U.S. Navy Base and the Portsmouth Water and Fire District. Sewer services are provided in three of the nine drinking water supply watersheds: Easton Pond, Nelson Pond and Gardiner Pond watersheds. Sewer services are also provided in the

Maidford River watershed. Water from the Maidford River is diverted into Gardiner Pond.

The Stone Bridge Fire District provides public drinking water to 8,000 customers in the town of Tiverton, including 3,400 residential connections. The district withdraws 750,000 gallons of water a day from Stafford Pond during peak demand. The district also sells treated water to the Town of Portsmouth. Stafford Pond, besides being a source of raw water for a *Large Community Water Supplier*, is a popular fishing and recreation area. The pond supports one the state's few remaining populations of small mouth bass, and RIDEM, Fish and Wildlife Division stocks the pond with trout. Boating activity on the pond is high. Although the treated water withdrawn from Stafford Pond meets all state and federal drinking water standards, the pond has been placed on the state's 303(d) List of Impaired Waterbodies. A TMDL study has been conducted in the watershed to determine the cause of excessive algal growth and nutrients in the pond. There are no public sewer services in the Stafford Pond Watershed.

Map 2: Aquidneck Island Drinking Water Supply



1.1 Assessment Study Areas

Newport Water, Lawton Valley Reservoir Watershed

The 829-acre watershed for the Lawton Valley Reservoir lies between Routes 114 and 138 in the town of Portsmouth. Newport Water owns a buffer strip of land around the entire perimeter of the reservoir. Land use activity in the watershed is primarily agricultural and medium density residential development. Based on current zoning, approximately half of the existing cropland and pastureland (100 acres) will be converted to residential development in coming years. The area is presently unsewered.

Newport Water, Saint Mary's Pond Watershed

Saint Mary's Pond lies between Routes 114 and 138 in the Town of Portsmouth. Water from the pond is discharged to a pipeline connected to the Lawton Valley Reservoir as well as to a pipeline leading to the headwaters

of Bailey Brook, where it continues to North Easton Pond. The watershed for the pond encompasses approximately 515 acres. Newport Water owns a buffer strip of land around 40 percent of the pond. Land use activity in the watershed is primarily agricultural (168 acres) and medium density residential development (94 acres). Approximately 60 acres of agricultural land may be converted to residential development in coming years. The area is presently unsewered.

Newport Water, Sisson Pond Watershed

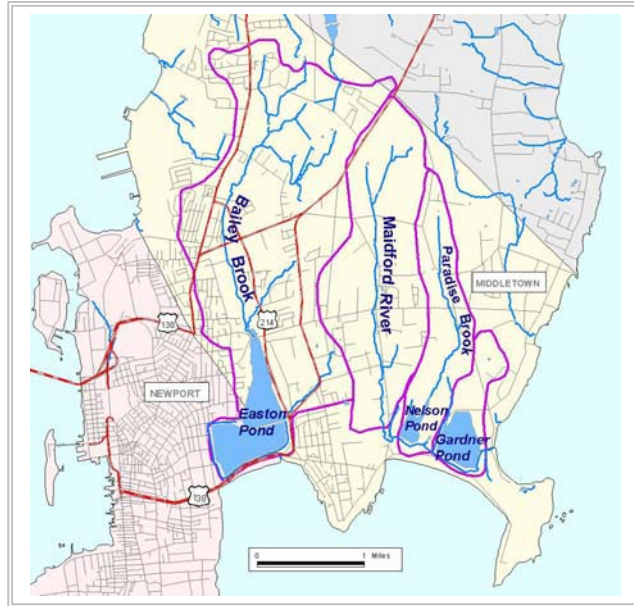
The 330-acre Sisson Pond watershed lies adjacent to the Lawton Valley Reservoir watershed and St. Mary's Pond watershed, and extends into the Town of Middletown. Water from the pond flows through a discharge pipe into a stream connected to Lawton Valley Reservoir; it also overflows to the south into Bailey Brook. Newport Water owns a buffer strip around 60 percent of the pond. Land development in the watershed is over 70 percent agricultural (140 acres); medium density residential development accounts for an additional 15 percent of land use in the watershed. Approximately 70 acres of agricultural land may be converted to medium density residential development based on current zoning. The area is presently unsewered.

