

BEFORE THE
STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE PETITION OF
NEW JERSEY-AMERICAN WATER COMPANY, INC.
FOR APPROVAL OF INCREASED TARIFF RATES AND
CHARGES FOR WATER AND WASTEWATER SERVICE, AND
OTHER TARIFF MODIFICATIONS

BPU Docket No. WR1912_____

Direct Testimony of
THOMAS SHROBA

Exhibit P-4

**New Jersey-American Water Company, Inc.
Direct Testimony of Thomas Shroba**

TABLE OF CONTENTS

OVERVIEW OF OPERATIONS AND FACILITIES	2
COMMITMENT TO WATER QUALITY AND ENVIRONMENTAL COMPLIANCE.....	6
Overview	6
COMMITMENT TO SAFETY	15
New Jersey-American Water Company’s Safety Approach, Plans and Programs.....	16
Security and Cybersecurity.....	22
Emergency Response.....	24
Safety and Security Resources and Support	26
Safety Program Benefits	30
OPERATING AND MAINTENANCE EXPENSE.....	31
IMPROVING WATER EFFICIENCY.....	33
System Maintenance.....	45
Non-Revenue Water	48
EMPLOYEE LEVELS AND EMPLOYEE COMPENSATION.....	60
Employee Levels	60
Compensation	61
Performance Compensation Plans	66

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **1. Q. Please state your name and business address.**

2 A. My name is Thomas Shroba. My business address is 1 Water Street, Camden, NJ
3 08102.

4 **2. Q. By whom are you employed and in what capacity?**

5 A. I am employed by New Jersey-American Water Company, Inc. (“New Jersey-
6 American Water”, “NJAWC”, or the “Company”) as the Vice President of
7 Operations.

8 **3. Q. What are your responsibilities in this position?**

9 A. As Vice President of Operations, I am responsible for leading New Jersey-
10 American Water’s operations (production, distribution, field services,
11 construction), water quality / environmental compliance, operational risk
12 management (safety), and business performance (collectively, “Operations”)
13 functions. I lead the Company’s Operations team by providing goals and
14 directions that strive to increase cost effectiveness, performance, customer
15 service and service quality.

16 **4. Q. Please describe your educational background and business experience.**

17 A. Please refer to Appendix A for a summary of my educational background and
18 business experience.

19 **5. Q. Have you previously testified in regulatory proceedings?**

20 A. Yes, I submitted direct and rebuttal testimony for New Jersey-American Water in
21 BPU Docket No. WR17090985.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **6. Q. What is the purpose of your testimony in this proceeding?**

2 A. The purpose of my testimony is to provide an overview of New Jersey-American
3 Water's operations and discuss our commitment to water quality and
4 environmental compliance, our commitment to safety, and our efforts to improve
5 water efficiency. I also support the Company's proposed staffing levels and
6 explain our compensation philosophy.

7 **OVERVIEW OF OPERATIONS AND FACILITIES**

8 **7. Q. As Vice President of Operations, are you generally familiar with New Jersey-**
9 **American Water's Operations and the facilities and property that the**
10 **Company maintains to serve customers?**

11 A. Yes.

12 **8. Q. Please describe New Jersey-American Water's operations.**

13 A. NJAWC is the state's largest water utility serving a population of approximately
14 2.7 million people. As of November 30, 2019, NJAWC provides service to
15 approximately 652,000 water and fire service customers and 50,000 sewer service
16 customers in 220 communities in 18 counties throughout the State of New Jersey.
17 The blue shaded areas in the service area map attached as Schedule TS-1
18 represent the franchise territory served by NJAWC. NJAWC customers are
19 served by field operations employees who report to eight operating centers
20 located in Short Hills, Shrewsbury, Egg Harbor Township, Delran, Plainfield,
21 Belle Mead, Farmingdale, and Washington (Warren County). The operating
22 center locations are also shown on Schedule TS-1. The operating centers are

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 organized into four geographically-based management areas (Regions). Also
2 included on Schedule TS-1 are the regulated wastewater systems owned by
3 NJAWC.

4 In addition to providing direct water and wastewater service to its customers,
5 NJAWC also provides regional water supply and “sale for resale” water service
6 to approximately 46 other entities throughout the state. The areas shaded in grey
7 and related water purveyors shown on Schedule TS-1 are served by NJAWC
8 through water sales agreements. The Company has been, and will continue to be,
9 committed to providing regional water supply solutions that are consistent with
10 sound business planning and the water needs identified and coordinated through
11 state and local planning efforts.

12 **9. Q. Please provide an overview of the water assets and facilities of the Company,**
13 **including sources of water supply, treatment facilities, pumping equipment**
14 **and distribution system property.**

15 A. NJAWC currently owns, operates, and provides service through thirty-six (36)
16 separate public community water systems in the areas previously described. Each
17 of the water systems includes its own source of supply, production, treatment,
18 storage and distribution facilities. NJAWC operates seven surface water
19 treatment plants, 121 groundwater production and treatment facilities, and five
20 raw water reservoirs with a combined capacity of 6.2 billion gallons. The average
21 water production budget for 2018 is 282 million gallons per day (“MGD”).
22 Within the NJAWC Operations structure, the Production Department is

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 responsible for the operations and maintenance of the sources of supply,
2 reservoirs, treatment plants and treated water storage facilities.

3 In addition to these Company-owned surface water and groundwater sources of
4 supply, NJAWC also purchases both raw water and finished (treated) water from
5 several other water suppliers including, but not limited to the following: the
6 Passaic Valley Water Commission (“PVWC”); the Morris County Municipal
7 Utilities Authority (“MCMUA”); the Montclair Water Bureau; the New Jersey
8 Water Supply Authority (“NJWSA”); the City of Newark; and the Marlboro
9 Township Municipal Utilities Authority (“MTMUA”). Over 100 emergency
10 interconnections are maintained with neighboring water purveyors to enhance
11 reliability of NJAWC and other water systems.

12 **10. Q. Please provide an overview of the Company’s wastewater assets and**
13 **facilities.**

14 A. NJAWC currently owns and operates 27 wastewater collection systems, 21 of
15 which also have wastewater treatment facilities. These wastewater treatment
16 facilities incorporate membrane, sequence batch reactor or conventional activated
17 sludge treatment technologies. Six of the collection systems -- Lakewood,
18 Howell (Adelphia section), Ocean City, Washington Borough (Port Collden
19 Mall), Haddonfield, and Mt. Ephraim -- convey collected wastewater to regional
20 wastewater treatment facilities owned and operated by the Ocean County Utilities
21 Authority, Cape May County Municipal Utilities Authority, Washington
22 Borough Municipal Utilities Authority, and the Camden County Municipal

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Utilities Authority, respectively. A statewide sewer management team is
2 responsible for the remaining 21 wastewater collection and treatment systems.
3 These systems are operated under contract with Natural Systems Utilities.

4 **11. Q. How does NJAWC manage the operations and maintenance of its water and**
5 **wastewater systems?**

6 A. Field Operations is responsible for operating and maintaining transmission and
7 distribution assets, utility service lines, metering facilities and sewer collection
8 assets. In addition, Field Operations provides field-level service to customers
9 including meter reading, service requests, and field related collections activities.
10 Finally, Field Operations works with the Engineering Department and new
11 customers to provide new and replacement services and to coordinate the
12 construction of certain new and replacement or rehabilitated distribution and
13 sewer collection assets.

14 **12. Q. Please describe the work performed by the Company's Customer and**
15 **Operations Support group.**

16 A. NJAWC Operations also includes a Customer and Operations Support group that
17 is based out of our Howell, New Jersey office. This team has several
18 responsibilities including the following: operational performance reporting,
19 meter program management, meter testing and meter shop operations,
20 management of customer inquiries and complaints, and liaison for the Board of
21 Public Utilities ("Board" or "BPU") contacts; special billing and collections

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 coordination; customer service processes; and liaison with the American Water
2 national customer service center.

3 **13. Q. Please explain Operations’ role in promoting safety and a safe working**
4 **environment at NJAWC.**

5 A. Operations is responsible for administering the health and safety program, which
6 includes the delivery of all Occupational Safety and Health Administration
7 (“OSHA”) required training, training and qualification of employees, physical
8 security, cyber security, business continuity planning and event management. We
9 are supported by functional departments within American Water Works Service
10 Company, Inc. (“Service Company”), such as Health & Safety, Learning &
11 Development, Security and Human Resources, to deliver core operations
12 services. Safety and security metrics are tracked and reviewed monthly.

13 **COMMITMENT TO WATER QUALITY AND ENVIRONMENTAL**
14 **COMPLIANCE**

15 **Overview**

16 **14. Q. Please describe New Jersey-American Water’s overall commitment to water**
17 **quality and environmental compliance.**

18 A. We are acutely aware that water is the only utility product intended for customers
19 to ingest, and that our customers rely on NJAWC to provide them with safe and
20 reliable water services. Water quality is of paramount importance to the health
21 and well-being of our customers. Beyond health and safety, we know that
22 NJAWC’s customers are also interested in the aesthetic qualities of the water we
23 treat and deliver to them. We proactively look for ways to optimize treatment

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 capabilities to continue to improve the overall quality of drinking water delivered
2 to our customers, and do so in a way that strives to create operational efficiencies
3 that also benefit our customers. The Company's Water Quality and
4 Environmental Compliance program is designed to ensure New Jersey-American
5 Water complies with all drinking water quality, water pollution, residuals
6 management, air pollution and hazardous materials laws and regulations.

7 **15. Q. What specific environmental laws or regulations affect New Jersey-**
8 **American Water?**

9 A. New Jersey-American Water's operations are subject to approximately 10 major
10 state and federal public health and environmental laws, the conformance with
11 which is handled by the Company's Water Quality and Environmental
12 Compliance ("WQ/EC") team. Those 10 major regulatory schemes are: (1) the
13 federal Safe Drinking Water Act and its implementing regulations; (2) the New
14 Jersey Safe Drinking Water Act and its implementing regulations; (3) the New
15 Jersey Pollutant Discharge Elimination System ("NJPDDES"), Discharge
16 Prevention Control and Countermeasures ("DPCC") program; (4) New Jersey's
17 Toxic Catastrophe Prevention Act ("TCPA"); (5) the federal Clean Air Act and
18 implementing regulations; (6) the Water Quality Accountability Act ("WQAA");
19 (7) the New Jersey Safe Dam Act; (8) the Delaware River Basin Commission
20 regulations; (9) the New Jersey Solid and Hazardous Waste rules, the federal
21 Resource Conservation and Recovery Act ("RCRA") and its implementing
22 regulations; and (10) the federal Emergency Planning and Community Right-To-

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Know Act (“EPCRA”). NJAWC’s Operations are also subject to other
2 environmental laws, such as land use regulations, Green Acres, and the Highlands
3 Water Protection and Planning Act.

