



THE FISHERS ISLAND WATER WORKS CORPORATION'S SHARED SERVICES WORK PLAN

Case 24-W-0146 Order issued 10/17/2024 follow
up filing

In Case 24-0146 the Commission was concerned that there may be other similar improper shared service situations in FIWW's service territory. Therefore, to allow the Commission to have a better understanding of the extent of this issue within FIWW service area, the Company is directed to make a filing with the Secretary to the Commission within nine months of the issuance of this Order, indicating whether any other service situation exists where the Company provides service to customers through shared service lines, the location(s) of such service(s), the number of affected customers, and a proposed plan for Commission consideration to address shared service line(s) that require replacement.

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Section 1: Executive Summary:

Since 2013 Fishers Island Water Works Corporation (FIWW) has taken significant steps toward water conservation. One of these steps was to identify and resolve failing shared services throughout the system. FIWW's water conservation efforts started in earnest in early 2013. The company's submission of the Annual Water Conservation Report of 2018 (AWCR 2018) to the New York State Department of Environmental Conservation in August 2018 details the company's water conservation efforts. The progress FIWW made in those years to address leaking pipes and customer services can be found in the AWCR 2018 in Appendix 4. Many of the leaks found and resolved in the AWCR were identified as non-tariff complaint shared services.

The Gloaming was identified as a shared service in these early efforts well before Case 24-W-0146. However the leak was only first discovered late July 2020. The Gloaming shared service was a particularly difficult situation to resolve since the company did not have a right of way over the property where the shared service was located, and a simple repair was not going to be possible due to the condition of the line.

Although FIWW is thankful to have the Gloaming shared service issue resolved, FIWW believes the Commission may benefit from understanding further details the company encountered before filing petition Case 24-W-0146. Some of the difficulties encountered are detailed below:

1. Condition issues identified in an adjacent pipe (made from the same material and installed at the same date) made it clear repairing would most likely result in an unrepairable outage. A full replacement was needed.
2. The replacement in place would have been a violation of the company's published Tariff and Suffolk County Health Code.
3. Customers had property rights to run service lines from an existing main down a shared road but refused to do so.
4. Refusal of customers to take any monetary responsibility for any of the work needed to solve the issue resulted in FIWW's action to plan for a new water main extension. A new main requires approval of Suffolk County Department of Health (SDOH) and main extension approval from SDOH requires submission of a full engineering plan. Both are lengthy processes. FIWW undertook the work noted above prior to submission of the petition of Case 24-W -0146.
5. Case 24-W-0146 petition was filed to obtain an order to resolve the question of misappropriation of funds if the company was to spend rate payers funding for the benefit of private property owners.

Shared Services

FIWW further understands the importance of addressing all shared services in the Fishers Island community's water system.

In Appendices 1&2 FIWW has identified conditions, provided customer counts impacted, evaluated status as well as set priority ratings for all known shared services in compliance with the Case 24-W-0146 order. Hereafter those priority ratings are known as phase 6 and 7.

In addition to Appendices 1 & 2 shared services condition report, included please find highlights of the overall system condition from a recent engineering report prepared by J.R. Holzmacher P.E., LLC Consulting Engineers (approved by SDOH as appropriate) and a system description. **The additional information is being shared in hopes it will help the Commission to better understand the challenges the company faces with critical infrastructure. As well as the need of the company to prioritize repair and replacement of the most critical pieces of the infrastructure first (to avoid catastrophic system failures) before the work plan is implemented and limited resources are spent to address less critical (non-leaking) shared services outlined in Appendix 1& 2.**

Background:

The Fishers Island Utility Company (FIUC) provides electric, telephone and potable water supply to a year-round population of 236 residents (2010 Census) within a 4.06 square mile service area. Fishers Island is a resort destination with a significant increase in population during the summer vacation season. The summer population is estimated at 3,500. The potable water supply is administered through the Fishers Island Water Works Corporation (FIWW), which serves the entirety of Fishers Island. Fishers Island is located at the extreme eastern end of Suffolk County in the Long Island Sound, near the Connecticut coastline as shown on Figure 1 (Separately included in J.R Holzmacher full report).

Fishers Island is long and thin, running generally from Northeast to Southwest, and was formed as a “sand pile” of glacial moraine during the retreat of the last glacier. Development on the east end of the island dates back to after the Civil War and now consists of low-density luxury homes and a golf course. The island was home to a former military base on its west end, developed following the Spanish American War, which was active during both World Wars. The west end is generally at lower elevations with higher elevations more typical along the spine of the island and toward the east end.

The island is surrounded by salt water and has a fresh water aquifer “floating” above brackish water. The island also has several fresh water ponds that have historically been used for potable water supply. (J.R. Holzmacher P.E., 2019)

Section 2: Water Supply System Description

The FIWW was founded in 1918. A surface water treatment plant is located in the central third of the island. The plant can filter water from an adjoining pond with treated water then store it in a 117,000-gallon clear well. Booster pumps are used to raise this water to distribution system pressures. The surface water treatment plant has a nominal capacity of 1 million gallons per day (694 gpm). The plant has been relegated to emergency use only since 2018 due to the extensive alterations which would be required to meet the disinfection contact time requirements of the Enhanced Surface Water Treatment Rule.

The water system operates a total of three potable supply wells located at the Groundwater Treatment Plant, near the middle of the island, as shown on Plate 1. (Separately included in J.R Holzmacher full report). These wells each contain manganese which is naturally occurring in the aquifer. A manganese removal filtration system was installed during 2018 which has a combined capacity of 400 gpm to treat all three wells. Water from each well is treated with soda ash to raise the pH and with sodium hypochlorite to oxidize manganese and as a disinfectant. AquaMag linear phosphates are added to reduce pipe corrosion within the water distribution system.

The potable water distribution system consists of approximately 22 miles of water main ranging in size from 2-inch to 10-inch diameter. Materials of construction are primarily unlined cast iron (CI) pipe. Pipes on the west end of the island are reported to have been installed in 1902, with those located east of the surface water treatment plant installed since 1926. All available flow test data since 1970 showed these pipes to be tuberculated and to have poor roughness characteristics. The geography of the island results in a distribution system configuration that is more like a “straw” than a “network,” with numerous locations depending upon a single pipe to move water east and west. The distribution system contains a total of 148 fire hydrants.

