

Direct Testimony
of
GREGG M. GLASSON, PE
before the
PUBLIC UTILITIES COMMISSION

for

PROVIDENCE WATER

DOCKET#

December 2019

1 **Q. Please state your name and your position.**

2 A. My name is Gregg M. Giasson and I am the Deputy General Manager of
3 Operations/Executive Engineer for the Providence Water Supply Board. I have general
4 oversight of the Engineering, Water Supply and Transmission & Distribution Departments.
5

6 **Q. Please describe your educational background and work experience.**

7 A. I obtained a Masters of Science in Environmental Engineering from Worcester Polytechnic
8 Institute in 2001 and a Bachelor of Science in Civil Engineering from Tufts University in
9 1992. I have worked for the Providence Water Supply Board for seven years, the first two
10 years as the Senior Director of Operations and the last five years as the Deputy General
11 Manager of Operations/Executive Engineer. From 2008 to 2012, I worked for the Pawtucket
12 Water Supply Board as the Assistant Chief Engineer/Chief of Operations. Prior to
13 Pawtucket, I worked at the consulting firm Camp, Dresser & McKee for 12 years where I
14 worked on a variety of drinking water projects as both a project engineer and project
15 manager. I am a Registered Professional Engineer in the State of Rhode Island. I am also a
16 licensed Grade 4 Distribution and Grade 4 Treatment Operator in Rhode Island.
17

18 **Q. What items are being addressed in your testimony?**

19 A. My testimony will cover the following:
20 (a) Infrastructure Replacement Plan (IFR);
21 (b) Chemical and Sludge Maintenance Fund; and
22 (c) Private Side Lead Service Replacement.
23

24 **Infrastructure Replacement Plan**

25 **Q. What are the requirements of the IFR Plan?**

26 A. In accordance with Rhode Island General Law (RIGL) 46-15.6 and the Rhode Island
27 Department of Health's (RIDOH) Rules and Regulations for Clean Water Infrastructure

1 Plans, all water utilities that sell more than 50 million gallons per year must prepare an IFR
2 Plan. The IFR Plan shall be updated every five (5) years and shall be sufficient in scope to
3 ensure the proper operation of the water utility. In addition, the IFR Plan shall provide a
4 funding mechanism for all the recommended improvements in the IFR Plan.

5 The IFR Plan is to be submitted to and approved by RIDOH. In addition, “The Rhode Island
6 Public Utilities Commission, as to water suppliers within its jurisdiction, shall permit an
7 increase for just and reasonable infrastructure replacement in the portion of the water
8 suppliers’ rate structure to comply with this chapter and shall allow the water supplier to add
9 this required funding to its rate base in accordance with this chapter.” (RIGL 46-15.6-6(5))

10
11 **Q. What is the status of Providence Water’s IFR Plan?**

12 A. In December of 2015, Providence Water submitted the required 5 year update of our IFR
13 Plan to RIDOH. The next formal submittal to RIDOH will be in December of 2020. It is
14 important to note that the IFR Plan is constantly updated and revised to meet Providence
15 Water’s changing needs. The current 5-year plan (FY2021 through FY2025) is included as
16 **Exhibit GG-1.**

17
18 **Q. What are the largest projects, in terms of cost, in the 5 year plan?**

19 A. The largest projects, in terms of cost, are as follows.
20 1. Water main rehabilitation
21 2. Sedimentation basin rehabilitation
22 3. Major transmission main inspection and rehabilitation
23 4. Storage Reservoir Water Quality Improvements

1 Water Main Rehabilitation

2 **Q. What is the Lead and Copper Rule (LCR)?**

3 A. The LCR is a regulation that was promulgated by the Environmental Protection Agency
4 (EPA) in June of 1991. The purpose of the rule was to protect public health by minimizing
5 lead and copper levels in drinking water. Lead and Copper enter drinking water mainly from
6 corrosion of service line materials and home plumbing containing lead and copper. The Rule
7 establishes an Action Limit (AL) of 15 parts per billion (ppb) for lead and 1.3 parts per
8 million (ppm) for copper based on the 90th percentile of samples taken at customer's homes.
9 The homes must be single family and either have a lead service or a copper service installed
10 between 1983 and 1986, which was the last 4 years that lead solder was allowed to be used
11 on copper piping.

12

13 **Q. Is Providence Water currently in compliance with the Lead and Copper Rule (LCR)?**

14 A. Yes, Providence Water is technically in compliance with the LCR, however we exceeded the
15 lead AL of 15 ppb each year (with the exception of 2015) since 2006. Because Providence
16 Water exceeded the lead AL, we are required to test on a biannual semester basis. The first
17 semester runs from January through June and the second semester runs from July through
18 December.

19

20 **Q. What are the consequences of exceeding the lead Action Level?**

21 A. If a utility exceeds the AL, there are a variety of requirements such as increased monitoring
22 frequency, evaluation of corrosion control practices, public education requirements, and
23 annual replacement of 7% of the utility's lead service line inventory. However, in 2011, the
24 Environmental Protection Agency's (EPA) Science Advisory Board (SAB) opined "Partial
25 (Lead Service) Replacements have not been shown to reliably reduce drinking water lead
26 levels in the short term, ranging from days, to months and potentially longer". As a result,
27 Providence Water and RIDOH have entered into multiple Bilateral Compliance Agreements
28 (BCA) granting Providence Water a stay on the annual replacement of 7% of our lead service
29 lines.

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Q. What is the status of the BCA with RIDOH?

A. Providence Water signed the BCA for 2018 with RIDOH on August 8th, 2018 (attached as **Exhibit GG-2**). Providence Water also received a draft BCA for 2019/2020 on November 8, 2019 (attached as **Exhibit GG-3**).

Q. What are the general requirements of the BCA?

A. The 2019/2020 draft BCA has a lot of the same requirements as the 2018 BCA, mostly focusing on establishing a public and private side lead service line database and investigating ways to increase the amount of customers who replace the private side of their lead service line. The two requirements that have significant financial impacts are (1) annual flushing of 90 miles of water main, and (2) main rehabilitation in the amount of \$19,100,000 per year in state fiscal years 2020, 2021, and 2022.