Map 3: Aquidneck Island Drinking Water Supply Watersheds

Newport Water, Bailey Brook Watershed

The Bailey Brook watershed encompasses 2,874 acres in the towns of Middletown and Newport. The brook and its watershed drain to the Easton Pond reservoir complex, the primary water supply for Newport Water's Station 1 distribution system. North Easton and South Easton ponds are separated by an earthen embankment and are connected by a pipeline. South Easton Pond is better protected than North Easton Pond and has higher water quality.

The Bailey Brook watershed is highly developed. Sewer services are provided throughout most of the watershed. Approximately 50 percent of land use in the area is higher density residential development. Commercial and industrial development account for an additional 20 percent of land use activity. Most of the remaining undeveloped land in the watershed is used for agricultural purposes.



Newport Water, Nelson Pond Watershed

Nelson Pond is located in the town of Middletown and is connected by pipeline to Gardiner Pond. The two ponds are operated as a single reservoir. The ponds receive water from their own watersheds as well as receiving flow from both the Maidford River and Paradise Brook. The watershed for Nelson Pond is 600-acres in area and fully encompasses Paradise Brook. This is one of the least developed of the public water supply watersheds on Aquidneck Island; over 20 percent of the watershed remains forested. Newport Water owns a buffer strip around 60 percent of the pond. Land use activity is primarily agricultural and medium density residential development. Much of the remaining agricultural land (115 acres) could be converted to medium or low-density residential development in coming years.

Newport Water, Gardiner Pond Watershed

The 292-acre watershed for Gardiner Pond is almost entirely undeveloped. Newport Water owns a buffer strip around the entire perimeter of the pond. Residential and commercial development account for less than 10 percent of land use activity in the area. However, over 25 percent of the watershed is in some form of agricultural development (90 acres). Approximately half of this agricultural land could be converted to medium-density residential development in coming years.

Newport Water, Maidford River Watershed

The Maidford River, with a watershed of approximately 1,335 acres in area, flows through a diversion into Gardiner Pond. Land use activity in the watershed is a mix of medium density residential and commercial development and extensive agricultural activities. The developed area of the watershed is sewer.

Newport Water, Nonquit Pond Watershed

The Nonquit Pond watershed is located primarily in the town of Tiverton, with a small area of the watershed located in the town of Little Compton. The total area of the watershed is approximately 4,408 acres. Over 60 percent of the watershed is either forested upland or wetlands. Newport Water uses Nonquit Pond as a back-up supply for its Lawton Valley-Portsmouth distribution system. There is no publicly owned buffer strip around the pond.

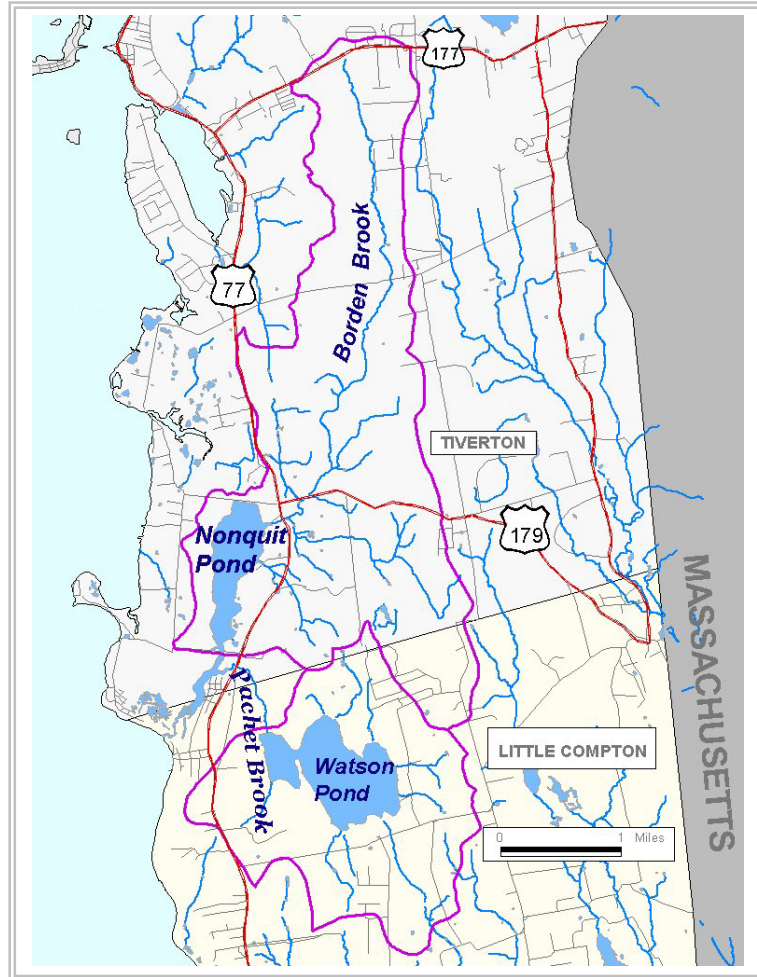
Land use activity in the watershed is a mix of residential and commercial development and farming. Based on current zoning, roughly 1,000 acres of remaining forestland could be lost or seriously fragmented with conversion to low-density residential development.