The water system operates as a single pressure zone with a 500,000-gallon ground tank located at the high point of the island and referenced as the Chocomount reservoir. This tank is located within the eastern third of the island. The surface water treatment plant clear well and booster pumps are still maintained and used for potable water storage. Table 1 (Separately included in J.R Holzmacher full report) contains a summary of the pumping capacities for the three wells owned by FIWW. (J.R. Holzmacher P.E., 2019)

Section 3: Anticipated Growth & Improvements to Serve Existing Customers

Higher density development on the island is not anticipated. However, the water system has not been able to supply rated firefighting flows in many areas of the island, so improvements are needed in order to serve existing customers.

Implementation of the transmission main improvements cannot realistically be done in a single step due to financing constraints. Even if grants can be obtained, grant funds are customarily issued as a reimbursement of funds expended so breaking the work up into multiple smaller projects is necessary since it requires less working capital.

The existing water distribution system is illustrated on Plate 1. (supplied separately for J.R. Holzmacher full report) The legend shows color coding to indicate the diameter of the water mains. The Fishers Island water distribution system is unusual in that there are numerous locations where all water passing east to west must transit via a single segment of pipe rather than flowing through a network of multiple pipes. The island geography also poses a disadvantage in that the principal storage tank is located over a mile east of the water wells, and those in turn are over three miles from the location of the buildings requiring large fire flows at the west end of the island.

The running length of water main from the Chocomount reservoir to the vicinity of the airport and the school on the west end is approximately 5.25 miles. Since the rated fire flow is greater than combined capacity of all the wells and booster pumps, the ultimate source of the fire flow is the Chocomount reservoir unless other improvements are made. Transmitting this water over five miles without excessive head loss due to pipe friction is a substantial challenge. Improvements made at the Surface Water Treatment Plant and Groundwater Treatment Plant can reduce the length of new water main required by 1.38 miles. (J.R. Holzmacher P.E., 2019)

Section 4: CI Condition

1970 Report

An engineering report was prepared by Metcalf & Eddy (M&E) during 1970. This report made reference to an earlier report prepared in 1960 by the New York Fire Insurance Rating Organization (NYFIRO) which noted deficiencies in available fire flows on the west and extreme eastern ends of the island. The M&E report utilized a definition of a fire protected area as those served by hydrants that could sustain fire flows of 500 gpm for a duration of four hours, for a total flow of 0.12 MG. This definition may have been carried forward from the 1960 report.

Field work during 1970 included performance of hydrant flow tests at six locations. Findings included “a serious deficiency in fire flow existed in all areas investigated.” The report also addressed the condition of the unlined CI mains. The 10-inch diameter mains were found to have a roughness factor, “C” equal to 50 for the pipes installed in 1902 running west from the surface water treatment plant, while the pipes running east, built during 1926, had a C equal to 70. Tests on 6 inch diameter mains resulted in C values of 60. Higher C values are better, with new PVC pipes typically assigned values of 150 and old ones a value of 120.

It has been nearly 50 years since those tests were performed. Internal corrosion of the pipes has undoubtedly continued. However, it has been observed in other water supply systems that once a pipe is fully tuberculated it will continue to form scale and tubercles but the measured

roughness will not drop much below 50.

The M&E report recommended cleaning and relining of much of the existing 10 inch diameter pipe and replacement of some sections of 4 and 6 inch pipe with new 8 inch diameter pipe. The occurrence of pipes which are too small, regardless of their condition, is exacerbated by the substantially higher fire flows now required. (J.R. Holzmacher P.E., 2019)

1980 Report

A second engineering report was prepared during 1980. That report noted that the 10 inch diameter main from the Surface Water Treatment Plant to the west end had been pigged and relined during 1974, but with limited benefit. It further noted that the C value on the pipe between the Surface Water Treatment Plant and the Chocomount reservoir had decreased from 70 to 50 in the intervening ten years. The report made reference to a “water flow of 500 to 1,000 gpm that is considered acceptable for fire protection...” but without attribution for the higher flow rate. (J.R. Holzmacher P.E., 2019)

Structural Integrity deterioration

A second form of corrosion relates to the exterior of the pipe and to the structural integrity rather than just the pipe roughness and resistance to water flow. Unprotected iron pipe can form electrolytic cells between the pipe and the surrounding soils and between the pipe and the fluid being carried internally. These cells act very slowly and remove atoms of iron from the pipe wall which are replaced by oxygen and by carbon in the form of graphite transported from the surroundings. (J.R. Holzmacher P.E., 2019)

Graphitized corrosion of gray cast iron is a deterioration process whereby the iron matrix in the cast iron corrodes without any visible loss of material. The affected material is transformed from an intact metallic phase to a porous corrosion product phase which has no structural integrity. This process can proceed as either a layer type corrosion or can be localized in pits or plugs. When a significant fraction of the wall thickness has been converted the pipe will crack readily and without warning. We are not aware of any specific incidents of this within the Fishers Island distribution system but the potential for such an occurrence is high based on the average pipe age and the corrosion noted on the pipe interior. (J.R. Holzmacher P.E., 2019)

Section 5: Documented Examples of Graphitized Corrosion

Since the publishing of the Holzmacher report in 2019, FIWW has learned the warning signs of the loss of structural integrity are first bell failures followed by lateral failures in the wall of pipe. FIWW has tracked both as shown in Appendix 3.

Furthermore, FIWW recently experienced a system wide service failure due to a lateral break in a 10 inch main on Christmas Eve 2024, requiring a SDOH boil notice to be issued. FIWW expects more of this type of outage in the near future.

Section 6: Prioritized Construction Work Plan Phase 1-5

Accurate construction cost projections can only be developed once large portions of the detailed design have been finalized. However, preliminary cost projections have been developed and recently updated in order to be able to evaluate the relative costs and benefits of the contemplated construction. Recommendations are estimated at \$18,000,000.