4 **16. Q. Does compliance with the federal law suffice for compliance with New Jersey**
5 **law?**

6 A. No, it does not. While there is some overlap between the state programs and
7 federal requirements, state and local statutes and regulations can be more
8 restrictive. New Jersey has: (1) more stringent diesel vehicle regulations than
9 the federal Clean Air Act; (2) more stringent diesel backup generator
10 requirements than federal regulations; (3) higher regulated drinking water
11 contaminant standards; for example, federal regulations currently set a maximum
12 contaminant level (“MCL”) for arsenic in drinking water of 10 ug/L (micrograms
13 per liter, or parts per billion). The New Jersey Department of Environmental
14 Protection (“NJDEP”) adopted a new MCL of 5 micrograms per liter in January
15 2006, giving New Jersey the most protective arsenic drinking water standard in
16 the nation. New Jersey also became the first state to create a binding standard
17 for a perfluorinated compound, PFNA, setting a drinking water limit of 13 parts
18 per trillion (“ppt”). The NJDEP also proposed drinking water limits of 14 ppt for
19 PFOA and 13 ppt for PFOS, two types of per- and polyfluoralkyl substances
20 known as PFAS. The EPA’s current health advisory is 70 ppt for PFOS and
21 PFOA combined. (4) NJDEP has lower threshold quantities for hazardous
22 materials and petroleum storage regulations; and (5) The NJPDES Program

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 protects New Jersey's ground and surface water quality by assuring the proper
2 treatment and discharge of wastewater (and its residuals) and stormwater from
3 various types of facilities and activities.

4 A significant amount of work performed by the WQ/EC Team is ensuring that
5 NJAWC knows about these more stringent requirements, and then designing and
6 implementing compliance programs that minimize duplicative efforts while
7 ensuring compliance with both the federal and state requirements. While there is
8 little duplication in reporting requirements – typically a state agency is the
9 primary enforcement agency for the major federal environmental laws – our
10 operations are so pervasively regulated that the Company filed or prepared
11 approximately 3,000 reports or other regulatory filings in 2018 to comply with
12 the 10 different regulatory schemes outlined previously.

13 **17. Q. Please describe New Jersey-American Water's water quality testing**
14 **program under the Safe Drinking Water Act.**

15 A. NJAWC routinely tests water in all of its systems to determine if it is meeting the
16 safety standards established by the federal and state regulatory authorities. Our
17 drinking water is tested both before and after treatment to ensure that it satisfies
18 all chemical and bacteriological criteria. To ensure that the public health is
19 protected, we have multiple barriers in the treatment process to prevent
20 contamination from reaching our customers. We test for the presence of
21 Synthetic Organic Chemicals, Inorganic Chemicals, Volatile Organic Chemicals,
22 Radionuclides, bacteria, disinfection by-products, and all other contaminants that

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 the regulators require us to monitor, at the frequency prescribed by the federal
2 and state regulations, and report the results of this testing to the NJDEP on a
3 monthly, quarterly, and annual basis, in accordance with the regulations. In
4 addition, we work with our customers to collect and analyze samples for
5 compliance with the Lead and Copper Rule, as well as participate in the federal
6 Unregulated Contaminant Monitoring Rule programs.

7 In 2019, New Jersey-American Water will collect more than 14,000 water
8 chemistry samples and more than 16,000 routine bacteriological samples. Many
9 additional samples are taken to assess process effectiveness, support pilot
10 treatment studies, and monitor emerging contaminant threats. We also collect
11 other bacteriological samples as-needed in response to main breaks and similar
12 emergencies. All four regions have a WQ/EC Supervisor who; (1) reviews
13 regulatory documents and sampling history to determine the need and schedule
14 for collecting specific samples; (2) coordinates with operators to verify wells and
15 treatment plants are available for sampling based on maintenance and seasonal
16 operating conditions, and then reconcile availability to the regulatory schedule;
17 (3) orders sampling kits from our laboratories and prepares those kits for
18 operators to use in the field; (4) tracks the collection of samples by operators, the
19 delivery of kits to laboratories, the analysis of the sample by the laboratory, and
20 the receipt of laboratory results; (5) reviews laboratory results for compliance
21 issues, then prepares the data for reporting to regulatory agencies; and (6) both
22 the WQ/EC supervisor and licensed operator complete and submit an internal

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 compliance certification form monthly to audit all regulatory sample
2 requirements.

3 **18. Q. Is water quality sampling the only task required to comply with the New**
4 **Jersey and federal Safe Drinking Water Acts?**

5 A. No. NJDEP also issues permits for each drinking water system, some of which
6 contain other conditions relating to the operation and recordkeeping for treatment
7 plants and other facilities. The WQ/EC Team, in cooperation with operations,
8 ensures we are complying with those requirements and reports on our compliance
9 as needed. In addition, there are various physical standards our facilities must
10 meet. The WQ/EC Team routinely inspects our facilities to ensure these physical
11 standards are being met. The WQ/EC Team also coordinates with NJDEP to
12 obtain regulatory approvals for the addition of new tanks, treatment plants and
13 other facilities, or variances from approved treatment processes. The WQ/EC
14 Team also oversees implementation of the Cross Connection Control Program to
15 avoid substances of an unknown quality being introduced into the distribution
16 system by conditions on our customers' premises. Finally, the WQ/EC Team
17 tracks the required levels of operator certifications necessary to comply with
18 drinking water regulations and coordinate with operations management to ensure
19 we have proper operator staffing for our facilities.

20 **19. Q. Please describe NJAWC's program to comply with the National Pollutant**
21 **Discharge Elimination System ("NPDES") with regard to its wastewater**
22 **operations.**

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 A. NJAWC partners with a contractor (Natural Systems Utilities) to: complete and
2 submit of NJPDES Permit Renewals or Modification Forms; complete and
3 submit monthly Discharge Monitoring Reports (“DMR”), as required by each
4 Facility NJPDES Permit, Collect; submit and oversee regulatory sample testing
5 by an outside (third-party) laboratory, for those samples required under each
6 facility NJPDES Permit, but for which the operator is not certified to perform;
7 and notify the NJDEP Hotline for any event which violates, or could potentially
8 violate, the Facility NJPDES Permit or applicable law.

9 **20. Q. Is the effluent from New Jersey-American Water’s wastewater operations**
10 **regulated?**

11 A. Yes, effluent from our wastewater operations is regulated under NJPDES
12 regulations. We monitor treated wastewater (effluent) prior to its discharge.
13 Through a combination of physical, chemical, and biological treatment processes,
14 the regulated constituents are removed or reduced to significantly low levels, and
15 then discharged into the ground or appropriate waterway.

16 **21. Q. Please describe how New Jersey-American Water manages compliance with**
17 **applicable environmental laws and regulations.**

18 A. The cornerstone of NJAWC’s Water Quality and Environmental Compliance
19 program are Environmental Management Plans (“EMPs”). EMPs are a
20 compliance matrix that identifies a regulatory requirement, specifies the person
21 responsible for ensuring NJAWC complies with that requirement, and contains
22 information on the means the Company is using to comply. EMP reviews are

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 conducted each quarter to ensure the information remains current. The EMPs
2 contain the requirements for the regulatory schemes outlined previously,
3 including specific permit conditions that regulators impose on individual
4 equipment and facilities as well as general regulatory requirements.

5 **22. Q. How else does New Jersey-American Water manage compliance with**
6 **applicable environmental laws and regulations?**

7 A. The Company uses a laboratory information management system (“LIMS”) for
8 managing some of the water quality data and sample reporting requirements. The
9 LIMS sample scheduling feature provides a tool to streamline thousands of water
10 sample tests annually and ensures that the results are tracked and reported as
11 required by the environmental regulators. In addition, NJAWC is using MapCall,
12 an internally built product, to manage bacteriological sample collection, as well
13 as other NJDEP, EPA, and OSHA requirements, such as environmental permits,
14 incidents, training, and lead and copper site requirements and forms. MapCall is
15 accessible by mobile device, so samples can be collected from the field, permits
16 can be referenced from a remote station, and any other documentation or training
17 document can be pulled up at the time the work is being performed. NJAWC is
18 also working with the Service Company Environmental Management team, to
19 develop reports and dashboards that will show the near-real time status of all
20 water quality samples. Except for the small percentage of water quality
21 parameters that are analyzed locally, LIMS pre-populates state reports to enable
22 all samples to be tracked from collection to upload in an Excel-based report. The

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 report is submitted to the Director and the Vice President as part of a Company
2 sample certification practice. Together, these systems confirm all required
3 samples are completed and submitted each month to help ensure environmental
4 compliance.

5 **23. Q. Please explain how these software systems can be used to support the**
6 **Company's WQ/EC program.**

7 A. The WQ/EC Team currently utilizes standard spreadsheet programs to track,
8 analyze, and report the voluminous amount of data generated by the Company's
9 operations. The amount of data the Company needs to collect grows as new
10 regulatory requirements are added, such as the Community Water System
11 NPDES permit, the MCL for Hexavalent Chromium, and the additional rules the
12 NJDEP has for cross-connection controls and the Lead and Copper rule
13 ("LCR"). In addition, most of the regulatory schemes require NJAWC to
14 maintain the data we collect and the reports we submit for between 3 and 5 years.

15 The use of software systems such as LIMS and MapCall reduces the manual re-
16 entry of data collected on paper forms or otherwise generated from diverse
17 sources. They also consolidate the information into structured databases with
18 querying and reporting tools, instead of managing it in multiple separate
19 spreadsheets. This allows for better data analysis, which in turn supports better
20 decision making in compliance and operating matters, and makes mandatory
21 reporting more efficient.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **24. Q. Is the Company seeking any additional resources to support its Water**
2 **Quality and Environmental Compliance program?**

3 A. NJAWC restructured the WQ/EC department in 2018 after experiencing a few
4 DEP notices of violations against a goal of zero. The department previously had
5 one WQ/EC manager with statewide responsibilities. Three existing positions
6 were repurposed, and one position was added to create four regional manager
7 positions to provide regional managerial focus on regulatory compliance and to
8 promote daily engagement with regional operations personnel. Additionally,
9 NJAWC is adding two Cross Connection Specialists in 2020 to support the
10 Company's enhancement of its cross-connection program. The enhanced cross
11 connection program will help the Company protect its water systems and
12 customers from the accidental introduction of contaminants by implementing a
13 proactive program to help prevent water backflow into our networks.

14 **COMMITMENT TO SAFETY**

15 **25. Q. Please describe NJAWC's overall commitment to safety.**

16 A. Ensuring the health and safety of our employees and customers and protecting the
17 quality of the water we deliver is the top priority for our Company and is critical
18 to our success. Our co-workers', contractors', and customers' safety is of vital
19 importance and we focus on it every day. Our goal is to have every NJAWC
20 employee get home in the same health they came into work or better every single
21 day.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 With the safety of our employees, customers, contractors, and the general public
2 in mind, we approach safety with a focus on continuous improvement through the
3 implementation of proactive initiatives, plans, practices and processes that
4 compliment and sustain a robust workplace safety program.

5 New Jersey-American Water is also committed to securing assets across our
6 system and recognizes the importance of protecting our water sources, treatment
7 plants, infrastructure, and data from malevolent acts, as demonstrated by our
8 robust security and cyber security programs. In addition, the Company's
9 emergency response program demonstrates the Company's recognition that rapid
10 response and recovery from security incidents are critical to maintaining the water
11 and wastewater systems.