Q. How much has Providence Water spent on water main rehabilitation?

A. Since 1997, Providence Water has rehabilitated approximately 93 miles of water main in our distribution system (See **Exhibit GG-4**). The amount of main rehabilitated per year increased significantly as part of the Consent Agreement entered into with the RIDOH in 2013. In addition, a good portion of the water main infrastructure in our distribution system is either at or beyond its useful life. As shown in **Exhibit GG-4**, the cost per foot to rehabilitate water main varies. In fiscal year 2019, the cost per foot was approximately \$268/foot. This is due to several factors, including but not limited to the following:

- (1) the type of rehabilitation (replacement versus cleaning and lining);
- (2) the amount of other utilities in the roadway;
- (3) the amount of pavement restoration and police details required;
- (4) contractor availability and current economic conditions;
- (5) the location of the work (urban area versus rural area); and

1 (6) the amount and type of services (copper versus lead).

2
3 Sedimentation Basin Rehabilitation

4 **Q. What function do the sedimentation basins perform at the treatment plant in Scituate?**

5 A. The current clarification process involves the addition of a coagulant (ferric sulfate) and pH
6 adjustment (lime) to destabilize particles. The particles are mostly sediment and naturally
7 occurring organic matter (NOM). The destabilized particles then pass through the tangential
8 mixer to create larger particles that are heavier and more likely to settle. From the tangential
9 mixer, the water enters the sedimentation basins where the larger particles are removed via
10 settling. The clarification process is where the majority of large particles and NOM are
11 removed. The NOM is a precursor to disinfection byproducts (DBP) such as trihalomethanes
12 (THM) and haloacetic acids (HAA). Water from the clarification process is then delivered to
13 the filtration process. Essentially, Providence Water adds chemical before the mixer and this
14 chemical helps any particles that are in the water clump together and settle out within the
15 sedimentation basins. Once the water leaves the sedimentation basins, any particles
16 remaining in the water are captured by the filtering process.

17
18 **Q. What is the current plan for the rehabilitation of the sedimentation basins?**

19 A. The existing tangential mixer and sedimentation basins are from the original construction in
20 the 1920's and are approaching the end of their useful life. In addition, Providence Water is
21 concerned that the existing sedimentation basins may not be able to handle future regulatory
22 water quality requirements.

23 Providence Water commissioned a pilot plant study to evaluate alternative treatment
24 processes to replace the existing sedimentation basins. Preliminary cost estimates from this
25 study have indicated that the cost for replacement could range anywhere between \$40 million
26 to \$146 million. The pilot study was completed in 2017. The pilot plant study concluded
27 that using the existing sedimentation basin, along with distribution storage tank mixing, was
28 the most cost effective means to addressing future disinfection byproduct control.

1 However, the existing basins are in need of repair, so Providence Water is currently
2 evaluating methods for repair of the sedimentation basins that will (1) maintain plant
3 operations during the replacement of the tangential mixer and repair of the sedimentation
4 basins, and (2) provide a long term solution for removal and disposal of sludge from the
5 sedimentation basins that will result in a cost savings for ratepayers.

6
7 Major Transmission Main Repair and Inspection

8 **Q. What are you defining as Major Transmission Mains?**

9 A. There are two major transmission lines that deliver water from the treatment plant in Scituate
10 to our retail and wholesale customers, the 90-inch tunnel and the 78-inch/102-inch (78/102)
11 aqueducts. The 90-inch tunnel is mostly a bedrock tunnel and is approximately 4.5 miles in
12 length. On the other hand, the 78/102 was built in the 1960s and is constructed mostly of
13 prestressed concrete cylinder pipe (PCCP) and requires a great deal of inspection and
14 maintenance. In 1996, Providence Water had a major failure of the 102-inch aqueduct on
15 Oaklawn Avenue in Cranston. As a result of the 1996 break, Providence Water has installed
16 a fiber optic monitoring system and inspects the pipeline every 5 years. Many utilities
17 throughout the country struggle with pipes of this type and vintage. The last two inspections
18 of the 78/102 have revealed several issues: (1) the shutdown and reactivation of the pipeline
19 is artificially aging the pipeline; and (2) the pipeline is deteriorating at a pace quicker than
20 expected. As such, Providence Water has been evaluating different repair methods and
21 replacement options to provide a long term solution for the 78/102. Providence Water has
22 determined that sliplining the 78/102-inch aqueduct is currently the most cost effective
23 method for repair as needed. Sliplining involves placing a brand new smaller diameter pipe
24 in the 78/102-inch aqueduct without compromising flow capacity. A small portion of the
25 78/102-inch aqueduct is excavated and a predetermined length of smaller diameter pipe is
26 pushed into the existing aqueduct. The useful life of the new sliplined sections of pipe now
27 has been extended 100 years.

1 **Q. What is the current plan for the 90-inch Tunnel?**

2 A. Providence Water hasn't inspected the 90-inch since 2005. Providence Water needs to isolate
3 and inspect this tunnel within the next 5 years. The current plan is to inspect and conduct
4 any needed repairs in FY2023.

5

6 **Q. What is the current plan for the 78-inch and 102-inch Aqueduct?**

7 A. Providence Water has developed a program where the 78-inch and 102-inch portion of the
8 aqueduct are isolated, inspected and repaired every 5 years. Due to the location of the Kent
9 County Water Authority and Warwick wholesale connections, Providence Water cannot take
10 the entire length of the aqueduct out of service. As such, Providence Water staggers the
11 inspection and repairs of the aqueduct. Each time a portion of the 78/102-inch aqueduct is
12 isolated, the aqueduct will be inspected and a portion of it will be repaired.

13

14 Storage Reservoir Water Quality Improvements

15 **Q. What is the current plan for the storage reservoir water quality improvements?**

16 A. In 2017, Providence Water commissioned a desktop analysis to evaluate the benefits of
17 installing aeration and tank mixing at each one of our six distribution storage reservoirs. As
18 a result of this study, Providence Water installed an aeration and tank mixing system in the
19 Ridge Road reservoir in late 2018/early 2019. The installation of the tank mixing system at
20 the Ridge Road reservoir had two purposes, (1) address an immediate need for disinfection
21 byproduct reduction in the area served by the Ridge Road reservoir, and (2) evaluate full
22 scale results of aeration and tank mixing. Providence Water plans to operate the aeration and
23 tank mixing for a full year under different aeration and mixing scenarios. Based on these
24 results coupled with the results from the desktop analysis, Providence Water will develop a
25 plan for installation of aeration and/or mixing in the other five storage reservoirs.