Specific projects required to provide the 2,250 gpm firefighting flow recommended by the Insurance Services Office, Inc (ISO) plus peak day demand include the following:

1. Surface Water Treatment Plant Improvements – This project will include an increase in the existing booster pumping capacity to 2,100 gpm while adding a third pump to provide mechanical redundancy with the largest pump out of service. Related improvement will include covering the filter beds to serve as a finished water storage tank and increasing the diameter of the pipes discharging from the booster pumping facility.
2. Ground Water Treatment Plant Improvements – This project will include installation of a 12 inch diameter pressure relief valve and roadway vault just east of the plant discharge location to the new transmission main.
3. Transmission Mains – Phase I – This project includes new transmission mains from the Ground Water Treatment Plant to Montauk Avenue. This work is shown on Plate 2. (Separately included in J.R Holzmacher full report)
4. Transmission Mains – Phase II – This project includes new transmission mains on Oriental Avenue to Fox Avenue plus a loop on Montauk Avenue. This work is shown on Plate 2. (Separately included in J.R Holzmacher full report)
5. Transmission Mains – Phase III – This project includes new transmission mains from Oriental Avenue, along Ettrick Avenue to the Airport plus a branch to the Ferry Freight Office. This work is shown on Plate 2.(Separately included in J.R Holzmacher full report)

Additional work that can be considered if funding allows includes the following:

6. Transmission Mains – Phase IV – This project includes new transmission mains from the Chocomount reservoir to Ground Water Treatment Plant. This work is shown on Plate 2. (Separately included in J.R Holzmacher full report)

Transmission Mains – Phase V – This project includes new transmission mains within the west end along Crescent Avenue north of Montauk Avenue and in the east along East End Road from Chocomount Reservoir to near the Fishers Island Club. This work is shown on Plate 2 (Separately included in J.R Holzmacher full report). (J . R . H o l z m a c h e r P . E . , 2 0 1 9)

Section 7: Funding Plan

Funding Phase I-V

FIWW is preparing a major rate case petition that will be submitted to the commission when complete.

FIWW has made application to the water section of the Rural Utilities Service (RUS) of the United States Department of Agriculture (USDA).

Funding Phases I,II and IV

At the request of RUS USDA the original application made by FIWW was modified to reduce the request amount from \$18,000,000 to \$9,000,000. The modified application consists of Phases I,II and IV of the original plans and was submitted to RUS USDA on December 17th, 2024. If approved the modified application will fund the replacement of the oldest and most critical section of the water distribution main first. FIWW anticipates the financing for phases I, II and IV from USDA to come in the form of a grant and a low interest long term loan. FIWW expects USDA terms will be acceptable to the commission.

Funding Phases III, and V

Phases III, and V funding and beyond may prove to be more problematic. Although more long-term low interest funds could be available to FIWW through the USDA, FIWW has learned through conversation with USDA, a poverty rate would first need to be established in the FIWW tariff to do so. This new (Poverty) rate is believed to be needed in order to meet USDA requirement that limit the increase in rates no more than 3% of annual income for rate payers making below the \$56,000 median annual income level identified in the US census.

In addition, FIWW believes Commission will have concerns over the percentage increase for all potable rate payers. To alleviate some concerns anticipated from the Commission. FIWW will be proposing a new service class for Public Fire Protection be added to FIWW's tariff, distinct from potable water classes as well.

Phases VI and VII

Phases Vi and VII are described in the section below.

The estimated cost to hire outside contractors to replace 1 mile of water main is approximately \$2.5 M. FIWW believes after the larger system problems have been corrected in phases I-V, the work of replacing one mile of water main annually could be accomplished in house at a vastly

reduced cost if some additional resources were added. The additional resources would consist of two additional headcounts (commuting to Island daily), a mini excavator, a backhoe and a dump truck. Equipment is estimated to cost approximately \$500K and two additional employees around \$325k annually.

Section 8: Remaining Shared Services Work Plan Phases VI & VII

Shared Services that require a water main extension to correct.

Phase VI

Going forward beyond phase V FIWW has identified the need to replace 1 mile of water main per year. The first of which will address the identified need for main extensions in service groups 2-4 to correct shared services identified in Appendix 1 on page 10. This work is expected to be self-funded and performed in-house. FIWW will need to increase head count and purchase additional equipment to minimize costs to perform this work in house.

Shared Services that are located on Private Property.

Phase VII

FIWW has identified 9 shared service locations affecting 21 customers where water mains already exist. All 21 customers could correct the shared service condition by replacing customer owned service lines. A list of customers and locations is available in Appendix 2 on page 11.

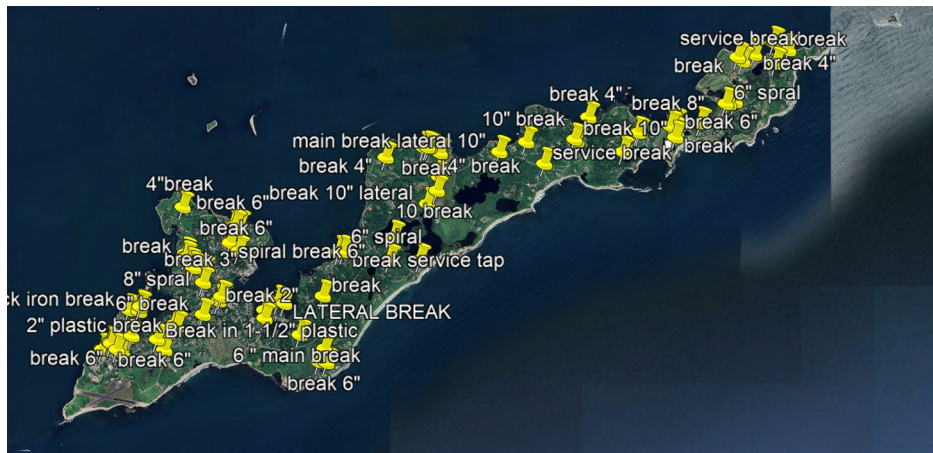
Appendix 1: Shared service that will require main extensions to correct.