12 **26. Q. Is safety relevant to operational performance?**

13 A. Yes. The Company considers safety to be a core value, as well as a strategy. We
14 ask our employees to place safety first in everything they do. We have a strong
15 commitment to our employees (and their families) to keep them, our customers
16 and the general public safe. A safe workplace increases employee morale,
17 increases our commitment to one another, and in the long run, makes for a more
18 engaged and productive workforce.

19 **New Jersey-American Water Company's Safety Approach, Plans and Programs**

20 **27. Q. What is the "Safety Begins with You" Program?**

21 A. The "Safety Begins with You" Program is a prioritized list of safety initiatives
22 implemented to improve workforce engagement and accountability. The

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Operations Leadership Team holds biweekly safety meetings to establish actions
2 to deliver the initiatives and track results. The initiatives are as follows:

- 3 • Peer-to-Peer Safety Observations (BAPP Teams)
- 4 • Employee Injury Review Meetings
- 5 • Job Safety Briefs
- 6 • NovaCare Employee Care Program
- 7 • OSHA Compliant Training
- 8 • Supervisor Inspection and Feedback Training
- 9 • Near miss, first aid, incident investigations
- 10 • Monthly Life Saving Rule Reinforcement
- 11 • Personal Protective Equipment (“PPE”) Review and Communication
- 12 • Certified Safe Worker Program
- 13 • Stop Work Authority
- 14 • Utility Mechanic Training
- 15 • Collaborative vehicle design

16 **28. Q. What is the Peer-to-Peer Observation Program?**

17 A. The peer-to-peer observation program is an employee led, management supported
18 behavior-based safety initiative composed of the following elements:

- 19 • **Identifying Critical Behaviors** – Analyzing historical data and employee
20 insight to identify the behaviors that are critical to safe performance.
- 21 • **Gathering Data** – Conducting peer-to-peer, no-name-no-blame
22 observations to capture information that measures exposure levels.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

- 1 • **Providing Feedback** – Engaging in informal follow-up discussions with
2 their coworkers about the safe and at-risk behaviors they observed.
- 3 • **Using Data to Remove Barriers** – Applying findings from the observation
4 data captured, cross-functional teams work to remove these barriers to safe
5 behavior.

6 **29. Q. What is the Company’s Near Miss Program?**

7 A. In 2015, New Jersey-American Water, as part of an American Water initiative,
8 began an enhanced method of online near miss reporting. A near miss is an event
9 or condition that did not result in injury, illness or damage, but could have.
10 Reporting and investigating near misses allows us to learn from near accidents
11 instead of real accidents. Information is gained about what accidents can happen
12 and how to adjust the safety program to prevent them. This program is part of the
13 Company’s commitment to proactive processes that focus on prevention rather
14 than reaction to injuries and accidents. Every near miss reported goes through an
15 analysis that helps identify its cause and prevent the situation from happening
16 again. Because this program has been implemented across American Water, the
17 Company is able to identify and share the findings on a national level.

18 The reporting of near misses is a no-fault system. There have been and will be
19 no disciplinary actions associated with near miss reporting. This will continue to
20 build trust and benefit our safety culture.

21 The Company’s 2019 target is to complete the corrective actions for 95 percent
22 of near misses within 30 days. NJAWC has submitted 217 near misses as of

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 October of 2019 and completed 98% percent of the actions within 30 days.
2 Corrective actions typically range from completing repairs or replacement of
3 equipment and tools, purchasing proper PPE, removal and elimination of trip
4 hazards, addition of warning signs, removal of insects and raised awareness of
5 insect hazards, installation of proper pipe material to eliminate chemical hazards,
6 better lighting, and raised awareness of road and work zone hazards.

7 **30. Q. What is the Stop Work Authority?**

8 A. In the event of a serious safety issue, employees are empowered to “Stop Work”
9 and make sure no one else will be exposed to hazards that could cause injury. The
10 back of each employee’s badge reminds them of their Stop Work authority.
11 Employees are encouraged to utilize their stop work authority without fear of
12 repercussions.

13 **31. Q. What is the Certified Safe Worker program?**

14 A. Certified Safe Worker is a program where employees certify they have completed
15 or demonstrated six safety actions in areas such as health screenings, CPR/First
16 Aid training, other safety training, pre-job stretching, stopping an unsafe job,
17 submitting safety improvement suggestions and/or practicing safety at home. To
18 date, 79% of our employees have earned their designation as a Certified Safe
19 Worker.

20 **32. Q. Does New Jersey-American Water provide safety-related training to its**
21 **employees?**

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 A. Yes. A robust safety training program helps reduce injuries and accidents,
2 allowing the Company to remain in compliance and enhance the safety culture.
3 It is vital that everyone in the workplace is properly trained in identifying and
4 managing hazards when they are exposed to them. This includes supervisors,
5 managers, contractors, and part-time and temporary workers. Training is varied
6 and includes weekly safety talks, tailgate talks, OSHA required biannual safety
7 refreshers, initial training and equipment-specific or task-specific training. All
8 training records are kept in a database to ensure that everyone who should get
9 training does.

10 **33. Q. Who at New Jersey-American Water undertakes safety-related training?**

11 A. All employees participate in some form of safety training. The content of
12 NJAWC's Operations training program and the methods of presentation reflect
13 the needs and characteristics of the particular workforce. Any employee that may
14 encounter a hazard covered in the training topic will be required to attend the
15 training. Training targets new hires, contract workers, employees who wear
16 personal protective equipment, and workers in high risk areas.

17 Managers and supervisors also are included in the training plan. They receive
18 training in company policies and procedures, as well as hazard detection and
19 control, how to provide feedback and recognition, accident investigation,
20 handling of emergencies, and how to conduct toolbox talks.

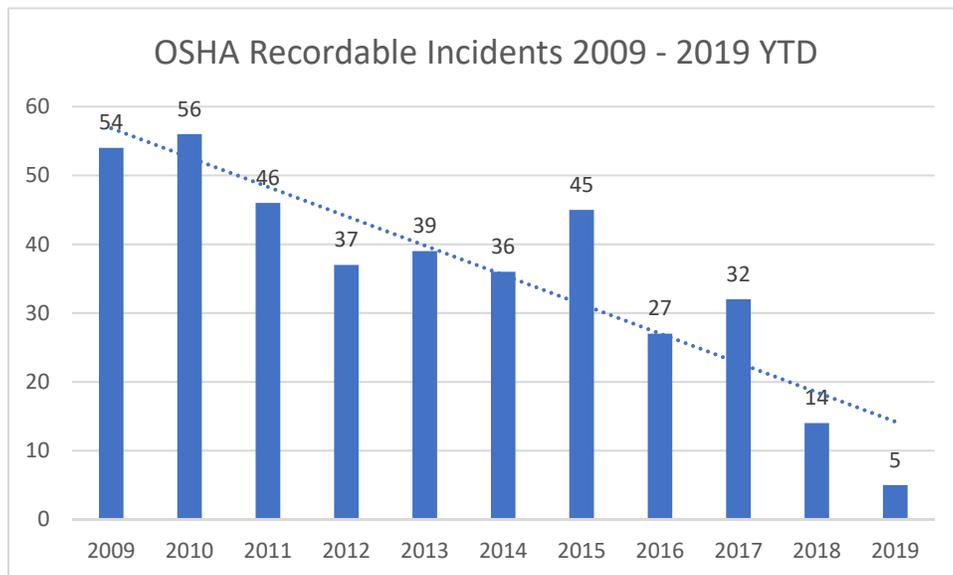
NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **34. Q. Is certain safety training required?**

2 A. Yes. Required training is determined by OSHA and specific safety training is
 3 determined by the unique needs of the field location.

4 **35. Q. How have NJAWC’s safety initiatives improved the Company’s OSHA
 5 recordable injury rate?**

6 A. New Jersey-American Water has experienced a gradual reduction in OSHA
 7 recordable incidents since making safety a core value and strategy in 2009. There
 8 has been dramatic improvement in both the OSHA recordable incident rate and
 9 severity of the injuries since the implementation of the “Safety Starts with You”
 10 program in 2017. See chart below:



11

12

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **36. Q. Has NJAWC experienced a reduction in workers compensation claims since**
 2 **the implementation of the “Safety Starts with You” program?**

3 A. Yes, the number of claims has decreased. The Company experienced a 69%
 4 reduction in claim cost from 2017 to 2018 and is on track to achieve a greater
 5 reduction in 2019 YTD. See chart below:

Workers Compensation Claims 2017 - Nov 2019			
Year	# of Claims	Cost incurred	Avg Cost/claim
2017	67	\$703,539	\$10,501
2018	40	\$215,307	\$5,383
2019	27	\$103,317	\$3,827

6

7 **37. Q. What other benefits has NJAWC gained from the implementation of the**
 8 **“Safety Starts with You” initiatives?**

9 A. Focusing on safety increases productivity by avoiding incidents, accidents,
 10 breakdowns and process failures. This leads to better all-around performance.
 11 The increased engagement associated with the implementation of the initiatives
 12 has improved the communication, trust, and overall relationship between our
 13 management team and field personnel.

14 **Security and Cybersecurity**

15 **38. Q. What is New Jersey-American Water doing to address physical security?**

16 A. New Jersey-American Water has taken a comprehensive approach to addressing
 17 security. Physical security consists of cameras, badge readers and cyber keys that
 18 monitor situations and are programmed to limit access to secure areas, including
 19 offices, shops, well sites, treatment, pump and lift stations. New Jersey-American

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Water uses standards from the American Water Works Association (“AWWA”)
2 and the American Society for Industrial Security (“ASIS”). The Company has
3 strategically placed cameras at critical infrastructure, (e.g., tank and well sites)
4 and secure work locations (e.g., offices and shops). Cameras are connected to a
5 secure line that provides video output to the local operations control rooms and
6 American Waters central security and reliability control room.

7 Identification badges are issued for the purpose of facility access control at New
8 Jersey-American Water. NJAWC’s policy is that access to all Company-owned
9 and leased property be limited to authorized persons in the conduct of official
10 activities as approved by the local management. All employees must wear and
11 openly display the identification badge visibly while on any NJAWC property,
12 while on Company business or while representing the Company publicly or
13 privately. Unauthorized entries are registered as an alarm that is received by the
14 local operations control Room and American Water’s central security and
15 reliability control room.

16 CyberLock® systems are integrated at two of the largest districts in New Jersey,
17 with plans to expand throughout NJAWC’s operations. Keys and locks are
18 programmable with access permissions for each key holder. In addition, a key
19 can be assigned a start and end date, and depending on the work, it can be
20 programmed to allow access to one set of locks from 8 a.m. to 6 p.m. on weekdays
21 and to another set of locks only from 10 a.m. to 4 p.m. on weekends. Setting short-

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 term expiration dates is an excellent way to minimize risk due to lost or stolen
2 keys and programmed access further ensures the security of our facilities.

3 **39. Q. How is cybersecurity being addressed?**

4 A. Cybersecurity technology solutions are vital to reliable and resilient water
5 systems. For that reason, cybersecurity is core to the American Water vision of
6 resiliency and sustainability. As we continue to implement intelligent water and
7 wastewater systems, we ensure that industry-leading cyber controls are designed,
8 built and integrated into all aspects of the technology. These controls protect our
9 existing systems and enable the implementation of secure innovation.
10 Safeguarding the integrity of Company information and systems while enhancing
11 the customer experience is our security mission.