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28

1 **Chemical and Sludge Maintenance Fund**

2 **Q. Why is Providence Water requesting additional funding for the Chemical and Sludge**
3 **Maintenance Fund?**

4 A. The Chemical and Sludge Maintenance Fund is utilized for two purposes: (1) sludge
5 maintenance, and (2) chemicals utilized at the Water Treatment Plant. As part of the BCA
6 with RIDOH, Providence Water was required to evaluate alternative corrosion control
7 strategies. Beginning in 2014, Providence Water conducted pipe loop studies to evaluate
8 alternative corrosion control chemicals. The pipe loop studies have shown that the addition
9 of orthophosphate helps mitigate lead spikes in the warmer months. After discussions with
10 our expert panel, Providence Water was advised to evaluate utilizing orthophosphate on a full
11 scale basis. Beginning in 2017, Providence Water conducted a full scale demonstration test
12 to evaluate the effectiveness and dosing of the orthophosphate on a hydraulically isolated
13 portion of our distribution system. Orthophosphate proved to be effective at reducing lead at
14 our customers' tap. Construction of the full scale chemical feed system, to provide
15 orthophosphate to all our customers, has begun and is estimated to be operational in April of
16 2020. Providence Water expects to spend an additional \$500,000 per year in chemicals with
17 the addition of orthophosphate.

18
19 **Private Side Lead Service Replacement**

20 **Q. What is a public side and a private side lead service?**

21 A. A water service line carries water from the water main in the street into the customer's home.
22 As shown in **Exhibit GG-5**, the public side of the service is from the main in the street to the
23 curb. This portion of the water service line is owned by Providence Water. The private side
24 of the water service is from the curb to the building/residence and is owned by the customer.

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26 **Q. How many lead services does Providence Water have in your system?**

27 A. Providence Water has approximately 11,000 public side lead services remaining and
28 estimates that we have approximately 28,000 private side lead services.

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Q. What is the status of the Lead and Copper Rule?

A. The Lead and Copper Rule (LCR) is the only drinking water regulation that encompasses customer owned infrastructure as part of compliance. As such, the EPA has been evaluating changes to the LCR for the last several years. The EPA finally issued a draft rule on November 13, 2019. The revised rule can be viewed at the following address.

<https://www.federalregister.gov/documents/2019/11/13/2019-22705/national-primary-drinking-water-regulations-proposed-lead-and-copper-rule-revisions>

As part of the rulemaking process, stakeholders have 60 days to provide comments (the comment deadline is currently January 13, 2020) to the revised rule. It is our understanding that the EPA will take the comments they receive, make the necessary changes/clarifications to the revised LCR and publish the final rule sometime in mid-2020.

Q. What implications does the revised LCR have for Providence Water?

A. Providence Water already complies with the majority of the requirements in the revised LCR. These requirements are primarily focused on (1) public education on lead in drinking water, (2) developing a lead service line inventory, (3) full lead service line replacements (from the main to the building) and (4) optimizing corrosion control. The two major changes in the LCR that affects Providence Water is the addition of a Trigger Level (TL) and requiring full lead service line replacements as part of compliance. Under the revised LCR, if a utility exceeds the lead TL of 10 ppb (i.e., if more than 10% of the homes sampled have lead levels between 10 ppb (TL) and 15 ppb (AL)), the utility must complete goal based lead service line replacement. The goal rate is proposed by the utility and must be approved by the state. If the utility exceeds the AL of 15 ppb, the utility is required to replace 3% of the lead service lines in their system per year. Under the revised LCR, only full lead service line replacements count toward the utility's replacement goal/requirement.

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Q. Does Providence Water anticipate being under the TL of 10 ppb?

A. As discussed in Mr. Caruolo’s testimony, Providence Water has a four-pronged approach to reducing lead at our customer’s tap. As part of this filing, Providence Water is looking to enhance our corrosion control strategy by the addition of orthophosphate and bolster our lead service replacement program by increasing funding for private side lead service replacements. Between these two programs, Providence Water is hopeful that we will be below the TL of 10 ppb. As discussed earlier, the LCR is the one drinking water regulation that includes infrastructure not owned by Providence Water. Samples that are taken for compliance with the LCR are taken from a faucet in the customer’s home that is frequently utilized for drinking and cooking. The water that is sampled travels through the service line (both public and private) and the customer owned internal plumbing and fixtures. Even if the public and private service line is replaced, there is still the possibility of lead leaching into the water from the possible presence of lead in the customer’s plumbing and fixtures. The addition of orthophosphate should help mitigate these issues.

Q. How effective is the current no interest, three year private side lead service replacement program?

A. Since our 0% Interest Loan Program began, we sent direct mailings to approximately 40,000 customers throughout our entire distribution system who were suspected of having a private side lead service. We also mailed approximately 3,000 letters to customers in the neighborhoods where we were performing our planned main replacement work. Those neighborhoods were Fox Point, Mount Hope, and Blackstone Boulevard in Providence, Marieville in North Providence, and the Edgewood area of Cranston. Providence Water also has information on the loan program prominently displayed on our website and included on our bills to our customers.

From the beginning of 2018 through November 22nd, 2019, 428 private side lead services have been replaced, with 274 of those being part of the three year, no interest loan program.

1 Providence Water attempted to survey approximately 330 customers who did not opt to
2 replace their service. Of the approximately 120 that responded to the survey, approximately
3 60 people indicated that the cost was too high.
4

5 **Q. What is the cost for a private side lead service replacement?**

6 A. Utilizing data from 2018 and 2019, the cost for a private side lead service replacement ranges
7 from as high as \$15,000 to as low as \$1,900 with 95% of the costs below \$5,000. The
8 average cost of a private side replacement is \$3,600 which translates to a cost of \$100/month
9 for a customer who utilizes the three year, interest free loan program.
10

11 **Q. What is Providence Water proposing for private side lead service replacements going
12 forward?**

13 A. As part of our ongoing efforts to reduce lead at our customers tap and to meet the
14 requirements of the revised LCR, Providence Water is requesting an additional \$2,750,000
15 per year in rates to pay for private side lead service replacements at no cost to the
16 homeowner. The \$2,750,000 would be combined with the \$250,000 already approved in
17 rates. The \$3,000,000 would be used to replace 3% per year of the approximately 28,000
18 private side lead services at no cost to the homeowner. Providence Water would focus on the
19 lead services that are associated with the public side services replaced during our water main
20 work. In addition, Providence Water will give priority to high risk customers such as homes
21 with young children or pregnant women.
22

23 **Q. Why is Providence Water proposing to replace private side lead services at no cost to
24 the homeowner?**

25 A. The main focus of the revised LCR is lead service identification and full lead service line
26 replacement (from the main to the home). Specifically, only full lead service line
27 replacements will count towards a utility's goal/requirement. To date, approximately 214
28 private side lead services have been completed per year in 2018 and 2019. Approximately
29 1,032 public side lead services have been replaced over the same time period. As discussed

1 previously, cost is a major reason for a customer to not replace the private side portion of the
2 lead service line. As such, by Providence Water replacing the private side of the lead service
3 line at no cost to the homeowner will ensure that the majority of the private side lead service
4 lines will be replaced.