Service Group	Service Names	Tax map id#	Comments	leaking
1	Boyd	1000-9.-6-9	Phase II	no
	Hanau	1000-93-11-3.1		no
2	Z&S	1000-12.-1-3	Phase VI new services needed	no
	Paddle Court CC	1000-12.-1-1.2		no
3	Ross	1000-5.-1-4	Phase VI New Main Extension	no
	Van Hengel	1000-5.-1-7.5		no
4	Village Market	1000-6.-2-22.5	Phase VI	no
	Club	1000-6.-2-22.2		no

Appendix 2: Shared Service line on Private Property

Service Group	Service Names	Tax map id#	Comments	Leaking
1	Collins	1000-9.-11-8.1	New services needed	no
	Wasson	1000-9.-11-9.2		no
	Elwell	1000-9.-11-9.3		no
2(1920s)	Ferry Terminal	1000-12.-1-10	Main in place new services needed	no
	Cook	1000-12.-1-9		no
3	Carrol	1000-9.-7-1	Main In Place	no
	Carrol	1000-9.-7-3		no
	Oshea	1000-9.-7-4		no
4	Broom	1000-3-25.4	Main in place new services needed	no
	Seville	1000-10.-3-25.3		no
5 (1930s)	Walsh Park (Kucsera)	1000-10.-7-7	Main in place new services needed	no
	Gaillard	1000-10.-7-6		no
	Genesse	1000-10.-7-8		no
6	Walsh Park (Harrison)	1000-9.-5-4	Main in place new services needed	no
	Peishoff	1000-9.-5-9		no
7	Walsh Park (Aeillo)	1000-9.-5-5	Main in place new services needed	no
	Walsh Park (Hall)	1000-9.-5-8		no
8	Jameson	1000-9.-1-19	Main in place new services needed	no
	Parsons	1000-9.1-18		no
9	Ahman	1000-9-4-19	New service needed	no
	Parsons	1000-9--20	New service needed	

Appendix 3: Main Break Map



Appendix 4: FIWW WATER CONSERVATION ANNUAL
REPORT

**FISHERS ISLAND
WATER DISTRICT
Fishers Island, New York
WATER CONSERVATION
ANNUAL REPORT**

August 2018



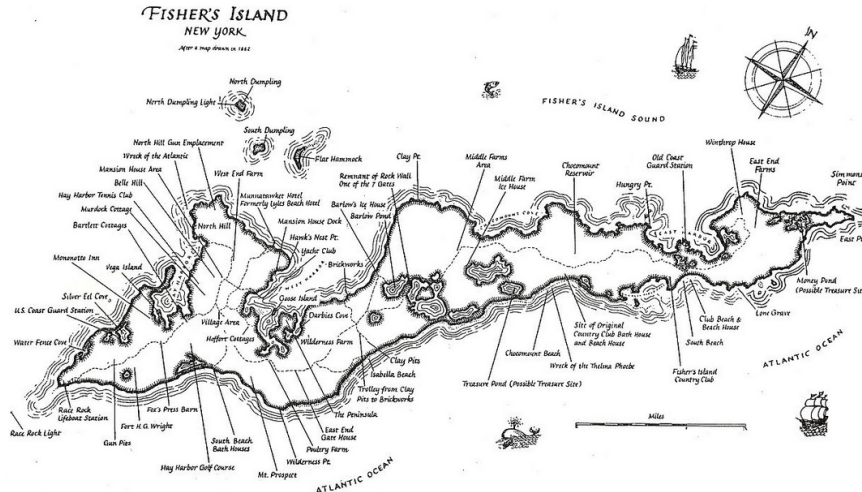
SUMMARY

This document is the first annual Water Conservation Report issued by the Fishers Island Water Works, Fishers Island, New York in accordance with the Water Conservation effort coordinated by the New York State Department of Environmental Conservation. In addition to reporting on Water Conservation efforts on the island, this document provides an introduction to Fishers Island itself and contains information on the history and operation of the water supply systems on Fishers Island.

In summary, we are happy to report that through our efforts over the past 5 years, Fishers Island Water Works Corporation has been successful at reducing the island's overall water loss within the distribution system by 22%. We are actively pursuing opportunities to conserve even more, but we are very proud of the fact that we have already surpassed the 15% targeted conservation goal.

INTRODUCTION

About Fishers Island, New York



Fishers Island, New York, located at the eastern entrance to Long Island Sound, lies approximately two miles off the southeastern coast of Connecticut opposite Stonington. Regular passenger and auto ferry service connects the Island with New London, CT (45 minute boat ride) while smaller commuter boats run back and forth to Fishers from Noank, CT. As a seasonal resort, the Island's population fluctuates greatly. The year-round population was 236 in the 2010 census. This off-season number increases to approximately 3500 during peak summer periods. The year round population supports the school, volunteer fire department, EMT's, health services and many other critical functions for the Island, not to mention most of the services to the seasonal community.

Fishers Island has no established form of local government. Although Fishers Island is geographically close to the Connecticut coast, it is politically a hamlet of the Town of Southold, NY, at the eastern end of Long Island. This unusual arrangement can be traced to the Duke of York's 1664 land patent, a document that trumped Connecticut's prior claims to the seven-mile long island. The bitterly disputed boundary line wasn't finally settled until 1879/80. Interestingly enough, the island still possesses a Connecticut Postal Zip code of 06390.

The grand hotels of the last century are gone, two of them victims of the Great Depression, and no single family owns the land, but Fishers Island remains very private, and nourishes its relatively quiet pace of life. Although the community is small, Fishers Island is supported by a wide range of Island institutions, organizations and businesses.

Fishers Island School is a pre-K to 12th grade New York public school with some 70 students, approximately half of whom commute from New London to Fishers Island. The School provides students with a "high quality" core curriculum in addition to a wide range of required and self-selective courses in the arts, career development and occupational studies, health/physical education/family and consumer sciences. Students are also offered the opportunity to broaden their learning experiences beyond the classroom. They can take advantage of an array of co-curricular and extracurricular activities within the school environment and the

extended Fishers Island community. The Viking sports teams compete with local mainland schools in cross-country, basketball and golf.

The Island has a grocery store that is open year-round and a deli-style market that opens during the peak season. There are two realty companies, two gas stations, a marina, a hardware store, two art galleries, and two bike rental shops. There are also several major landscaping firms and general contractors. The private clubs on Fishers Island include the Fishers Island Club (also known as “the Big Club”), the Hay Harbor Club, and the Fishers Island Yacht Club.

The small town center features three gift stores, a liquor store, and an ice cream store. Anchoring the Town Green is the Fishers Island Utility building with the Fishers Island Post Office located on its first floor. Other venerable Island establishments include the American Legion, open year-round, and the Pequot Inn, open six months of the year offering food and drink. The **Fishers Island Oyster Farm**, established in 1959, is the island’s only remaining major farm and only product exporter.