12 The Company's cybersecurity program is consistent with industry best practices,
13 including the National Institute of Standards and Technology ("NIST")
14 Cybersecurity Framework and the AWWA Process Control System Security
15 Guidance for the Water Sector.

16 **Emergency Response**

17 **40. Q. Provide an overview of the Company's emergency response program.**

18 A. Emergency response and recovery is a critical aspect in the operation of water
19 and wastewater systems. NJAWC maintains response plans, agency and industry
20 emergency contacts and attends public and industry specific conferences on
21 emergency response and preparedness in order to sustain a broad coverage in an
22 emergency. Integration of the various responders, communications and flow of

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 information during an emergency or natural disaster is critical. NJAWC follows
2 the National Incident Management System (“NIMS”) and Incident Command
3 System (“ICS”) protocols and procedures.

4 **41. Q. How does New Jersey-American Water prepare for emergencies?**

5 A. NJAWC has established a business continuity framework, bringing functional
6 and operational teams together for the purpose of reducing risk and enhancing
7 resiliency. As part of the framework, the Company adopted the nationally
8 recognized ICS, which enables unified emergency response and close, effective
9 coordination with emergency management in the communities we serve.

10 Each NJAWC district maintains an emergency response plan utilizing the NJDEP
11 format that is reviewed annually. The emergency response plan includes: mutual
12 aid information and procedures; system descriptions; critical system components;
13 event management process; security; incident command system; plan
14 development, maintenance and training; actions plans for all emergency
15 scenarios; emergency contact lists; emergency equipment lists; sampling
16 protocol; and other site specific data.

17 Emergency response drills are conducted annually and include large system
18 outages, contamination events, natural disasters, cybersecurity events, and
19 environmental spills. Drills are coordinated by operations and include on site
20 mock drills, tabletop exercises and after-action reporting.

NEW JERSEY-AMERICAN WATER COMPANY, INC.**Safety and Security Resources and Support**

1 **Safety and Security Resources and Support**
2 **42. Q. Please summarize how the Company supports its safety and security**
3 **programs.**

4 A. NJAWC utilizes a combination of internal Health & Safety personnel and
5 operations personnel to support the Company's safety and security programs. It
6 starts with everyone owning safety, including employees and contractors. It is
7 important that we hold each other accountable to get to zero injuries and manage
8 security incidents.

9 **43. Q. Please describe the Accident Prevention Council ("APC").**

10 A. Each District maintains an APC that is jointly chaired by management and union
11 personnel. Each APC has the responsibility to: hold monthly meetings; review
12 committee reports and safety alerts; collaborate with other APC committees to
13 share best practices; support peer-to-peer observation program; recommend tools
14 and equipment; conduct inspections at a time and in a manner they consider in
15 the best interest of the health and safety program; discuss and resolve safety
16 issues; track health and safety issues brought to the APC and document
17 resolution; and comply with the American Water Health and Safety Committee
18 Policy.

19 **44. Q. How does the American Water Operations Security team and the Integrated**
20 **Operations Center support the Company's security programs?**

21 A. American Water Operations Security supports the business in the overall
22 management of physical and cyber security systems at facilities across the

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 country. This includes developing procedures, guidelines and training related to
2 our security systems and processes. Operations Security also conducts internal
3 security reviews and partners with the Department of Homeland Security
4 (“DHS”) on external security assessments, using the results to develop
5 improvement initiatives and further enhance security controls of company assets
6 and systems. In addition, the Operations Security team provides technical support
7 and guidance to identify potential security vulnerabilities and develop appropriate
8 solutions.

9 Staffed 24 hours a day, seven days a week, the Integrated Operations Center
10 (“IOC”) monitors security cameras, alarms and incoming calls. In addition, they
11 have access to the CyberLock system and can view lock and key activity. The
12 IOC also monitors American Water security and technology systems;
13 continuously tracks weather alerts, security threats and intelligence; and serves as
14 a key collaboration point for operations, leadership and functional teams.

15 The IOC also reviews safety or security situation reports that are entered online
16 through the security portal, which can also be used to report safety near-miss
17 activities, safety or injury incidents, and security incidents. The IOC also has an
18 event information hotline that is used to provide key information about facility
19 closing and other information when an event has been declared (e.g., hurricane,
20 snow emergency).

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 The Company has access to Operational Security and the IOC to assist in the
2 response and recovery from an emergency event and restore service as quickly as
3 possible.

4 **45. Q. How else does American Water support the Company's safety and security**
5 **efforts?**

6 A. American Water has developed security awareness training for physical and
7 cybersecurity risks, incident response and emergency preparedness. This training
8 reinforces the shared responsibility for security with all employees, contractors
9 and visitors, and supports a safe and secure work environment. Although the
10 Company works hard to prevent incidents from happening, it must also prepare
11 for them. Practice exercises are a powerful way to bring solid planning and years
12 of experience to bear on the new and diverse challenges faced. American Water
13 has led dozens of preparedness exercises across the business, while also
14 participating in regional and national level exercises with state and federal
15 partners. For example, a tabletop emergency exercise was conducted in our North
16 Region that involved a cyanotoxin event. Essex County OEM, municipal OEM,
17 NJDEP, and the BPU participated in the exercise, which focused on incident
18 management and communication during and after the event. The exercise
19 identified several actionable items and the results were documented in the after
20 action report. Not only do these activities enhance readiness, they often identify
21 opportunities for increased operational efficiency.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 For incident investigations, New Jersey-American Water utilizes an enterprise
2 wide online tool called TapRoot®. It is a systematic process, software, and
3 training program for identifying root causes of safety incidents. It can be used to
4 investigate and identify the root causes of major accidents, everyday incidents,
5 minor near-misses, quality issues, human errors, maintenance problems,
6 productivity issues, manufacturing mistakes, and environmental releases. The
7 systematic process is based on in-depth human factors and equipment reliability
8 research. It is designed to help investigators maintain objectivity during their
9 investigation.

10 The results of these investigations are then considered by the business to evaluate
11 the situation and determine what safety process improvements may be
12 appropriate going forward. American Water also maintains a security hotline that
13 can be used to report a safety near miss or safety/security incident, request
14 security system service, report or request an identification badge or report an
15 operational event.

16 **46. Q. How do you promote safety with your contractors?**

17 A. NJAWC utilizes internal and external inspectors to ensure our contractors are
18 complying with all regulations and maintaining safe work environments. Our
19 inspectors have extensive safety backgrounds and have been selected based on
20 their safety expertise as well as their engineering knowledge. Annual meetings
21 are held with all contractors to refresh them on NJAWC safety program
22 requirements and introduce any new requirements added since the previous year.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Avetta is a safety prequalification program for NJAWC contractors. Contractors
2 that fall under the construction and maintenance categories must register with
3 Avetta, and provide their safety documentation. Avetta assigns an experienced
4 professional to perform a one-on-one audit. Avetta reviews everything from
5 paperwork in the contractor's office to performance in the field. Their safety
6 professionals help manage New Jersey-American Water's risk and our
7 contractors' performance by: having an Avetta Representative verify the
8 contractors' data; centralizing contractor data into an easy-to-use, online
9 database; providing supplier statistics on health, safety and environmental issues;
10 giving contractors a personalized customer service representative to answer their
11 questions and assist them through the process; and validating that regulatory
12 forms and statistics are submitted properly and accurately.

Safety Program Benefits**14 47. Q. How do the safety programs benefit employees?**

15 A. Employees receive direct benefits from strong safety, security and emergency
16 response programs. Training provides the employee with the ability to identify
17 hazards; and incident and reporting processes allow employees to report and
18 assist in identifying root cause and causal factors so actions can be taken to
19 prevent accidents from occurring. A safe workplace increases employee morale,
20 increases our commitment to one another, and in the long run, makes for a more
21 engaged and productive workforce

NEW JERSEY-AMERICAN WATER COMPANY, INC.1 **48. Q. How do safety programs benefit customers?**

2 A. Customers benefit because the Company, through strong health and safety
3 programs, has enhanced productivity and decreased absenteeism. This means
4 that crews operate with a full staff and can fix problems quicker, reducing any
5 service down time to the customer. In addition, a strong safety culture also
6 reduces safety-related incidents, resulting in lower insurance and workers
7 compensation costs.

8 **49. Q. How do safety programs provide an overall public benefit?**

9 A. The general public benefits from NJAWC's safety and security programs because
10 we provide safe water and wastewater services. Our safe operations and
11 compliance with occupational safety regulations provide the general public with
12 the confidence that the Company operates in a safe and secure manner. In
13 addition, NJAWC crews operate daily in public areas and must protect their
14 worksites from hazards as well as prevent the general public from exposure to
15 these hazards.

16 **OPERATING AND MAINTENANCE EXPENSE**17 **50. Q. What has been the result of New Jersey-American Water's efforts to control**
18 **O&M costs?**

19 A. New Jersey-American Water has successfully controlled costs over the past
20 several years. The Company's 2018 operating and maintenance ("O&M")
21 expenses (excluding purchased water and sewer costs) were approximately \$14

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 million *lower* than 2010 O&M expenses, and we are continuing our cost
2 mitigation efforts.

3 **51. Q. What level of O&M expense is the Company seeking in this case?**

4 A. NJAWC is seeking recovery of approximately \$219 million in O&M expense for
5 the test year ending June 30, 2020, which represents expense levels into 2021.
6 While O&M expense has increased since the last case, it has remained relatively
7 flat compared to 2010 levels. In fact, the Company's proposed O&M expense
8 (excluding purchased water and sewer costs) is over \$25 less per customer than
9 its 2010 cost per customer levels. This represents a period of 10 years where
10 customers are charged less for O&M expenses as a result of the Company's
11 growth in customers over that period. The requested increases in O&M expense
12 over these periods support the Company's efforts to continue providing high
13 quality water service in the most cost-effective way to our customers in the long-
14 term. The direct testimony of NJAWC witnesses Jamie Hawn discusses
15 NJAWC's specific O&M pro forma adjustments in this case.

16 **52. Q. Why is the Company seeking an increase in O&M expense in this case?**

17 A. In addition to annual increases in employee related expenses, our request for
18 increased O&M expense is driven primarily by increases in our production costs.
19 These costs include the chemicals we use to treat water, power, purchased water,
20 and waste disposal. Some of the increases in costs for chemicals and waste
21 disposal are driven by new water and wastewater contaminant standards.

NEW JERSEY-AMERICAN WATER COMPANY, INC.**1 IMPROVING WATER EFFICIENCY****2 53. Q. What is water efficiency?**

3 A. In simple terms, water efficiency means using improved practices and
4 technologies to deliver safe, reliable and adequate water service more effectively.
5 NJAWC's water efficiency efforts cover a wide range and include supply-side
6 practices, such as leak detection and our geographic information system ("GIS"),
7 as well as demand-side strategies, such as rate design and public education
8 programs. From an operations perspective, improving water efficiency requires
9 achieving a cost-effective mix of prudent investments and improved operations
10 and maintenance management capabilities targeting safety, customer satisfaction,
11 environmental compliance, sustainability, asset performance and operational
12 efficiency. As I have noted, the Company's focus on providing cost-effective
13 service has resulted in an overall O&M expense remaining relatively stable over
14 the past several years.