5
6 **Q. Are you aware of any other utilities who pay for either all or some of the replacement of**
7 **the private side lead service?**

8 A. The two most recent examples are the City of Newark New Jersey and the City of Trenton
9 New Jersey. Trenton currently pays for all but \$1,000 of the cost to replace the private side
10 lead service. The City of Newark initially paid for all but \$1,000, but now covers the entire
11 cost of the private side lead service replacement. The City of Newark does not own any
12 portion of the service line, the customer owns from the main to building. The City of
13 Trenton is similar to Providence Water where the customer owns from the curb to the
14 building.

15
16 **Q. Does that conclude your testimony?**

17 A. Yes, it does

Exhibit GG-1

Providence Water IFR Expenditure Plan
FY 2021 through 2025

Total Amount	Budget 2021	Budget 2022	Budget 2023	Budget 2024	Budget 2025
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RAW WATER SUPPLY FACILITIES

1A	Various Raw Water Supply Facilities Projects	250,000	50,000	50,000	50,000	50,000	50,000
1B	Reservoir and Dam Inspections	160,000	10,000	20,000	10,000	80,000	40,000
2A	Secondary Reservoir and Dam Improvements	2,500,000	500,000	500,000	500,000	500,000	500,000
6A	Gainer Dam Spillway Rehabilitation	500,000				500,000	
9A	Raw Water Booster Pump Station Building Improvements	600,000			600,000		
10A	Raw Water Conduits and Valves Inspection	100,000			100,000		
10B	Replace 60" Valves	400,000			400,000		
11A	Replace 12" Blowoff Valve	100,000	100,000				
Raw Water Supply Total		\$4,610,000	\$660,000	\$570,000	\$1,660,000	\$1,130,000	\$590,000

TREATMENT SYSTEMS AND FACILITIES

12A	Various Treatment Plant Projects	500,000	100,000	100,000	100,000	100,000	100,000
12B	Treatment Plant Building Rehabilitation	3,500,000	500,000	3,000,000			
12C	Treatment Process and Water Quality Studies	1,000,000	200,000	200,000	200,000	200,000	200,000
12D	PW Lab Equipment	50,000	10,000	10,000	10,000	10,000	10,000
13A	SCADA / Control System	100,000	20,000	20,000	20,000	20,000	20,000
14A	Treatment Plant Structures and Conduits Inspection	60,000	10,000				50,000
16A	Sedimentation Basin Rehabilitation	37,000,000	2,000,000	11,000,000	2,000,000	11,000,000	11,000,000
19A	Service Water System Inspection	100,000	100,000				
	Service Water Tank Rehabilitation	1,000,000		1,000,000			
20A	Inspection of 48" Wash Water Pipe and Tank	10,000	10,000				
23A	Replace Ferric Feed Pumps	10,000	10,000				
24A	Fluoride System Improvements	25,000					25,000
Treatment Plant Total		\$43,355,000	\$2,960,000	\$15,330,000	\$2,330,000	\$11,330,000	\$11,405,000

STORAGE FACILITIES

27A	Various Storage Facilities Projects	250,000	170,000	20,000	20,000	20,000	20,000
27B	Storage Reservoir Water Quality Improvements	7,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000
Storage Facilities Total		\$7,750,000	\$1,670,000	\$1,520,000	\$1,520,000	\$1,520,000	\$1,520,000

PUMPING FACILITIES

34A	Various Pumping Facilities Projects	100,000	20,000	20,000	20,000	20,000	20,000
38A	Cranston Commons Pump Station Replacement	4,000,000	1,000,000	2,000,000	1,000,000		
40A	Fruit Hill Pump Station Replace Generator	250,000	250,000				
Pumping Facilities Total		\$4,350,000	\$1,270,000	\$2,020,000	\$1,020,000	\$20,000	\$20,000

TRANSMISSION SYSTEM FACILITIES

44A	Scituate Aqueduct and Tunnel (90") Inspection	2,000,000			2,000,000		
44B	Scituate Aqueduct and Tunnel (90") Rehabilitation	5,000,000			5,000,000		
45A	Supplemental Tunnel and Aqueduct Rehabilitation Plan	300,000			300,000		
45B	78" Aqueduct Inspection	3,000,000		3,000,000			
45C	78" Aqueduct Rehabilitation	7,000,000		7,000,000			
45D	102" Aqueduct Inspection	3,000,000				3,000,000	
45E	102" Aqueduct Rehabilitation	7,000,000				7,000,000	
45F	102" Aqueduct fiber optic monitoring	625,000	125,000	125,000	125,000	125,000	125,000
46A	Various Transmission System (16" - 66") Facilities Projects	2,500,000	500,000	500,000	500,000	500,000	500,000
Transmission System Total		\$30,425,000	\$625,000	\$10,625,000	\$7,925,000	\$10,625,000	\$625,000

Providence Water IFR Expenditure Plan
FY 2021 through 2025

		Total Amount	Budget 2021	Budget 2022	Budget 2023	Budget 2024	Budget 2025
DISTRIBUTION SYSTEM FACILITIES							
47A	Water Mains Rehabilitation	95,500,000	19,100,000	19,100,000	19,100,000	19,100,000	19,100,000
48A	Various Distribution System Facilities Projects	3,750,000	750,000	750,000	750,000	750,000	750,000
Distribution System Total		\$99,250,000	\$19,850,000	\$19,850,000	\$19,850,000	\$19,850,000	\$19,850,000
SUPPORT SYSTEM FACILITIES							
49A	Various Support System Facilities Projects	1,000,000	200,000	200,000	200,000	200,000	200,000
49B	Arc Flash Study	1,000,000				1,000,000	
53A	Records Management System (GIS/AM) Improvements	250,000	50,000	50,000	50,000	50,000	50,000
54A	Replacement of Billing System	5,000,000	1,500,000	2,500,000	1,000,000		
Support System Facilities Total		\$7,250,000	\$1,750,000	\$2,750,000	\$1,250,000	\$1,250,000	\$250,000
TOTAL		\$196,990,000	\$28,785,000	\$52,665,000	\$35,555,000	\$45,725,000	\$34,260,000