Fishers Island Volunteer Fire Department and associated EMTs provide Emergency services to the island. A “Sea Stretcher” ambulance boat is utilized for emergency transportation to the mainland. Health care is made accessible to island residents and visitors by the **Island Health Project**, a vital non-profit organization that funds and manages a medical office near the center of town that has an associated full-time doctor who lives on Fishers Island. The Island’s law enforcement is provided by year-round constables who are assisted throughout the year by New York State Troopers.

Fishers Island Ferry District provides public marine transportation services from Fishers Island to New London year around via the Race Point and Munnatawket ferries. The District also manages property owned by the Town of Southold on Fishers Island including the Parade Ground, the theater, and the airport. Elizabeth Field, a former military airfield with two asphalt-paved runways, is situated at the western tip of the Island.

The Fishers Island Utility Company was formed in 1965 to furnish Fishers Island with vital Electric, Telephone and Water Service. The current Fishers Island Utility Company is a subsequent company of the Fishers Island Farms Utility Company founded in 1918.

The Fishers Island Utility Company (“FIUC”) holds substantial ownership interest in the three “operating” corporations (Electric, Telephone and Water) and provides management, office and payroll services to each as well as to the independent Fishers Island Development Corporation (“FIDCO”). The Electrical, Telephone and Water corporations and their rates are fully “regulated” as public utilities by the New York State Public Service Commission (“PSC”). Rates charged to our customers on Fishers Island are approved in advance by the NYS PSC. Periodically, these regulated “operating” entities apply to the NYS PSC for approval of proposed rates and rate changes.

Brief History of the Fishers Island Water Works

1904: Barlow Pond and Island Pond Water Supplies

In 1904, E.M. & W. Ferguson’s Fishers Island Water Co. began providing water to the residents of Fishers Island when two of the east end lakes were harnessed as a water supply. That year they built a water distribution system consisting of a pumping station, a pumping main, and a reservoir. Prior to the establishment of the pumping station, fresh water on Fishers Island was provided by private wells.

The heart of the entire 1904 water system was the brick pumping station located on Barlow Pond that pumped potable water through a pumping main from Barlow Pond (13 acres surface area) and adjacent Island Pond (47 acres) to the Belle Hill Reservoir atop Shingle Hill.

1904 – Late 1950’s: Belle Hill Reservoir

The original Belle Hill Reservoir—perched above the Mansion House Cottages—had a capacity of 330,000 gallons, a diameter of 51 feet, a depth of 22 feet, and 24-inch thick brick walls. Water was gravity fed from its tank which stood at the highest spot on the west end.

Mid 1920’s: Chocomount Hill Reservoir, Middle Farms Pond Water Supply Added

When the eastern two-thirds of Fishers Island were developed in the mid-1920s, a second large reservoir was built atop the east end’s Chocomount Hill with a capacity of 500,000 gallons. After its completion in 1926, this new “Top of the World” site became the preferred reservoir that was used to supply the whole system and still remains in operation today. Middle Farms Pond (32 acres) was added as a backup surface water source during the spring of 1926.

1927: Filtration Plant Built

As part of the development of the east end, a Filtration Plant was built in 1927 to treat, filter and chlorinate the Island’s lake-based water supply. The Filtration Plant remains on “stand by” status, but is still used in July,, August and September to augment the well system.



Completed Water Filtration Plant circa 1927

1938 – 1940’s: Island Pond Breached by Hurricanes

After Island Pond was breached during the 1938 Hurricane, it was subsequently restored as a fresh water lake. When it was breached again by another hurricane in the 1940s, it was permanently disconnected from the reservoir system. Island Pond is better known today as “Oyster Pond” for its brackish water has been utilized for oyster cultivation for over 50 years and is currently the home for the **Fishers Island Oyster Farm** .

1988: Middle Farms Wells Dug

Test wells were dug in 1988 to enable the 60-year old Filtration Plant facility to be taken off line for maintenance. The wells, located in the aquifer of Middle Farms, provided a plentiful supply of good quality water and proved cost effective. They have been the Island’s primary source of water since 1990. The Filtration Plant remains on “stand by” status, but is still used in July, August and September to augment the well system.

Fishers Island Water Works Operation-Today

Water Sources

The source of water for the Fishers Island Water Works Corporation is groundwater pumped from two wells located in the Middle Farms area that are drilled into the Glacial aquifer beneath Fishers Island. (See Figure 1 below) Together their output averages 190 gpm (gallons per minute). For the months of July-September, our water supply is supplemented by a Surface Water Plant that takes its water from Barlow Pond. During the off-season, these two wells are able to provide all the water needed by the island. In the summer months, however, our water needs spike to between 300 to 400 gpm.

A new groundwater well, being readied and is scheduled to be online in September, 2018, will produce between 200 and 250 gpm and should provide enough water for our year-round needs as well as the increased demand for July-September. After September, 2018, the backup water supply to the wells will still be primarily surface water from Barlow, but will also utilize Middle Farms, and Treasure Ponds if needed. After this time, the surface water will only be used in extreme situations.

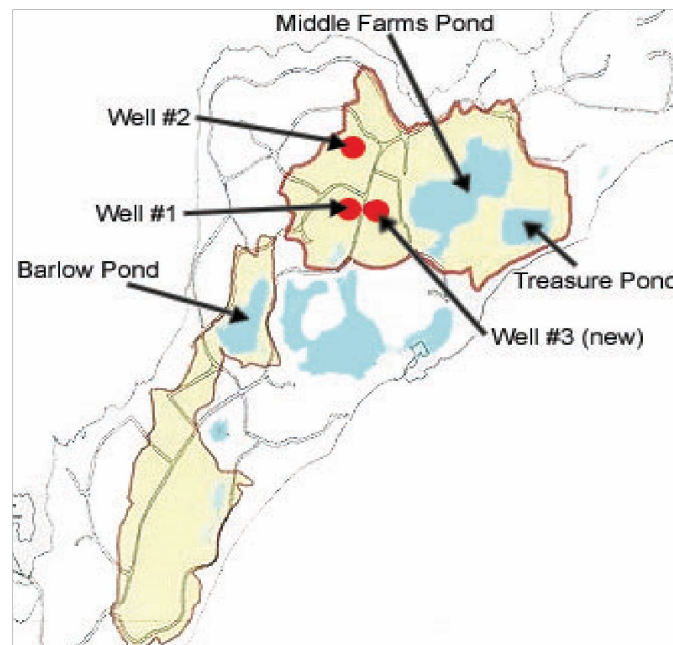


Figure 1

Water Treatment

The Fishers Island Water Works Corporation provides treatment at all wells to improve the quality of the water pumped prior to distribution to residents. The pH of the pumped water is adjusted upward to reduce corrosive action between the water and water mains and in-house plumbing by the addition of soda ash. The water is also chlorinated with sodium hypochlorite to protect against the growth of bacteria in the distribution system. A polyphosphate AquaMag is added to the water for iron sequestering.