**15 54. Q. Please describe some of New Jersey-American Water's efforts to improve
16 water efficiency.**

17 A. The Company strives to improve water efficiency through use of technology,
18 system maintenance, and efforts to manage costs as efficiently as possible to
19 provide a more cost-effective level of service for our customers over the long
20 term. In addition, NJAWC uses various operational and efficiency reviews to
21 further focus on improving customer service and efficiency of production and
22 field operations. The Company also leverages the size and scale of American

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Water to improve transactional efficiencies through increased automation, the
2 adoption of more effective business practices and a continuous improvement
3 mindset.

4 **55. Q. How does NJAWC gain efficiencies from its relationship with American**
5 **Water?**

6 A. As a subsidiary of American Water, NJAWC has available to it the resources of
7 the Service Company, which provides access to highly trained professionals who
8 possess expertise in various specialized areas and who work exclusively for
9 American Water's subsidiaries. Not only does NJAWC benefit from getting these
10 services and expertise at cost, through the size and breadth of American Water,
11 NJAWC has continued to increase its purchasing power to obtain discounts on
12 the necessary equipment needed to manage and maintain our system—including
13 pipes, fittings, and water treatment chemicals—that we otherwise would be
14 unable to obtain were we a separately owned water system. In addition, the
15 Company's ongoing investment in technology enables a better end-to-end view
16 of its water and wastewater business. For example, Service Company's
17 Technology and Innovation ("T&I") team works side-by-side with end-users to
18 develop technological solutions engineered with a focus to enhance our
19 employees' effectiveness and to allow our customers to do business with us more
20 easily. These products and applications are designed with ease of use in mind.
21 They take advantage of augmented intelligence technologies that enhance human

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 decision making and continuously learn from their interactions with humans and
2 the environment, meaning information evolves with usage.

3 **56. Q. How is the American Water Supply Chain team utilized by the Company?**

4 A. All goods and services purchased that can be leveraged across the entire
5 American Water enterprise are done so by the Supply Chain team within Service
6 Company (“Supply Chain”) in order to maximize the purchasing power of the
7 entire American Water enterprise. Such goods and services include but are not
8 limited to water treatment chemicals, pipe valves and fittings, meters, engineering
9 services, consulting services, professional services and employee benefits. The
10 value realized from Supply Chain’s work are a benefit to all American Water
11 subsidiaries.

12 state-specific and regional services include but are not limited to infrastructure
13 maintenance and repairs and facility maintenance and repairs, are the
14 responsibility of the supply chain team maintained at the state level (“state Supply
15 Chain”). The state Supply Chain’s strategic objectives are to leverage state
16 specific requirements in order to obtain greatest value across the entire state or
17 specific region(s) within the state. The goal is to obtain the highest quality
18 services at greatest value to the state.

19 **57. Q. What are some of the significant categories in which Supply Chain managed
20 to control costs?**

21 A. Water Treatment Chemicals: Annually, Supply Chain solicits bids for all water
22 treatment chemicals. By leveraging the volume of the entire American Water

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 enterprise, Supply Chain has been successful in being able to negotiate price
2 reductions, hold pricing flat or minimize price increases.

3 Maintenance Repair and Operating (“MRO”) Supplies: In 2019, Supply Chain
4 conducted multiple bid exercises for MRO Supplies. Supply Chain was able to
5 leverage the volumes across the entire enterprise in order to lower the overall
6 costs of these products.

7 Ductile Iron Pipe: In 2019, Supply Chain conducted a bid exercise for ductal iron
8 pipe and was able to leverage volumes to minimize price increases from the prior
9 agreement. On 8-inch diameter class 54 pipe, Supply Chain was able to reduce
10 the cost by an estimated 26% from the prior agreement. This cost reduction is a
11 major benefit to New Jersey-American Water and its customers since this class
12 and size pipe is used on most main replacement projects and network repair work.

13 Telecommunication Services: In 2018, Supply Chain negotiated an extension
14 with our existing voice and data carriers. By leveraging the agreement term and
15 volume commitments, Supply Chain was able to reduce the overall costs of these
16 services. As a result, New Jersey-American Water voice and data rates decreased
17 in 2018 and 2019.

18 Fleet: In 2018, Supply Chain negotiated incentive discounts directly with the
19 manufacturer for the entire American Water enterprise. This resulted in
20 significant incentive discounts from model year 2019 versus 2018, which New
21 Jersey-American Water took advantage of when purchasing vehicles.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Utility Markouts: In 2017, state Supply Chain established two agreements with
2 two Utility Markout contractors. For contractor 1, the agreement was established
3 through July 2020 with a negotiated 2.5% increase. For contractor 2, prices were
4 held flat through July 2020.

5 Network Repair: In 2017, state Supply Chain executed agreements for Network
6 Repair services with a 2-year term. At the end of the initial term of these
7 agreements in 2019, these agreements were extended for an additional year and
8 two months with no price increases.

9 Meter Replacement Services: In 2016 and 2017, state Supply Chain established
10 agreements for meter replacement services. In 2018, the existing agreements
11 were extended through 2019 with no price increases.

12 Patchwork Paving Services: In 2016, state Supply Chain established patchwork
13 paving agreements with multiple contractors to service the state of New Jersey.
14 Pricing was held flat through 2018 and in 2019, the agreements were extended
15 one year with minimal increases.

16 In each instance, New Jersey-American Water and its customers have benefited
17 from leveraging the size and scale of American Water enterprise wide through
18 Supply Chain and leveraging the size and scale of NJAWC through the efforts of
19 state Supply Chain.

NEW JERSEY-AMERICAN WATER COMPANY, INC.1 **58. Q. How is NJAWC using GIS to improve employee effectiveness?**

2 A. Accurate electronic maps ensure that the Company's institutional infrastructure
3 knowledge is captured for use by current and future employees. To that end,
4 NJAWC has loaded its facilities into GIS so that maps of its water and wastewater
5 system assets are accessible on its internal network. The information available on
6 GIS includes the location and a short description of the facilities, giving an
7 electronic spatial view of the entire system. GIS also helps locate customers that
8 might be affected by related service issues and allows us to more effectively
9 communicate with our customers. We continue to enhance our GIS platform
10 through integration with our SAP Enterprise Asset Management ("EAM")
11 system, our computer-aided design ("CAD") system, and our PowerPlant fixed
12 asset records. This integration allows communication across the various
13 platforms that makes data retrieval more efficient.

14 **59. Q. How has NJAWC benefitted from its GIS platform?**

15 A. The WQAA, enacted on July 21, 2017, requires water purveyors to identify the
16 geographic location of each valve and fire hydrant in its public water system using
17 a global positioning system ("GPS") based on satellite or other location
18 technology. NJAWC was required to identify the GPS location of 45,534 fire
19 hydrants and 180,967 valves by October 19, 2017 to comply with the WQAA.
20 The Company started a GPS program to enhance its GIS many years prior to the
21 adoption of the WQAA. The foresight of the Company enabled the utilization of
22 cost-efficient internal resources to gather the required GPS points rather than

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 contracting out the large volume of work under the compressed time frame
2 required by the WQAA.

3 The internal GPS resources also gathered adjacent curb box locations while
4 completing the valve and fire hydrant work. The curb box locations assist the
5 field technicians to quickly locate curb boxes during emergency and scheduled
6 work. The GPS locations save time, minimize damage to customer property, and
7 increase customer satisfaction.

8 **60. Q. What work management system is NJAWC using to improve employee**
9 **effectiveness?**

10 A. The Company uses MapCall, an application that provides a more intuitive
11 interface among SAP, GIS and its employees in the field. MapCall provides the
12 flexibility to create work orders, configure workflows and report progress while
13 in the field. For example, a supervisor can create a work order to flush a dozen
14 hydrants in a particular area. Using MapCall, the field worker can report progress
15 as flushing is performed, and both the supervisor and others in the field can
16 visually see the progress made toward completing the identified work in real time
17 through the MapCall interface. The same can be done to schedule and monitor
18 other routine work, as well as emergency work, such as main break repairs.

19 MapCall also allows those in the field to more efficiently communicate water
20 quality and other events through preloaded notifications via email to both internal
21 and external stakeholders, including regulators, allowing workers to quickly shift
22 back to focusing on the task at hand and providing quality service to customers.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Water main break locations are continually added to the GIS and InfoAsset, a
2 pipe replacement prioritization database, to help identify sections of pipe that
3 have outlived their useful life. This information is used to prioritize water main
4 replacements by strategically focusing on the pipe with the highest risk of failure.

5 **61. Q. Are there other technology solutions NJAWC is implementing to improve**
6 **employee effectiveness?**

7 A. Yes. In addition to GIS platform enhancements and MapCall, American Water
8 is developing a number of applications that will further enhance employee
9 effectiveness. These include Customer1View (“C1V”), Meter Ops and
10 Work1View (“W1V”), each of which provides more comprehensive and easily
11 accessible information to employees.

12 C1V has been implemented by the Company to better serve our customers in a
13 way that also improves our efficiency. C1V provides improved access to
14 customer information (e.g., premise and service order history, meter details,
15 billing and payment information) to field service representatives (“FSRs”) who
16 regularly interact with our customers. This means that FSRs can view the same
17 information as customer services representatives (“CSRs”) located at the
18 customer service center (“CSC”). This allows our FSRs to review customer
19 information that can help them address the customer’s issue and provide
20 customers information while speaking with them, rather than having to contact
21 the CSC for information or requiring customers themselves to follow up with the
22 CSC. FSRs can also update customer information and record notes on customer

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 interactions on the spot, providing other employees that serve our customers
2 timely access to the most up to date information.

3 Meter Ops is another application that supports our continued efficiency. Meter
4 Ops monitors key attributes for each meter, including manufacturer, size,
5 installation date, location (both on a map and whether it's located inside or
6 outside), customer information, and historical data, such as past alarms, work
7 orders, customer contacts and visits, and reading and billing information. This
8 provides local operations supervisors and managers a real-time view of meter
9 performance and the ability to more easily monitor and manage length of service
10 meter replacements and identify and address potentially problem meters more
11 timely. In addition, all this information is available to, and can updated by, our
12 employees while they're in the field so, here again, they have a full, real-time,
13 view of information they can use to better serve our customers.

14 The Company is also rolling out W1V. This is a tool built by the field, for the
15 field. It will provide a single view for managing work in the field, customer
16 information and meter information. W1V includes a real-time operations map to
17 see work orders with optimized routing, as well as other types of work and alerts
18 happening nearby. In addition, using W1V, FSRs can manage their own work
19 based on the day's demands by adding or deferring undated work, and putting
20 orders on hold to do emergency work needed at another location. Supervisors
21 can also reroute work as appropriate. W1V will be integrated with C1V for easy
22 access to customer information during field visits. It will also be integrated with

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Meter Ops and MapCall to provide FSRs one point of access for all information
2 needs. Taken together, these types of improvements will continue to drive a
3 better customer experience and level of satisfaction.