Exhibit GG-2

DEPARTMENT OF HEALTH
CENTER FOR DRINKING WATER QUALITY

vs

CITY OF PROVIDENCE

PWS ID# 1592024

BILATERAL COMPLIANCE AGREEMENT

WHEREAS, the Department of Health (RIDOH) has responsibility for safe drinking water and regulatory authority over public water systems in the state of Rhode Island; and

WHEREAS, the City of Providence public drinking water system (Providence Water) supplies water to people in the state of Rhode Island; and

WHEREAS, RIDOH drinking water regulations in accordance with USEPA standards require water testing for lead contamination; and

WHEREAS, Providence Water samples taken in accordance with RIDOH regulations *and* EPA standards have demonstrated a lead level which exceeds the established action level and triggers a lead service line (LSL) replacement program whereby seven percent (7%) of the service lines (SL), as determined in 2005, must be replaced annually; and

WHEREAS, Providence Water was up to date through calendar year 2011 on its 7% SL replacements; and

WHEREAS, concerns have been raised about the effectiveness of partial LSL replacement in reducing lead exposure through water and the abatement of lead contained in water supplied by Providence Water; and

WHEREAS, potentially more effective ways to reduce lead exposure through water and the abatement of lead contained in water supplied by Providence Water have been tentatively identified, including optimized treatment, a system-wide unidirectional flushing program, and an extensive infrastructure program consisting of cleaning, lining, and main replacement of the estimated 50 to 55% of the distribution system that is composed of unlined cast iron pipe; and

WHEREAS, RIDOH has a lead abatement program designed to address the issue of lead reaching the citizenry of Rhode Island;


NOW, THEREFORE, RIDOH and Providence Water agree to the following:

1. RIDOH will grant Providence Water a stay during the 2018 season on its 7% SL replacement requirement. In lieu of LSL replacement, Providence Water shall continue/initiate the following activities:
2. Providence Water will continue consultation with its expert advisory panel to evaluate corrosion control treatment in the Providence Water's water system, including consideration of simultaneous compliance issues. Costs of convening the panel, such as travel and hotel accommodations, shall be borne by the Providence Water Supply Board. The panel shall continue to be composed of representatives from academia, and water supply professionals; its composition shall not change except with the approval of RIDOH.
3. Providence Water shall continue optimization of corrosion control with the approved partial system orthophosphate treatment pilot project.
 - a) Due to the influence of additional pilot project samples on representative compliance sampling, two 90th percentile calculations for lead and copper will be reported, both inclusive and exclusive of the orthophosphate pilot project samples, and the higher value of the two 90th percentile calculations will be considered for compliance purposes.
 - b) Providence Water shall produce monthly progress reports on the status of the orthophosphate treatment demonstration project including all water quality parameter data associated with the project according to the approved sampling plan. The reports shall also include water main coupons and SL sample harvesting plans, pipe scaling progress, and scaling analyses from coupons and samples within the demonstration area as they become available. The reports shall be submitted on the 27th of the following month.
 - c) If reports indicate measurable mitigation of lead exposure is being achieved at the taps of homes within the orthophosphate treatment pilot project area, Providence Water shall begin development of 30% engineering design plans for system-wide implementation of treatment no later than December 31, 2018. The orthophosphate pilot project's effectiveness of reducing lead at the taps and timeline for completion of this task shall be determined by RIDOH with supporting documentation provided by Providence Water and the expert advisory panel discussed in Item 2.
 - d) The 30% engineering design plans for system-wide orthophosphate treatment implementation shall be submitted by September 30, 2019.
 - e) RIDOH shall be provided an annual update on all activity related to corrosion control by Providence Water. The annual corrosion control report for 2018 shall be submitted by February 1st, 2019.
4. Until such time as corrosion control has been deemed optimized, Providence Water shall remain on standard monitoring, as specified in the *Rules and Regulations Pertaining to Public Drinking Water* [R46-13-DWQ] (Regulations), Section 6.86 (a) through (d), and Water Quality Parameter monitoring as specified in Section 6.87(a) through (c). Providence Water shall also continue to meet the requirements regarding public education as specified in the Regulations, Section 6.85, and reporting requirements as specified in Section 6.90.
5. Providence Water shall initiate and/or continue measures to address the condition of Providence Water's distribution system, which is believed to be contributing to the presence of lead in the water. These measures shall include but not be limited to:
 - a) A system-wide unidirectional flushing program (UDF). An updated schedule and implementation plan for UDF shall be submitted to RIDOH for approval no later than July 1, 2019. The UDF plan will be aggressive in approach and shall include at least 90 miles per year. The plan shall also include the number of total miles and percentage of distribution system flushed as of present, and information on the zones within the UDF program.


- b) Providence Water shall comply with the terms of the approved Infrastructure Replacement Plan regarding main rehabilitation and replacement, which is understood to mean unlined cast iron mains, for the State fiscal years 2018, 2019, and 2020, in the amounts of \$17,000,000 (FY2018), \$17,000,000 (FY2019), and \$18,000,000 (FY2020).
6. Prior to commencing scheduled or emergency system repairs or water main infrastructure replacement work which requires partial or full LSL replacements during 2018, Providence Water shall comply with the provisions of Section 6.84(d), regarding notification and education. Also, Providence Water shall provide NSF/ANSI-certified point-of-use water pitcher treatment units and one replaceable filter to affected residents who may experience short-term elevated lead levels in drinking water as a result of a partial or full LSL replacement. Affected residents shall also be notified as soon as possible of the interest free loan opportunities for full LSL replacement and, at a minimum, as soon as a work schedule for SL replacement has been identified.
7. Outside of the LSL replacements which shall take place under system repairs, Providence Water shall use best efforts to solicit and conduct additional full LSL replacements. Providence Water shall prioritize such best efforts in areas with the greatest numbers of vulnerable populations including day care centers and schools. A detailed progress report to solicit and conduct full LSL replacements shall be submitted to RIDOH annually with the first report due February 1st, 2019, and include the following items:
 - a) Include feasibility subreport to RIDOH on the process and obstacles involved in implementing a municipal ordinance requiring full LSL replacement upon sale, demolition, or replacement of buildings in the cities of Providence and Cranston. This subreport shall include evaluating how other communities have developed and implemented similar ordinances.
 - b) Include feasibility subreport to RIDOH on implementing a full LSL replacement plan at no cost to the homeowner via principal forgiveness, grant monies, housing and urban development monies, or other means. The subreport shall include evaluating how other communities and public water systems have provided full LSL replacements at no cost to the homeowner.
 - c) Hold annual outreach meeting with municipalities served by Providence Water. Outreach shall include the progress of Providence Water and other municipalities in implementing LSL replacement plans, including demonstrated successes in obtaining monies and implementation of such plans. Outreach to municipalities shall also include educational information on how municipalities can take advantage of existing programs and monies to implement comprehensive LSL replacement plans. A subreport detailing this outreach meeting shall be included in each annual progress report.
 - d) Include subreport on comprehensive promotional efforts and utilization of the \$1,250,000 granted by the Public Utilities Commission & Rhode Island Infrastructure Bank to conduct private LSL replacement at 0% interest financing over the course of three years. This subreport shall include a list of all promotional materials with distribution dates and a summary of the number of participants, and their service locations by municipality, that have successfully received SL replacement under this program. The initial progress report shall include the total number of SL replacements that have been performed under this program to date.
 - e) Include subreport on the number of public side LSL replacements that have been conducted in the previous 12 months, in each progress report. The initial annual progress report shall include a subreport on the number of public side LSLs that have been replaced to date.
 - f) Consumers discovered to have private LSLs shall be issued written notification of their SL's composition, provided with public education materials, information regarding Providence Water's free lead sampling program, and the financial opportunities available for replacement, within 30 days of discovery. Currently known private LSLs shall be issued this notification and materials by September 1, 2018. A subreport of these notifications shall be included in each annual progress report.