As stated above, during July, August, and September, we currently supplement our water supply with surface water. This water receives additional treatment that includes, chemical addition of aluminum

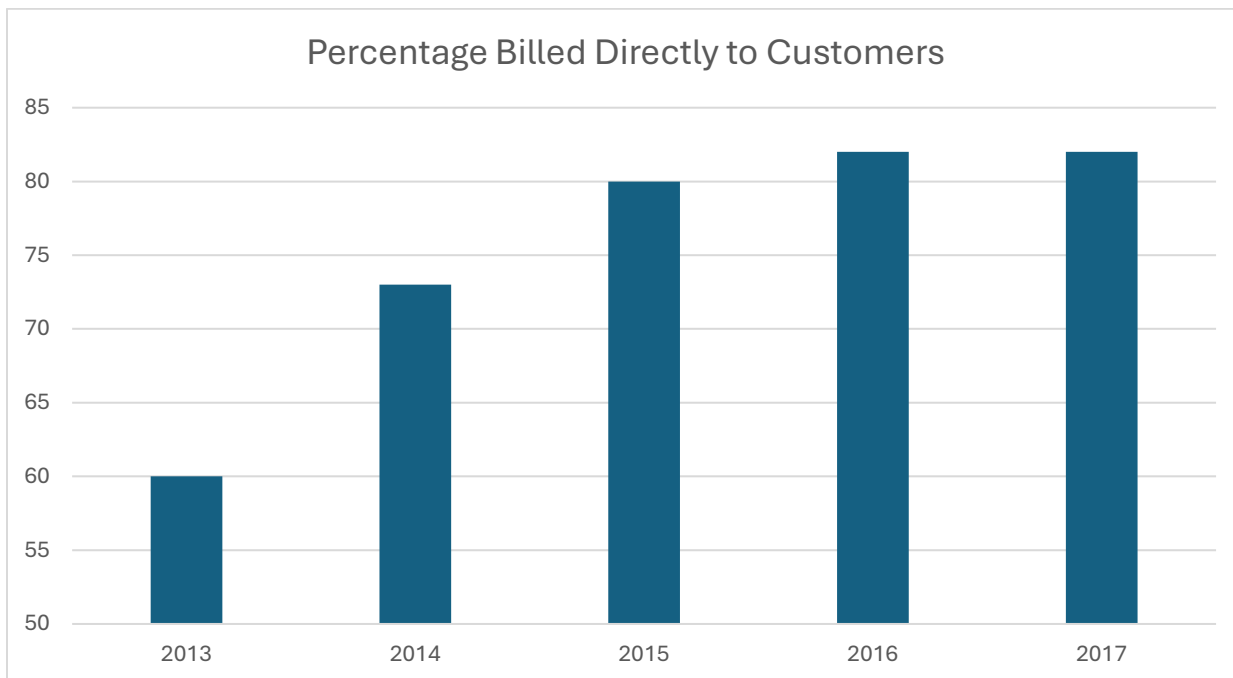
sulfate for coagulation, sedimentation and sand filtering for the removal of solids. The regular use of the surface water plant is expected to end September 2018 once the new well is operational. However, the surface water plant operation will be maintained to be able to use it if necessary.

Water Distribution

In addition to operating and maintaining the treatment plant, reservoirs, and wells, FI Water Works Corporation maintains a distribution system containing approximately 22 miles of underground water piping. The average age of these main distribution pipes is 80 years with the oldest section of approximately 3 miles is 117 years old. This physical distribution system is carefully maintained, tested and inspected for leaks to ensure that the water dependably is distributed and is of the same high quality that leaves the treatment plant. This process includes routinely flushing the system twice a year to remove sediment and keep the water clear as well as other proactive measures. We provide metered service to 645 services and unmetered service for 148 Fire Hydrants to the Fishers Fire District.

Water pumpage and distribution records are maintained daily and are reported on monthly. Individual daily usages and water levels are also analyzed to identify any abnormal situations, such as major leaks or unexpected water loss. Should this situation occur the issue is quickly isolated and is addressed as soon as possible to minimize water loss.

Year over year, Fishers Island WaterWorks has consistently improved its efficiency in delivering water to our customer base. Below is a chart illustrating this improvement by exhibiting over a 20% improvement in water distribution over a 5-year span. As a point of interest, this improvement reflects our historic water conservation successes even before the customers gets the water distribution.



Main Replacement

Under Fishers Island Water Works Corporation's 20 year capital improvement plan two areas known as the Fort and Shingle Hill have been identified as the areas in most need of main replacement. Additional funding

will be required for these improvements and other the company plans to rise the funding for future projects through a combination rate increases and surcharges. As part of the main replacement program AMR distribution metering is also planned. Distribution metering will be used to alert operators when leaks occur throughout distribution.

Water Quality Monitoring

The Fishers Island Water Works Corporation routinely monitors for numerous parameters and contaminants in the island's drinking water as required by Federal and State laws. Drinking water is tested for coliform bacteria, turbidity, inorganic contaminants, lead and copper, nitrate, volatile organic contaminants, total trihalomethanes and synthetic organic contaminants.

In addition to the tests referenced above, information on a per source basis other data is captured and reported on. Quantitative data such as water pumpage volumes, water temperatures, pH, turbidity, and residual CL2 levels are all reported on and maintained. In addition, use of additives such as soda ash (to maintain proper pH levels), sodium hypochlorite (to protect against the growth of bacteria in the distribution system) and the use of the polyphosphate AquaMag are all captured. All Individual test results are taken and evaluated daily and are reported on monthly.

Fire Prevention

Fishers Island Water Works Corporation has 148 fire hydrants installed on Fishers Island and is responsible for maintaining, testing and flushing them but we routinely service hydrants and perform non-scheduled maintenance when we are notified that a hydrant needs attention.