4 **62. Q. How else is NJAWC using technology to improve customer service?**

5 A. We are improving our web-based customer portal to allow self-service for billing,
6 consumption information and conservation advice. We are making the portal
7 more user friendly, accessible, and compliant with the Americans with
8 Disabilities Act by, for example, using more graphical information.

9 We are upgrading our customer service infrastructure to improve interactions
10 with customers and make customer information more easily accessible in the
11 field. In addition to the tools described above, upgrades include replacing our
12 CSC call management software and meter data management solution. Our new
13 CSC telephone software system improves call routing, automates many call
14 handling tasks and uses voice prompts to gather information, all of which serve
15 to minimize the time customers have to spend on the telephone.

16 CSR One View provides CSRs access to relevant customer information more
17 efficiently by bringing together information from multiple sources in to a single,
18 easy to use view. This will lead to more effective customer communications,
19 service and outreach, as well as more effective utilization of CSC resources. CSR
20 One View is being integrated with the customer portal to enable communications
21 with customers via online chat. This integration should be completed by 2021.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **63. Q. Are there technology solutions NJAWC is implementing to operate systems**
2 **with improved efficiency, resiliency, and security?**

3 A. Yes. NJAWC continues to focus on Automation and Controls (also referred to
4 SCADA) capital projects throughout our operational areas and has multiple
5 projects underway as discussed by Mr. Shields. The objectives of these
6 improvements target areas that include data standardization and data
7 consolidation, field instrumentation and control enhancements, remote terminal
8 unit (“RTU”) standardization, as well as human machine interface (“HMI”)
9 software and communication conformance. With these upgrades, sites are
10 equipped with components that provide increased security, in addition to a higher
11 level of resilience and reliability with updated infrastructure and an architecture
12 that facilitates improved connections to our internal operations.

13 Upgrades have yielded cost savings of approximately \$1.6 million from 2017-
14 2019YTD with the transition from legacy communications lines to cellular based
15 solutions. Aside from cost savings, these efforts have yielded additional data to
16 be aggregated for analysis and increased visibility to operations. Furthermore,
17 replacement of legacy equipment has allowed NJAWC to engage and solicit
18 contracts from a longer list of vendors who were not options to support the
19 hardware/software that reached its life expectancy.

20 With SCADA system standardization comes opportunities to replicate efforts that
21 include:

- 22 ▪ Solar panel backup systems at tanks

NEW JERSEY-AMERICAN WATER COMPANY, INC.

- 1 ▪ Tank turnover programming
- 2 ▪ Anti-cavitation to protect pump assets
- 3 ▪ Mobile alerting of equipment/process statuses

4 **64. Q. Are there other technology solutions NJAWC is implementing to improve**
5 **water efficiency?**

6 A. Yes. The Company is implementing an enterprise-wide safety, incident and near
7 miss management solution that integrates incident/near miss capture, reporting,
8 claims, and analysis. The Company has also replaced its legacy, unsupported
9 employee time management system with MyTime. MyTime enhances employee
10 time collection and reporting and contributes to improved pay accuracy. It also
11 provides employees with a better way to record time worked and time off,
12 including the ability to record and view time on a mobile device.

13 **65. Q. What energy savings initiatives has the Company implemented to control**
14 **costs?**

15 A. NJAWC's planned capital investment for the Raritan Millstone Water Treatment
16 Plant ("RMWTP") includes a \$15 million program to provide improvements to
17 the low lift pump station. As described by Mr. Shields, these improvements
18 included replacement of inefficient pumps and motors, along with suction and
19 discharge piping and appurtenances, SCADA and instrumentation upgrades,
20 control room expansion to enhance safety, and electrical upgrades associated with
21 new pumps including the addition of variable frequency drives for two pumps.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 The New Jersey Large Energy User Program (LEUP) is designed to promote self-
 2 investment in energy efficient projects for New Jersey's largest commercial and
 3 industrial facilities. Reviewing the scope of the work at the Raritan Millstone
 4 Low Lift Station, NJAWC applied for an energy efficiency rebate for the
 5 improved efficiency of the pumps being replaced at the station. NJAWC had
 6 previously performed wire to water efficiency testing on the original RMWTP
 7 low lift pumps and once installed validated the manufacturers efficiency of the
 8 new pumps. The existing pumps had an average efficiency of 37% and by
 9 replacing these pumps with new efficient pumps it was determined that NJAWC
 10 would see an annual electric savings of 945,829 kWh as shown below.

Pump ID	Tested Efficiency	Replaced Efficiency	kWh Saved	LEUP Rebate (\$ 0.33 / kWh)
LL1	48%	83%	46,017	\$ 15,186
LL2	27%	83%	37,000	\$ 12,210
LL3	33%	83%	44,600	\$ 14,718
LL4	30%	89%	53,247	\$ 17,572
LL5	31%	89%	111,378	\$ 36,755
LD1	45%	87%	303,500	\$ 100,155
LD2	42%	87%	350,087	\$ 115,529
Total	37%		945,829	\$ 312,124

11
 12 Applying the LEUP rebate of \$0.33 per kWh, NJAWC received an efficiency
 13 rebate of \$312,124 for this project, which has mitigated the requested increase in
 14 this case.

System Maintenance

15
 16 **66. Q. Please describe the key components of NJAWC system maintenance**
 17 **activities.**

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 A. Keeping abreast of system maintenance is the hallmark of a healthy water
2 distribution system. Among its core activities, NJAWC staff diligently completes
3 annual maintenance programs, including length of service meter replacements,
4 fire hydrant maintenance and valve exercising programs. These programs help us
5 ensure that our assets are performing as expected, so that we can continue to
6 provide the high quality, reliable service our customers have come to expect. In
7 2018, the Company replaced 100,839 meters, inspected all 45,534 fire hydrants
8 and exercised 43,454 isolation valves.

9 **67. Q. What is the guiding document used to establish maintenance program**
10 **targets?**

11 A. NJAWC's state-wide Asset Management Plan ("AMP") is the guiding document
12 for maintenance plan targets. The AMP was implemented by April 19, 2019 as
13 required by the WQAA.

14 **68. Q. Is New Jersey-American Water meeting its operational obligations under the**
15 **Safe Drinking Water Act?**

16 A. Yes. The Company certified compliance with the Safe Drinking Water Act when
17 submitting the certification for the WQAA on October 18, 2019.

18 **69. Q. What other maintenance programs support the Company's efficient**
19 **operation of its system?**

20 A. NJAWC completes a number of programs designed to keep its water system
21 operating efficiently. Pipeline replacement programs, described throughout the

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 testimony of Company witness Donald Shields, water flushing programs and
2 Condition-Based Maintenance Program are among them.

3 **70. Q. Please explain the Condition-Based Maintenance Program.**

4 A. NJAWC employs a Condition-Based Maintenance Program on a rotating basis at
5 facilities where electrical equipment is used. This equipment includes pumps,
6 motors and electrical panels. In addition to visual, mechanical and audible
7 inspections, a host of other in-depth inspections are performed. For example,
8 thermal imaging tests are performed to determine excessive heat on electrical
9 equipment like motors, electrical panels, transformers and safety switches.
10 Vibration inspections are performed to determine deflection in a pump shaft,
11 which is an indicator of potentially damaged pump or motor bearings. The
12 Condition-Based Maintenance Program also includes electrical tests to determine
13 proper operation of disconnects, breakers, fuses, contactors, voltage/protective
14 equipment devices, etc. After the inspections are performed, a report is generated
15 that categorizes severe or critical issues for immediate attention, as well as less
16 severe issues for lower prioritization.

17 **71. Q. How do NJAWC's system maintenance efforts encourage operational**
18 **efficiency?**

19 A. System maintenance helps reduce failures and unexpected repairs, which are
20 disruptive and expensive to correct. One of the byproducts of an adequately
21 maintained system is fewer unexpected failures, which rarely occur at convenient
22 times and, again, are costly to repair.

NEW JERSEY-AMERICAN WATER COMPANY, INC.**Non-Revenue Water****72. Q. What is non-revenue water (“NRW”)?**

A. Non-revenue water is the difference between system delivery and water sales. Typically, NRW is measured as a volume or a percentage of system delivery based on a 12-month rolling average. NRW is not just leakage, it also includes water for firefighting, annual flushing, theft, and meter inaccuracies.

73. Q. Please describe the Company’s efforts to reduce its level of NRW.

A. In addition to utilizing its DSIC mechanism to accelerate the replacement of aging infrastructure in the Company’s service territory, NJAWC addresses apparent and real NRW losses using various industry-endorsed processes and practices, including an annual water loss management plan and water audits, as well as leak detection methods that are described below.

74. Q. What is the Annual Water Loss Management Plan?

A. The plan objective is aligned with water accountability and loss control processes and practices promulgated by the AWWA. The processes and practices are found in the 4th Edition of the AWWA Manual 36 publication *Water Audits and Loss Control Programs*. Incorporated by reference is AWWA Water Audit software, currently version 5.0, which includes an additional auditing capability which “grades” the validity of the water audit input data. The grading measure also provides guidance on the means to improve data collection and therefore the functionality of the water audit.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **75. Q. Has NJAWC performed water audits throughout its system?**

2 A. Yes. NJAWC has performed extensive water audits throughout its service
3 territory. Beginning in 2013, water audits have been completed annually for
4 systems in the jurisdiction of the Delaware River Basin Commission (“DRBC”).

5 Beginning in 2016, the Company submitted water audits to NJDEP for systems
6 that were impacted by the NJDEP 2016 drought warning.

7 In addition, in the latest closed calendar year (2018), the Company performed
8 water audits for another half dozen systems.

9 Therefore, the Company has completed water audits of all its systems that have
10 the proper parameters for a standard water audit – that is 24 of 36 systems. While
11 the Company tracks NRW performance and other indicators for every operating
12 system, water audits have limited applicability for very small systems. Where
13 customer density is less than 32 connections per mile and system overall size is
14 less than 5,000 customers, the water audit benefits are limited. For these small
15 systems, NJAWC performs a basic water balance. A basic water balance compiles
16 system delivery and sales data for a discrete area. Both of these data elements are
17 tracked over many years. Trends in the data are then used to determine if the
18 system is operating efficiently or if there is excessive water loss which requires
19 remedial actions.

NEW JERSEY-AMERICAN WATER COMPANY, INC.1 **76. Q. What indicators are reported within the water audit?**

2 A. The water audit provides five key indicators as reported by the Reporting
3 Worksheet of the AWWA Water Audit Software. These indicators are:

4 1) Apparent Losses: The sum of unauthorized consumption, customer
5 metering inaccuracies, and systematic data handling errors;

6 2) Real Losses: Total water losses less Apparent Losses;

7 3) NRW: Total water losses including unbilled metered, unbilled unmetered,
8 and authorized Company use;

9 4) Financial Indicators: NRW as a percentage by volume supplied and NRW
10 as a percentage by cost of operating system; and

11 5) Operational Efficiency: Unavoidable Annual Real Losses (“UARL”),
12 Current Annual Real Losses (“CARL”), and Infrastructure Leakage Index (“ILI”)
13 or CARL/UARL. The dimensionless indicator of system performance is the ILI.
14 The ILI is a highly effective performance indicator for comparing
15 (benchmarking) the performance of utilities in operational management of real
16 losses.