- g) Known non-lead private SLs that have a public LSL shall be identified and prioritized for public LSL replacement as soon as possible but no later than 24 months. Newly discovered SLs that fit this description shall also be replaced as soon as possible but no later than 24 months. A subreport of the number of these sites identified, and those scheduled for replacement shall be included in the progress reports.
8. Providence Water shall implement a survey of all private side SLs to identify or confirm plumbing material composition, beginning October 1, 2018. Providence Water shall survey the number of private SLs, equal to the number of water meters that Providence Water replaces or inspects, annually. Results of these surveys, including material composition of plumbing and the corresponding street address, shall be submitted to RIDOH in the form of a summary report by February 1st, 2019 and annually thereafter. The initial report shall include all current private SLs. Plumbing material composition in the initial report shall be reported as either "suspected lead service line" for buildings constructed before 1940, "plumbing material not yet determined" for buildings constructed after 1940, "known lead service line" or "known non-lead service line" accordingly. Private side SLs, surveyed during meter replacement/inspection after October 1, 2018, shall be identified as either "known lead service line" or "known non-lead service line". Instances where plumbing material composition cannot be determined during inspection or replacement shall be identified as "suspected lead" for buildings constructed before 1940 and "plumbing material could not be determined" for buildings constructed after 1940. The initial summary report shall also include the number of all private LSL replacements that have occurred to date.
 9. By March 1, 2019, Providence Water shall provide all individual lead & copper compliance sampling results and locations online in an approved, electronic, and searchable format, accessible by the public. By March 1, 2019, all individual lead & copper compliance sampling results shall be posted online within 72 hours of certification of the results from the laboratory. By March 1, 2019, Providence Water shall also include all known and suspected private SL plumbing material composition in Providence Water's current "Lead Service Location Map" and it shall be updated annually as private SL surveys are performed.
 10. By September 1, 2018, Providence Water shall establish a prominent weblink, to a primary webpage for all information regarding lead in drinking water, on the Providence Water website homepage. The weblink must be as prominent as the major weblinks on the current homepage, e.g. "Pay your water bill", "Customer service", "Report a problem". The primary lead in drinking water webpage shall prominently display the most recent 90th percentile lead results and the LCR lead action level, as well as the required health effects language associated with lead. The primary lead in drinking water webpage shall also include a prominently displayed weblink to the "Lead Service Location Map". After Item 9 of this document has been completed, a weblink to the online lead results shall also be located on the primary lead in drinking water webpage. Lastly, Providence Water shall include information regarding the ongoing orthophosphate treatment evaluation under the "Corrosion Control" section of Providence Water's website.
 11. Providence Water's annual Consumer Confidence Report (CCR) for 2019, and subsequent CCRs, shall include a prominently displayed weblink to Providence Water's primary lead in drinking water webpage on the first page of the CCR. The 2019 CCR (calendar year 2018) and subsequent CCRs shall report the highest of two 90th percentile calculations for lead and copper, one inclusive and one exclusive of the orthophosphate pilot project samples.
 12. Should Providence Water, after having been given notice of any alleged deficiencies, and opportunity to cure any such deficiencies in performance relating to this agreement or fail to meet the requirements of items one (1) through eleven (11) above, an administrative fine calculated by RIDOH shall be paid.
 13. Should Providence Water feel that the requirements of this Bilateral Consent Agreement cannot be met within budget, time or managerial constraints, and that the terms need to be modified, Providence Water shall notify this office immediately, and request a meeting at which a detailed justification of the requested modification shall be presented, including a description of the efforts made to comply with the terms as written.
 14. This Bilateral Consent Agreement shall be renegotiated and updated by March 31, 2019, to reflect changes to the Safe Drinking Water Act "Lead and Copper Rule" that may or may not be promulgated by the EPA, and any other changes in circumstances that may necessitate altering this Agreement.

This Bilateral Consent Agreement is satisfactory and accepted by both parties. The terms of this Agreement shall become effective upon signing by both parties.

 8/8/18

Ricky Caruolo
Providence Water
PWS#1592024
(Date)

 8/8/18

June Swallow, P. E., Chief
R.I. Center for Drinking Water Quality
(Date)

Exhibit GG-3

DEPARTMENT OF HEALTH
CENTER FOR DRINKING WATER QUALITY

vs.