Newport Water, Watson Pond Watershed

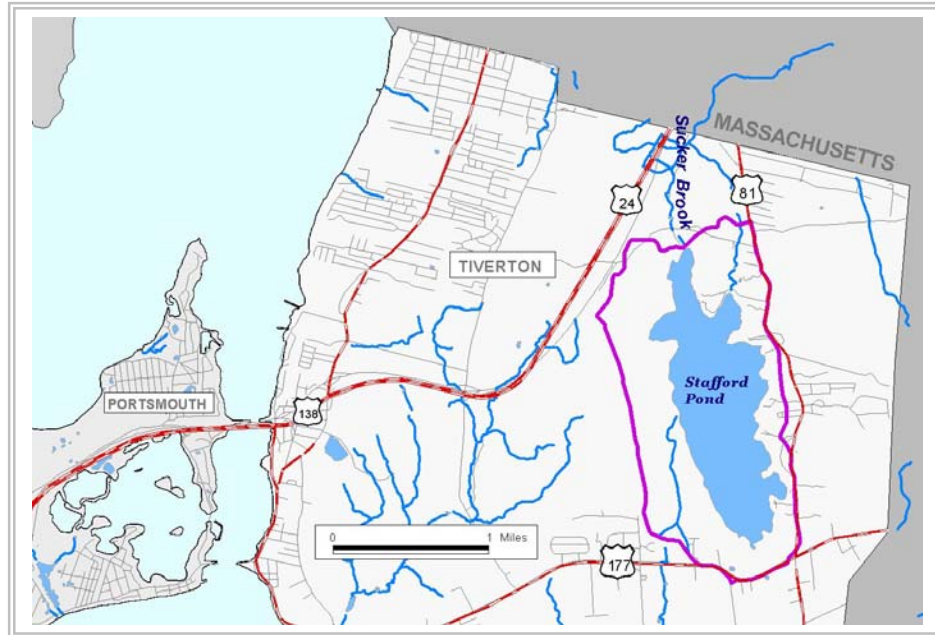
The 2,295-acre watershed for Watson Pond lies almost entirely in the town of Little Compton. A large portion of the watershed remains forested upland or wetland. Newport Water uses Watson Pond as a back-up supply for its Lawton Valley-Portsmouth distribution system. There is no publicly owned buffer strip around the pond.

Land use activity in the watershed is primarily agricultural, with a mix of some residential and commercial development. Remaining undeveloped land in the watershed is zoned primarily for low-density residential development (450 acres).

Map 4: Nonquit Pond and Watson Pond Drinking Water Watersheds



Map 5: Stafford Pond Public Drinking Water Supply Watershed



Stone Bridge Fire District, Stafford Pond Watershed

The 947-acre watershed for Stafford Pond is located in the town of Tiverton. Stafford Pond is the primary drinking water supply for the Stone Bridge Fire District. The pond itself is 487 acres in area. The west side of the watershed is largely undeveloped. However, the eastern shore of the pond is almost entirely developed with higher density residential development. There are no sewer services in the watershed, and many of the septic systems pre-date 1970 statewide standards for Onsite Waste Water Disposal systems. Water quality monitoring in the pond has documented declines in water quality over the years. In 1996, RIDEM initiated a study to identify and evaluate pollution sources affecting the pond. Farms, highways, boats, and failing septic systems were identified as principal sources of pollution entering the pond.

In 1986, the Town of Tiverton adopted the *Stafford Pond Watershed Protection Overlay District* to restrict hazardous land use practices in the watershed. Most of the remaining developable land in the watershed is zoned for medium-low density residential development (200 acres) and open space. However, the town has zoned 65 acres in the northwest corner of the watershed for new industrial development.