17 **77. Q. How does NJAWC use the information it gathers through its water audits to**
18 **manage NRW?**

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 A. The information gathered is analyzed and action plans are developed for NRW
2 management and reduction as part of NJAWC's overall water loss management
3 strategy.

4 **78. Q. What are the main characteristics of the Company's NRW strategy?**

5 A. The Company's NRW strategy follows the latest industry-accepted standards
6 including the water audit methodology set out above, while also working to
7 maximize customer satisfaction and operational efficiency at an acceptable level
8 of risk. The key elements include the following:

9 1) providing accurate, regular metering of production flows and customer
10 consumption volumes;

11 2) maintaining a system of real time hydraulic data collection and monitoring
12 via SCADA, Advanced Metering Infrastructure ("AMI"), or similar system of
13 instruments and data collection technology;

14 3) compiling an annual water audit as a standard business practice for
15 qualifying systems; and

16 4) employing sufficient loss control methods to contain water and revenue
17 losses at economic levels and to minimize system upsets.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **79. Q. What efforts has the Company employed to align functional areas of the**
2 **Company to support the NRW efforts?**

3 A. In 2013, NJAWC established a business unit to manage the Company's water
4 loss. This team of water loss professionals measures and analyzes the losses and
5 advises the Company on the type of water loss management that is appropriate in
6 each district. Programs are statewide and include leak detection, pressure
7 management, water audits, reduction of theft of services, monitoring zero
8 consumption, and leaks on customers' lines. In 2016, the team was realigned with
9 the SCADA team, the work management team (MapCall) and the T&I service
10 technicians. This realignment allows for a more rapid engagement in data
11 management and quality and engineering opportunities and issues. An example
12 of these opportunities include reviewing areas of apparent high pressure to
13 determine if additional pressure management or modulation is feasible, creation
14 of additional district metered areas, use of innovative technologies to perform
15 condition assessment and leak detection on transmission mains, and
16 supplementing existing leak detection tools with additional equipment. The team
17 has direct input into Company practices on system delivery, sales and NRW.
18 Moreover, the team can directly engage the asset planning group and GIS group,
19 and is now fully aligned with the various comprehensive planning studies and
20 capital improvement projects associated with the engineering group. In 2018, the
21 organizational structure was again modified to embed project managers into local

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 operations that are responsible for the daily implementation of water loss
2 strategies and to ensure projects related to water loss management are delivered.

3 **80. Q. What are real losses?**

4 A. Real losses are physical losses of water from the distribution system, including
5 leakage from pipes and any associated appurtenance and tank overflows.

6 **81. Q. What does the Company do to reduce real losses?**

7 A. In addition to using DSIC to support the continued accelerated replacement of
8 aging infrastructure, the Company is also addressing real losses through its leak
9 detection efforts. The Company is actively working to identify leaks and to repair
10 them. The Company's ability to quickly address these leaks saves customers
11 from potential disruptions of service, and saves the Company the increased costs
12 associated with losing millions of gallons of treated and pumped water.
13 Employees have been afforded technical training from both internal and external
14 resources and have been provided with new tools to perform proactive leak work.
15 Likewise, surfacing leaks are often pinpointed by these employees and are
16 quickly repaired, resulting in improvement in reducing real losses. The Company
17 has an established internal goal of repairing 90 percent of all leaks within 96 hours
18 of finding them. (This 96-hour time period provides the time for mobilization and
19 for One Call mark outs.) As a result, 1,432 and 1,140 miles of mains were
20 proactively or reactively surveyed in 2017 and 2018, respectively. These surveys
21 resulted in the location of 448 leaks in 2017 and 438 leaks in 2018. Many of these
22 leaks had no surface indications.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **82. Q. Please describe the specific methods that the Company uses to actively**
2 **control leaks.**

3 A. Leak surveying is typically done on a proactive basis when leaks are suspected to
4 be a significant contributing factor to NRW. Focused, proactive surveys are
5 mainly conducted in the Raritan and Essex/Passaic Districts, where the
6 distribution network is generally older and more prone to failure due the
7 geographic variations and consolidated geology. The Company also has
8 completed numerous leak surveys of its Warren systems. Currently, these
9 systems are either proactively surveyed or continuously monitored acoustically.
10 We have seen an immediate improvement in the systems' water losses, where
11 leaks on our mains, hydrants, valves and both Company-side and customer-side
12 service lines have been located. During 2017 and 2018, these efforts resulted in
13 the identification and repair of 886 leaks.

14 Additionally, targeted Company employees now receive more leak detection
15 training across the state, and the Company purchased additional equipment
16 (discussed below) for continuous, proactive leak detection work in the Delaware,
17 Coastal North and Coastal South Districts as deemed necessary. For the
18 Essex/Passaic and Raritan Districts, the Company has increased the number of
19 man hours spent on proactive leak surveying. The additional manpower has
20 enabled the leak detection teams to provide multiple benefits: proactively locating
21 leaks prior to surfacing; pinpointing leaks; and supporting permanent acoustic
22 monitoring efforts. Additionally, leak detection on large-diameter transmission

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 mains, those water mains 16 inches in diameter and greater, and other high-risk
2 buried linear assets, is outsourced to third party service providers. The result of
3 these activities contribute to the Company's prioritization of pipe rehabilitation.

4 **83. Q. Please describe the way in which NJAWC uses technology to identify leaks.**

5 A. The Company utilizes state of the art active listening technology for leak
6 detection. The EchoShoreDX platform incorporates the latest generation of
7 acoustic sensors that are the result of Echologics's pioneering success with
8 correlating leaks on a variety of pipe materials and large diameter mains. The
9 sensors are built into a standard fire hydrant cap and are capable of identifying
10 extremely faint acoustical noises emitted by leaks before they become detectable
11 by conventional methods. This early detection capability enables the Company
12 to prioritize repairs based on actual need and the most effective allocation of
13 repair crews. The EchoShoreDX is stationary and designed to be deployed as
14 continuous monitoring in an area-wide grid system. Data from the listening nodes
15 is either sent directly to a cell based collector or repeated to a collector. The data
16 is then uploaded nightly to an internet cloud based system, processed and
17 graphically displayed on New Jersey-American Water's GIS mapping system.
18 The Company first installed this technology in late 2015 and continues its
19 deployment consistent with district comprehensive planning studies, installing
20 over 7,000 devices (nodes) throughout the state to date.

NEW JERSEY-AMERICAN WATER COMPANY, INC.1 **84. Q. What are apparent losses?**

2 A. Apparent losses are non-physical losses that occur in utility operations due to
3 customer meter inaccuracies, systematic data handling errors in customer billing
4 systems, and unauthorized consumption. This is water that is consumed, but not
5 properly measured, accounted or paid for.

6 **85. Q. What does the Company do to manage apparent losses?**

7 A. The Company monitors its customer database system and billing system losses.
8 These are monitored and improved through a team of internal resources. These
9 team members look for inactive accounts/premises with consumption (or vice
10 versa), premise mismatches and consecutive zero consumptions. These
11 exceptions are processed into work orders that determine and eliminate the issue
12 that caused the exception. Currently in development is the utilization of GIS
13 analytics to allow greater flexibility in reviewing data tables of consumption, rate
14 class, public water system identification number ("PWSID") and pressure
15 gradient. This is in its early stages, and these tools are being customized based
16 upon user experience and results.

17 **86. Q. How does NJAWC's meter program help manage apparent losses?**

18 A. The meter program is managed by our field services teams. We monitor our
19 successful reads on a monthly basis, with a goal of minimizing estimated bills.
20 Additionally, we ensure that our periodic testing of meters meets BPU
21 requirements and engage in meter testing and studies to help manage apparent
22 losses.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **87. Q. Please describe how meter testing and meter studies are utilized in reducing**
2 **apparent losses.**

3 A. The Company employs large meter testing and profiling, pressure zone
4 management, and zonal metering studies, which are described below.

5 Large Meter Testing and Profiling

6 This is conducted by both our production (bulk sales and inter-district transfers)
7 and distribution (large customer meters) teams. All production meters were tested
8 in 2018 for flow and scaling accuracy. The Company has also analyzed
9 consumption patterns to determine if the customers' meters are still appropriate
10 for their current consumption rates, and if not, the installation of new meters is
11 recommended. Moreover, where feasible, turbine meters are being replaced with
12 more accurate compound meters.

13 Pressure Zone Management and Zonal Metering Studies

14 These studies are conducted in conjunction with each district's comprehensive
15 planning study ("CPS"). Pressure management ensures that we are providing our
16 customers with appropriate pressures in the distribution system. When
17 distribution system pressures are too high, background leakage occurs at a greater
18 rate. Zonal metering is now universally supported and can help the Company
19 determine whether smaller and very well-defined zones within the distribution
20 system should be created. Additional metering sites connected to the SCADA
21 system have been identified to provide additional data for compilation and

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 analysis of NRW. This data will be utilized in determining zonal consumption
2 patterns. The Company is exploring additional options relative to pressure
3 management and district metering, including an innovative modulation device for
4 pressure reducing valves (“PRV”) in Belvidere where preliminary results are
5 encouraging. The Belvidere system experienced an improvement of 5% in the
6 NRW volume as a result of the PRV modulation project. Additional pressure
7 reduction opportunities are being investigated by NJAWC’s Asset Planning
8 group in concert with the Service Company engineering team. Those studies are
9 focused on the Central (Raritan) district and are scheduled in 2020.

10 **88. Q. How does the Company work to reduce unauthorized consumption?**

11 A. Unauthorized consumption may be determined in a variety of ways. In addition
12 to the approaches discussed above, the Company has continued its Theft of
13 Service (“TOS”) program whereby our employees are educated and encouraged
14 to spot and report any potential water consumption that is not authorized. The
15 TOS program often finds unmetered irrigation systems, bypasses, upstream (of
16 the metering point) connections and unauthorized hydrant use, all of which
17 contribute to the NRW. Since inception in July of 2008, there have been 1,980
18 reports of TOS that have been successfully investigated and resolved.

19 **89. Q. Has the Company employed other efforts in managing NRW?**

20 A. Yes. In 2016, the Company realigned internal resources to align the water loss
21 team, SCADA, and work management team into an instrumentation and controls
22 group. A team of information technologists was also assigned to work with this

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 team. Using a third party integrator, a web-based tool was developed to pull data
2 from multiple sources to provide one view of NRW and automatically calculate,
3 on a monthly basis, the NRW metrics stated previously. By automating the
4 process, the teams are now focusing on improved analytics to provide targeted
5 guidance on asset management and NRW management. The tool has integrated
6 system delivery, both raw and refined, consumption data, both raw (meter reads)
7 and refined (billed consumption), pressure data, work management data (leaks)
8 and internal and external GIS information.

9 The development of this tool leads to the preparation of an auditing process for
10 system delivery, which follows the water from source, through the metering and
11 data delivery stream, to the data storage database. This has standardized the data
12 process for system delivery, thus improving the quality of the system delivery
13 database. The data now meets the highest level of criteria required in the water
14 audit grading process.