CITY OF PROVIDENCE

PWS ID# 1592024

BILATERAL COMPLIANCE AGREEMENT

WHEREAS, the Department of Health (RIDOH) has responsibility for safe drinking water and regulatory authority over public water systems in the state of Rhode Island; and

WHEREAS, the City of Providence public drinking water system (Providence Water) supplies water to people in the state of Rhode Island; and

WHEREAS, RIDOH drinking water regulations in accordance with USEPA standards require water testing for lead contamination; and

WHEREAS, Providence Water samples taken in accordance with RIDOH regulations *and* EPA standards have demonstrated a lead level which exceeds the established action level and triggers a lead service line (LSL) replacement program whereby seven percent (7%) of the service lines (SL), as determined in 2005, must be replaced annually; and

WHEREAS, Providence Water was up to date through calendar year 2011 on its 7% SL replacements; and

WHEREAS, concerns have been raised about the effectiveness of partial LSL replacement in reducing lead exposure through water and the abatement of lead contained in water supplied by Providence Water; and

WHEREAS, potentially more effective ways to reduce lead exposure through water and the abatement of lead contained in water supplied by Providence Water have been tentatively identified, including optimized treatment, a system-wide unidirectional flushing program, and an extensive infrastructure program consisting of cleaning, lining, and main replacement of the estimated 50 to 55% of the distribution system that is composed of unlined cast iron pipe; and

WHEREAS, RIDOH has a lead abatement program designed to address the issue of lead reaching the citizenry of Rhode Island;

NOW, THEREFORE, RIDOH and Providence Water agree to the following:

1. RIDOH will grant Providence Water a stay during 2019 and 2020, on its 7% SL replacement requirement. In lieu of LSL replacement, Providence Water shall continue/initiate the following activities:
2. Providence Water will continue consultation with its expert advisory panel to evaluate corrosion control treatment in the Providence Water's water system, including consideration of simultaneous compliance issues. Costs of convening the panel, such as travel and hotel accommodations, shall be borne by the Providence Water Supply Board. The panel shall continue to be composed of representatives from academia, and water supply professionals; its composition shall not change except with the approval of RIDOH. Providence Water shall meet with the expert advisory panel at least annually and report minutes of the meeting in the next annual corrosion control report that follows each meeting.
3. Providence Water shall continue optimization of corrosion control with the approved partial system orthophosphate treatment pilot project.
 - a) Due to the influence of additional pilot project samples on representative compliance sampling, two 90th percentile calculations for lead and copper will be reported, both inclusive and exclusive of the orthophosphate pilot project samples, and the higher value of the two 90th percentile calculations will be considered for compliance purposes.
 - b) Providence Water shall produce monthly progress reports on the status of the orthophosphate treatment demonstration project including all water quality parameter data associated with the project according to the approved sampling plan. These reports shall be submitted on the 27th of the following month.
 - c) Providence Water shall also submit a schedule of water main coupons and SL sample harvesting plans, pipe scaling progress, and scaling analyses from coupons and samples within the demonstration area as they become available. A schedule of pipe harvesting and scale analysis to be conducted shall be submitted to RIDOH by 2/1/2020.
 - d) RIDOH shall be provided an annual update on all activity related to corrosion control by Providence Water. The annual corrosion control report for 2019 shall be submitted by February 1st, 2020.
 - e) Providence Water, or a party contracted by Providence Water, shall reply in writing to all comment letters issued to Providence Water by RIDOH engineers, within 30 days of receipt.
4. Until such time as corrosion control has been deemed optimized, Providence Water shall remain on standard monitoring, as specified in the *Public Drinking Water Regulations* [216-RICR-50-05-1] (Regulations), Section 1.7.7 (A) through (D), and Water Quality Parameter monitoring as specified in Section 1.7.8 (A) through (D). Providence Water shall also continue to meet the requirements regarding public education as specified in the Regulations, Section 1.7.6, and reporting requirements as specified in Section 1.7.11.
5. Providence Water shall initiate and/or continue measures to address the condition of Providence Water's distribution system, which is believed to be contributing to the presence of lead in the water. These measures shall include but not be limited to:
 - a) A system-wide unidirectional flushing program (UDF). An updated schedule and implementation plan for UDF shall be submitted to RIDOH for approval no later than July 1, 2020. The UDF plan will be aggressive in approach and shall include at least 90 miles per year. The plan shall also include the number of total miles and percentage of distribution system flushed as of present, and information on the zones within the UDF program.

- b) Providence Water shall comply with the terms of the approved Infrastructure Replacement Plan regarding main rehabilitation and replacement, which is understood to mean unlined cast iron mains, for the State fiscal years 2020, 2021, and 2022 in the amount of \$19,100,000 each year.
6. Prior to commencing scheduled or emergency system repairs or water main infrastructure replacement work which requires partial or full LSL replacements during 2019 and 2020, Providence Water shall comply with the provisions of Section 1.7.5(D), regarding notification and education. Also, Providence Water shall provide NSF/ANSI-certified point-of-use water pitcher treatment units and one replaceable filter to affected residents who may experience short-term elevated lead levels in drinking water as a result of a partial or full LSL replacement. Providence Water shall also provide instructions and education on proper use of the provided filters. Affected residents shall also be notified as soon as possible of the interest free loan opportunities for full LSL replacement and, at a minimum, as soon as a work schedule for SL replacement has been identified.
 7. Residents found to have tap sample results for lead above 150 parts per billion, shall be notified within 24 hours of receipt of certified results from a laboratory. Residents in this scenario must be instructed to discontinue use of tap water, to discard any currently installed filters, and to use bottled water until follow up sample results show concentrations below 150 parts per billion.
 8. Providence Water shall use best efforts to solicit and conduct additional full LSL replacements. Providence Water shall prioritize efforts in areas with the greatest numbers of vulnerable populations including day care centers and schools. Providence Water shall complete the following requirements to solicit and conduct full LSL replacements by the corresponding due dates:
 - a) Meet with City of Providence staff to discuss the feasibility of using Community Development Block Grant funds from the US Department of Housing and Urban Development to conduct full LSL replacement using the strategy and framework employed by the Town of North Providence as guidance, or meet with City of Providence staff to discuss the proposal of a city ordinance to require full LSL replacement at the time of sale of any residential or commercial property. Providence Water shall hold either of these meetings and submit to RIDOH a summary of the discussion and outcomes, including minutes of the meeting, on or before December 1, 2020.
 - b) Meet with municipalities served by Providence Water to provide outreach on LSL replacement strategies. Outreach shall include the progress of Providence Water and other municipalities in implementing LSL replacement plans, including demonstrated successes in obtaining monies and implementation of such plans. Outreach to municipalities shall also include educational information on how municipalities can take advantage of existing programs and monies to implement comprehensive LSL replacement plans. Providence Water shall hold this meeting and submit to RIDOH a summary of the discussion and outcomes, including minutes of the meeting, on or before December 1, 2020.
 - c) Submit a summary on comprehensive promotional efforts and utilization of the \$1,250,000 granted by the Public Utilities Commission & Rhode Island Infrastructure Bank to conduct private LSL replacement at 0% interest financing over the course of three years. This summary shall include a list of all promotional materials with distribution dates and the number of participants, and their service locations by municipality, that have successfully received SL replacement under this program to date. Providence Water shall submit this summary to RIDOH by February 1, 2020.
 - d) Submit a summary of LSL replacements. The summary shall include the number of partial and full replacements, and the estimated number of public and private side LSLs remaining. Providence Water shall submit this summary to RIDOH by February 1, 2020.
 - e) Consumers discovered to have private LSLs shall be issued written notification of their SL's composition, provided with public education materials, information regarding Providence Water's free lead sampling program, and the financial opportunities available for replacement, within 30 days of discovery. Consumers with currently known private LSLs shall be issued or reissued this notification. Providence Water shall issue or reissue notification to consumers and submit a summary of these notifications to RIDOH by September 1, 2020.