Additional Notable Waterwork's Accomplishments/Improvements To Date

- Improved Surface Water Plant electrical service
 - Dug trench and installed a conduit run from the Pump House to Main Plant
 - Rewired all lighting within Pump House
 - Upgraded Main Plant electrical panel to circuit breakers
- Ammonia Room Improvements
 - Installed breathing safety equipment for the Ammonia Room
 - Implemented Ammonia bottle emergency kit and nstalled an ammonia alarm
- Rebuilt Highlift pump #2
- Installed a flush point for the "new" well in the Well House
- Cleared land at the Well House to allow for installation of the new filter system
- Completed Aqua Guard treatment on the island's two existing wells

Fishers Island Water Works Operation-Tomorrow

- Complete installation and full integration of Fishers Island Water Works' new filtration machine, September-December 2018
- Complete implementation and integration of Third Well on Fishers Island, September-December, 2018



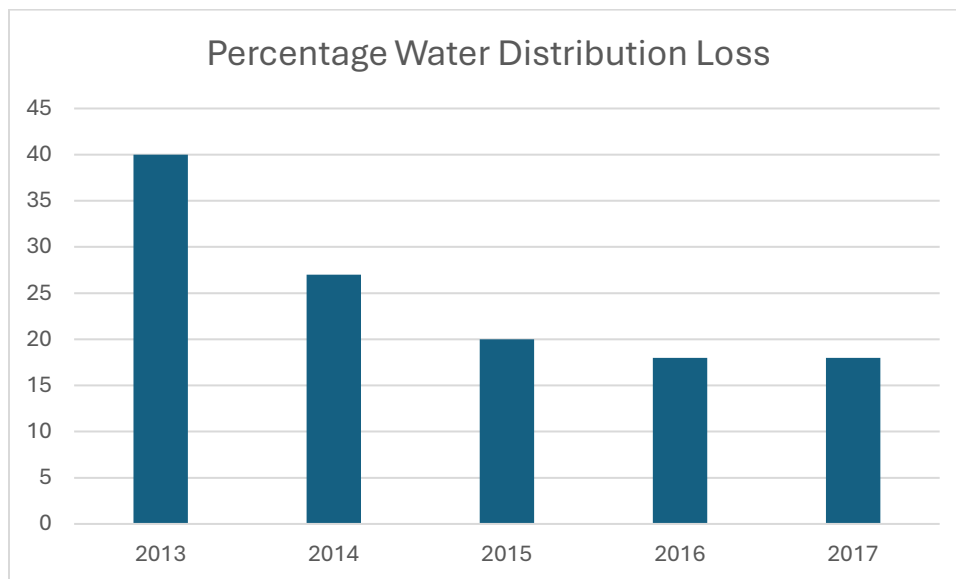
Fishers Island Water Works' new filtration machine, arrived on July 17, 2018. After installation is completed, the filtration system will process all of the island's water producing incredibly clean and pure drinking water while concurrently improve overall well output. Ultimately a building will be built around the system to adequately protect it.

- Continue making repairs and improvements to the island's aging distribution infrastructure. Thus far in 2018, the Fishers Island Water Works repaired 14 water line breaks that had resulted in an estimated water loss of approximately 810,000 gallons of water. Corrective measures addressed the immediate issues however also improved the overall infrastructure by implementing needed upgrades and replacements.
- Plans to extend water main by 700 feet in 2018. New valves and Flush Points (Hydrants) will be strategically placed to improve the overall water system.
- Scheduled to replace older property water service lines in 2018 for two island homeowners that will address suspected long time leaking issues.

Fishers Island Water Conservation Efforts-Today

Conserving Water within the Distribution System

The underground water system of Fishers Island is a limited supply however the recharge rate that is believed to be ample to meet current peak demand. Reducing future demand and accurately accounting for irrigation usage of private wells will ensure that our future generations will always have a safe and abundant water supply. As is evident by the above discussions, Fishers Island Water Works has been successful at improving the overall water system. However, an appreciable secondary benefit of the steps we have already taken far exceed the requirements of the New York state conservation plan to reduce water loss by 15% as our water loss reduction from 2013 to today is 22%, as is illustrated in the chart below. We are sure you will agree that our proven success of reducing water loss over the past 5 years coupled with our continued efforts to inform the public shows we are actively working towards water conservation and that we take it very seriously.



Unbilled water loss in 2013 was 40%, 2014 was 27%, 2015 was 20% and for 2016 and 2017 was 18%.

Resident Outreach Program

In addition to our documented water distribution efficiency improvements, Fishers Island Water Works maintains additional links on our website to inform the public about water conservation: (Fishers Island water resources and Fishers Island water conservation).

<http://fiuc.net/water/water-conservation/>

<http://fiuc.net/water/water-resources/>

In 2017, the Fishers Island Water Works Corp. continued to implement a water conservation program in order to minimize any unnecessary water use. Residents of Fishers Island have been encouraged to implement their own water conservation measures such as retrofitting plumbing fixtures with flow

restrictors, modifying automatic lawn sprinklers to include rain sensors, repairing leaks in the home, installing water conservation fixtures/appliances and maintaining a daily awareness of water conservation in their personal habits. Besides protecting our precious underground water supply, it has been stressed to our residents that water conservation will produce a cost savings to the consumer in terms of both water and energy bills (hot water).

An example of the success of this outreach program is with the Fishers Island Club, our largest water consumer in 2016, who implemented a holding pond to reduce the need to draw on the public drinking water system by over 250,000 gallons for their irrigation needs annually. As a result of this conservation effort, for 2017 the Club dropped to being the second largest treated water consumer for 2017.

Watershed Protection

Fishers Island is blessed to have a secondary water source to back up our well field, consisting of three ponds. Although the dependence on surface water is believed to be less critical in the years to come, the need to maintain them will be no less critical.

A watershed is the area of land around a water source. Well-maintained watersheds are vital for a healthy water supply. Rain and melting snow can carry sediments and other materials into lakes and streams that can contaminate water supplies. As policy, construction and development are limited near our primary water sources however saltwater intrusion of underground sources as well as fertilizers and contamination from septic systems remain concerns for surface water sources. Our three ponds (Barlow, Middle Farms, and Treasure) serve as our secondary sources of water, but are equally as critical to our overall water supply. Barlow Pond is currently in use on a daily basis during the summer months as its water is what is being filtered when the surface water plant is operational. Middle Farms and Treasure Ponds are not currently in use, but would be called upon should our well water supply become depleted and are defined and must be maintained as part of our 100-year drought plan. So, while these two ponds are not currently in use we must be vigilant about maintaining their water quality.

Because the Primary Watershed area is our source of drinking water for the island, the New York Department of Health Services and Fishers Island Water Works have placed many restrictions on this area. Some of the most important ones are:

- Underground heating oil -Storage tanks are not permitted in this area
- The commercial use of pesticides and herbicides are prohibited in this area (this is why the driving range, which is located in the Primary Watershed, cannot be fertilized or treated for weeds).
- Swimming, boating, and fishing are not allowed in Barlow Pond
- Currently boating, swimming and fishing are not permitted in Middle Farms or Treasure Ponds as we conduct water testing to determine the water condition.

Oversight on Private Well Use

In addition to the wells that provide public drinking water, the New York Department of Health Services mandates Fishers Island Water Works maintain an inventory of all private wells and their annual output as part of the Primary Watershed Protection Plan developed in 1998.

In 2015, FIWW efforts turned toward better understanding irrigation water being drawn from the aquifer in the primary watershed by others. Article 4 of the Suffolk County Sanitary Code also contains a special provision for Fishers Island. Specifically, Section 760-452B that reads:

§760-452 Special Provisions

B. Fishers Island Water Supply

1. Watershed protection measures for the Fishers Island Water Supply shall be promulgated in the form of standards established by the Department in order to minimize impacts of pollution on surface and groundwater quality. The standards may impose more stringent requirements than other sections of the Suffolk County Sanitary Code.

Pursuant to this provision in the Sanitary Code, the Suffolk County Health Department in 1997 adopted the "Fishers Island Watershed Protection Standards". Important provisions in the Standards that relate to private well monitoring are the following:

4.6 Owners of irrigation wells are required to report to the Fishers Island Water Works the actual or estimated amount of water withdrawn from the well, per year. Any new irrigation wells must be tested for water quality and reported to the Fishers Island Water Works prior to placing the well on line.

4.7 Any newly constructed private water system will comply with "Suffolk County Department of Health Services Private Water Systems Standards" with the additional provisions that: for any new private well, the applicant shall control or own the area within a 100 foot radius from the well; and where the public water supply is available within 500 feet and is accessible, it shall be the source of potable supply to any dwelling or business.

5.21 The Fishers Island Water Works shall inventory all private well sources and update the listing annually.

Although annual pumping data is also required to be reported to both the DEC and to Fishers Island Water Works by private well owners to maintain their well permits, little to no data is shared with Fishers Island Water Works. An effort is underway to remind private well owners of their obligation to report the inventory of private wells on the island and the usage. Assistance from the New York DEC would be most appreciated to further this effort as conservation in the regard is believed to be very important by FIWW to safeguard the watershed for all that live on the Island. (Specific areas of assistance that NYDEC could provide on this project is covered in the next section)

Fishers Island Water Conservation Efforts - Tomorrow

Enhance Resident Water Conservation Education

Due to the physical size of the Fishers Island and its largely seasonal population, the Fishers Island Water Works Corp. has identified that the most effective way to improve water conservation on the island is through education. Educational programs that publicize water saving tips as well as encouraging self-monitoring water conservation techniques are being planned. In addition, the distribution of “Water Saving Kits” and “Resident Water Audits” are being considered to provide residents a “hands-on” approach to water conservation.

Continuing to Improve the Water System Infrastructure

Fishers Island Works has begun research and development of plans to implement Automatic Meter Reading Technology. Although initially a costly endeavor, it is recognized that over time the return on investment of the project would be beneficial from a financial standpoint as well as to water conservation effort.

Benefits of implementing AMR technology include:

- Identify irregularly high water use by customers signaling possible service leaks in a more timely manner
- Eliminate the need to manually read meters as well as eliminating estimated readings
- Improve meter reading accuracy and will enable customers to monitor their usage over time
- Reduce overall costs of meter reading while increasing the convenience and service to the customers
- Allows FIWW to more closely monitor island wide consumption and more effectively manage the island’s water supply system.

Development of a Plan to Manage Private Wells

Exploring efforts towards the development of a publicly facing website that would provide customers:

- A list of companies registered and authorized by NYDEC to Drill Private Wells
- A way for registered users to log into the site so that they can record what they have done to each connection (drilled well, annual check of the backflow device, record water volume, etc.)
- A way to report on the amount of water that they use out of our shared watershed
- A way to potentially report on septic system maintenance

Note: For the purpose of this discussion, “Connection” as referenced below would include every connection to the public water system.

Connection Type:

- 1. No private well**
 - a. No tracking, reporting, or monitoring is needed
- 2. Private well not in use**
 - a. Annual certification by FIWW that the well is not in use
- 3. Private well using non-potable water**
 - a. One-time
 - i. Provide one-time completion report by driller
 - ii. Provide copy of water quality test report
 - iii. Certify that the well has a working backflow device and water flow meter
 - b. Annual
 - i. Certification by a registered company that a backflow prevention device is operational
 - ii. Reporting of annual output
- 4. Private well using potable water**
 - a. One-time
 - i. Certification by FIWW that requirements are met for a potable water well
 - ii. Provide one-time completion report by driller
 - iii. Provide copy of water quality test report that was submitted to the DOH
 - iv. Certify that the well has a working backflow device and water flow meter
 - b. Quarterly
 - i. Report of quarterly water quality done by a registered company
 - c. Annual

- i. Certification by a registered company that a backflow prevention device is operational
- ii. Reporting of annual output

CONCLUSION

Over the past five years, the Fishers Island Water Works Corporation has worked diligently at reviving the island's water supply and reducing water loss. We are proud that our Water Works Team is passionate at making the water quality and distribution the very best it can be.

Fishers Island Water Works Corporation has been successful at reducing the island's overall water loss within the distribution system by 22%. We are actively pursuing opportunities to conserve even more, but we are very proud of the fact that we have already surpassed the 15% targeted conservation goal.

Acknowledging that clean water is a precious resource, especially on our island, water conservation is extremely important. The Water Works team is embracing this opportunity with the same determination and effort as with improving the infrastructure. In conjunction with the island community, the Team is confident that they can continue their success and positive results in this area.