- f) Known non-lead private SLs that have a public LSL shall be identified and prioritized for public LSL replacement as soon as possible but no later than 24 months. Newly discovered SLs that fit this description shall also be replaced as soon as possible but no later than 24 months after being identified. A summary of the number of these sites identified, and those scheduled for replacement shall be submitted by Providence Water to RIDOH by February 1, 2020.
9. Providence Water shall continue to survey all private side SLs to identify or confirm plumbing material composition. Providence Water shall survey the number of private SLs, equal to the number of water meters that Providence Water replaces or inspects, annually. Results of these surveys, including material composition of plumbing and the corresponding street address, shall continue to be submitted to RIDOH in the form of a summary, including a spreadsheet, by February 1st, 2020 and annually thereafter. The summary shall include all current private SLs. Plumbing material composition of the SL shall be reported as either “suspected lead service line” for buildings constructed before 1940, “plumbing material not yet determined” for buildings constructed after 1940, “known lead service line” or “known non-lead service line” accordingly. Private side SLs, surveyed during meter replacement/inspection after October 1, 2018, shall be identified as either “known lead service line” or “known non-lead service line”. Instances where plumbing material composition cannot be determined during inspection or replacement shall be identified as “suspected lead” for buildings constructed before 1940 and “plumbing material could not be determined” for buildings constructed after 1940. The summary shall also include the number of all private LSL replacements that have occurred to date.
10. Providence Water shall continue to provide individual lead & copper sampling results and locations, on Providence Water’s website, in an approved, electronic, and searchable format, accessible by the public. By May 1, 2020, all individual lead & copper sampling results, including compliance and consumer requested samples, shall be included on this website within 72 hours of Providence Water receiving certified results from a laboratory.
11. Providence Water shall continue to include all known and suspected private SL plumbing material composition in Providence Water’s “Lead Service Location Map” and it shall be updated quarterly as private SL surveys are performed. By May 1, 2020 Providence Water shall include all individual lead & copper sampling results, including compliance and consumer requested samples, within Providence Water’s “Lead Service Location Map”.
12. Providence Water shall continue to maintain a prominent weblink, to a primary webpage for all information regarding lead in drinking water, on the Providence Water website homepage. The weblink must be as prominent as the major weblinks on the current homepage, e.g. “Pay your water bill”, “Customer service”, “Report a problem”. The primary lead in drinking water webpage shall prominently display the most recent 90th percentile lead results and the LCR lead action level, as well as the required health effects language associated with lead. The primary lead in drinking water webpage shall also include a prominently displayed weblink to the “Lead Service Location Map”. A weblink to the online lead results shall also be located on the primary lead in drinking water webpage. Lastly, Providence Water shall include information regarding the ongoing orthophosphate treatment evaluation under the “Corrosion Control” section of Providence Water’s website.
13. Providence Water’s annual Consumer Confidence Report (CCR) for 2020, and subsequent CCRs, shall include a prominently displayed weblink to Providence Water’s primary lead in drinking water webpage on the first page of the CCR. The 2020 CCR (calendar year 2019) and subsequent CCRs shall report the highest of two 90th percentile calculations for lead and copper, one inclusive and one exclusive of the orthophosphate pilot project samples.
14. Should Providence Water, after having been given notice of any alleged deficiencies, and opportunity to cure any such deficiencies in performance relating to this agreement or fail to meet the requirements of items one (1) through thirteen (13) above, an administrative fine calculated by RIDOH shall be paid.
15. Should Providence Water feel that the requirements of this Bilateral Consent Agreement cannot be met within

budget, time or managerial constraints, and that the terms need to be modified, Providence Water shall notify this office immediately, and request a meeting at which a detailed justification of the requested modification shall be presented, including a description of the efforts made to comply with the terms as written.

16. This bilateral consent agreement shall be renegotiated and updated by January 1, 2021, to reflect changes to the Safe Drinking Water Act "Lead and Copper Rule" that may or may not be promulgated by the EPA, and any other changes in circumstances that may necessitate altering this Agreement. This bilateral consent agreement shall not in any way negate early implementation requirements associated with promulgation of proposed revisions to the Safe Drinking Water Act "Lead and Copper Rule", in the event promulgation is finalized before any due date in this agreement.

This Bilateral Consent Agreement is satisfactory and accepted by both parties. The terms of this Agreement shall become effective upon signing by both parties.

Ricky Caruolo (Date)
Providence Water
PWS#1592024

June Swallow, P. E., Chief (Date)
R.I. Center for Drinking Water Quality

Exhibit GG-4

Exhibit GG-4
Main Rehabilitation FY1997 through FY2019

<u>Fiscal Year</u>	<u>Total Main Rehabilitation Cost</u>	<u>Total Main Replaced (Feet)</u>	<u>Total Main Replaced (Miles)</u>	<u>Cost per foot</u>
1997	\$790,808	7,700	1.5	\$103
1998/99	\$2,040,523	16,963	3.2	\$120
2000/01	\$365,998	1,759	0.3	\$208
2002/03	\$188,352	2,063	0.4	\$91
2004/05	\$225,521	2,943	0.6	\$77
2006/07/08	\$2,331,088	9,355	1.8	\$249
2009	\$1,141,087	6,825	1.3	\$167
2010	\$1,449,485	7,330	1.4	\$198
2011	\$8,603,842	39,141	7.4	\$220
2012	\$6,732,891	19,499	3.7	\$345
2013	\$8,690,291	35,275	6.7	\$246
2014	\$13,929,440	45,553	8.6	\$306
2015	\$11,430,705	50,030	9.5	\$228
2016	\$15,563,467	71,374	13.5	\$218
2017	\$12,088,055	40,273	7.6	\$300
2018	\$20,731,588	83,205	15.8	\$249
2019	\$14,153,742	52,763	10.0	\$268
Totals	\$120,456,883	492,051	93	\$245

Exhibit GG-5