15 **90. Q. What has been the result of the Company's efforts?**

16 A. The Company has reduced levels of NRW through its targeted and enhanced
17 efforts at managing real and apparent losses. For example, focused efforts in
18 Essex/Passaic District have yielded positive results, reducing NRW from 27.7%
19 to 19.9% between November 2015 and November 2019.

NEW JERSEY-AMERICAN WATER COMPANY, INC.EMPLOYEE LEVELS AND EMPLOYEE COMPENSATIONEmployee Levels**91. Q. What is NJAWC’s proposed staffing level in this case?**

A. The Company has identified 885.5 full time equivalent (“FTE”) employees as the appropriate staffing level for the Company’s water and wastewater operations, which includes part-time employees. The number of employees is based upon each department’s and functional area’s plans to continue providing safe, adequate, reliable and affordable service to our customers. On a regular basis, monthly, quarterly and annual performance metrics ranging from safety, customer service, financial, asset creation, asset maintenance and regulatory compliance is reviewed to ensure desired service levels and performance is achieved within each region/department. If an area is underperforming, an assessment is conducted to determine if there is a performance or resource issue. Service needs and related resource requirements are consistent with meeting regulatory requirements, tariff requirements, industry standards, service requests, customer needs, and providing support to the business operations in the most cost-effective way to best serve the long-term interests of our customers. The direct testimony of Jamie Hawn explains how the Company’s labor and labor-related costs were quantified, including the vacancy ratio applied to the 885.5 FTEs.

92. Q. Is the Company undertaking any initiatives aimed at ensuring that it is attracting and retaining highly qualified and motivated employees?

A. Yes. In 2010, American Water initiated a succession / replenishment initiative across the enterprise, including NJAWC. This initiative is a multi-year effort that

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 focuses on where critical business knowledge resides, and the risks regarding
2 retirement and retention of employees who possess that critical knowledge. The
3 program has evolved to include an annual assessment of all management to
4 identify the development requirements for future leaders. Development
5 opportunities include position reassignments, pre-retirement position overlap,
6 continuing education, leadership and skill training. For critical positions, we are
7 cross training our staff to facilitate knowledge transfer and mentoring. Within
8 the bargaining unit we have specifically developed and deliver training for new
9 Utility Mechanics, Backhoe Operators, Field Service Representatives,
10 Maintenance Mechanics positions. The aim is to document and effectively
11 transfer knowledge to other and new employees over time in order to avoid a
12 “knowledge vacuum” at the Company when long-termed employees leave the
13 business.

14 **Compensation**

15 **93. Q. Please identify the various employee classifications at NJAWC and briefly**
16 **describe how each group is compensated.**

17 A. There are three classifications of employees at NJAWC: union hourly employees,
18 non-union hourly employees, and exempt employees. As Ms. Hawn discusses in
19 her Direct Testimony, union and non-union hourly employees receive base pay
20 and variable pay in the form of overtime pay, (in some cases shift premiums and
21 meals), and are eligible for performance pay. Exempt employees receive base
22 pay and are eligible for performance pay. Each classification of employees’ total

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 compensation, therefore, includes fixed pay (base pay) and some form(s) of
2 variable pay (e.g., overtime, shift pay, or performance pay).

3 **94. Q. What level of compensation does NJAWC aim to provide?**

4 A. New Jersey-American Water aims to offer compensation that is on par with that
5 offered by the companies that NJAWC competes with for employees so we can
6 attract and maintain committed, dedicated and highly qualified employees.
7 Therefore, the Company targets its total direct compensation (base and variable
8 compensation) for each role near the market median (50th percentile). The
9 Company's compensation program is designed to provide employees with a total
10 compensation package on par with those offered by companies with which it
11 competes for employees. By using a combination of fixed and variable
12 compensation that includes performance compensation, NJAWC satisfies a dual
13 objective of reasonably compensating our employees while motivating them to
14 achieve goals that improve performance and efficiency to benefit our customers.

15 **95. Q. How is performance compensation provided to NJAWC employees?**

16 A. Performance pay may be awarded under two plans – the Annual Performance
17 Plan (“APP”) and the Long Term Performance Plan (“LTTP”). All full-time
18 employees participate in the APP. Eligibility for the LTTP is limited to certain
19 exempt employees.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **96. Q. You say all full-time employees participate in the APP; does that include**
2 **union employees?**

3 A. Yes, it does. Our bargaining unit employees became eligible for APP in 2018,
4 with their first payments in 2019.

5 **97. Q. How should NJAWC's employee compensation expense be assessed?**

6 A. Employee compensation is a necessary cost of providing utility service.
7 Therefore, it should be assessed through the same lens as other necessary
8 operating costs: if it is prudently incurred and reasonable in amount, relative to
9 what the industry pays for the same services, it should be recoverable through
10 rates. The focus should be on the reasonableness of the Company's overall level
11 of compensation, giving management the discretion to design the compensation
12 package that is best structured to compensate employees properly and to motivate
13 efficiency, safety, courtesy and other valuable employee traits. If the Company's
14 overall compensation level is reasonable and in line with or below the market,
15 regardless of the combination of fixed and variable payments that the employees
16 earn, then the Company's overall compensation expense is reasonable and
17 prudently incurred and should be recoverable.

18 **98. Q. Is the Company's performance compensation program reasonable?**

19 A. Yes. The Company retained the services of Willis Towers Watson ("WTW") to
20 perform a total compensation study and review of the competitiveness and
21 reasonableness of NJAWC's compensation program. The findings of WTW's
22 compensation study are described in Sections IV-VIII of the Direct Testimony of

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Robert V. Mustich. Mr. Mustich and WTW's study reached the following
2 conclusions:

- 3 ○ NJAWC's overall total direct compensation – which includes base
4 compensation and all performance compensation – is within the competitive
5 market range.
- 6 ○ American Water's short-term performance pay program (APP) is
7 comparable to and competitive with plan designs of other similarly sized
8 utilities.
- 9 ○ American Water's long-term performance pay (LTPP) is comparable to and
10 competitive with plan designs of other similarly sized utilities.
- 11 ○ The various comparative studies performed by WTW show that NJAWC's
12 total direct compensation programs are comparable to and competitive with
13 market practices of other similarly-sized utilities and are therefore
14 reasonable.
- 15 ○ Therefore, on a total direct compensation basis, NJAWC's compensation
16 expense is reasonable.

17 **99. Q. Is the Company's base and performance compensation a prudently incurred**
18 **expense?**

19 A. Yes. If we compensated our employees based entirely on base wages and salaries,
20 and those expenses were within the reasonable range of salaries and wages for
21 similarly situated companies, those expenses should be considered prudently
22 incurred. The fact that part of that compensation is in fact based upon

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 performance does not increase the level of overall compensation expense. As Mr.
2 Mustich has demonstrated in Sections IV-VIII of his Direct Testimony,
3 NJAWC's overall total direct compensation – which includes base compensation
4 and all performance compensation – is within the competitive market range.
5 Therefore, NJAWC's total compensation expense is reasonable and prudently
6 incurred.

7 **100. Q. Is providing appropriate levels of compensation to employees critical to**
8 **ensure the Company can continue to provide safe and adequate service?**

9 A. Yes, it is. Recruitment of skilled workers, as well as the retention of existing
10 trained workers, is critical to continuing to provide safe drinking water and
11 perform satisfactory customer service. Competition among companies to attract
12 and retain the best and highest performing employees is keen. In recruiting new
13 employees or retaining existing employees, both the Company and American
14 Water compete with general industry in surrounding regions and nationally.
15 Without the ability to provide competitive and customary compensation and
16 benefits, the Company could be hampered in its efforts to attract new employees
17 and retain existing employees, especially when competing with other utilities and
18 other industries for this talent. Especially with respect to employee retention, the
19 loss of skilled employees imposes a real cost on a company which then needs to
20 attract and train replacements. The Company's compensation program seeks to
21 provide employees with a total compensation package on par with those offered
22 by companies with which it competes for employees.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

Performance Compensation Plans

101. Q. Please describe the key performance objectives underlying the APP.

A. Management and hourly non-union employees' APP pay is based on a combination of individual performance and achievement of plan goals. Union employees' performance pay was established through collective bargaining and is based on the achievement of plan goals. For 2019, the APP goals are as follows:

STRATEGY	GOAL	TARGET	WEIGHT
SAFETY & PEOPLE	OSHA Recordable Incident Rate	1.3	7.5%
	DART Rate <i>(Days Away Restricted or Transferred)</i>	0.9	7.5%
CUSTOMER	Customer Satisfaction Survey	First Quartile in Industry Benchmarking	15%
ENVIRONMENTAL LEADERSHIP	Drinking Water Quality	20x over Industry Average	10%
OPERATIONAL EXCELLENCE	Operational Efficiency Improvement	34.5%	10%
GROWTH	Financial/Earnings Per Share	\$3.54 - \$3.64	50%

102. Q. Please describe the LTPP.

A. American Water provides restricted stock units ("RSUs") and performance stock units ("PSUs") as long-term variable compensation under the LTPP. American Water's RSUs and PSUs are based on three-year vesting periods. RSUs are based on time-based vesting and PSUs are based on performance vesting conditions.¹

¹ American Water uses a combination of compounded EPS growth and relative total shareholder return ("TSR") ranking over a three-year performance period as the basis for measuring performance for PSU awards. For the portion of American Water's PSUs that are contingent on relative TSR percentile performance, American Water compares performance to its peer group.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **103. Q. Do New Jersey-American Water’s performance compensation plans benefit**
2 **customers?**

3 A. Yes. The Company’s performance compensation plans align the interests of our
4 customers, employees and investors. The plans emphasize customer service,
5 environmental compliance, a safe work environment, and other operational goals,
6 as well as certain financial goals. All of the APP and LTPP Plans’ performance
7 objectives – both operational and financial – focus employees’ efforts in ways
8 that benefit customers.

9 **104. Q. How do the operational goals of the APP benefit customers?**

10 A. The operational goals of the APP are designed to focus plan participants on the
11 performance results that can most directly influence customer satisfaction, health
12 and safety, and environmental performance. Customers benefit from the plan
13 goals because operational performance is improved by controlling costs,
14 capturing efficiencies, promoting effective safety and risk management practices,
15 and enhancing customer service. Performance is determined by goals that
16 directly benefit customers by creating a more productive workforce that is
17 focused on customer satisfaction and achieving efficiency, environmental and
18 safety goals.

19 **105. Q. How do the financial goals of the APP and the LTPP benefit customers?**

20 A. The financial goals of the APP and LTPP benefit customers in many ways.
21 Importantly, to achieve performance pay financial goals, such as targeted
22 earnings per share (“EPS”) performance, demands attention to operating

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 efficiency. That is, unless the utility controls its operating costs, it cannot achieve
2 a targeted EPS. Financial-goal based performance pay ensures that employees at
3 all levels of the organization, and not just the upper ranks, remain focused on
4 increasing efficiency, decreasing waste, and boosting overall productivity. As a
5 result, incentivizing employees to control operating costs unquestionably benefits
6 customers, because it mitigates the need for rate increases and thus potentially the
7 frequency of rate cases. Consequently, when financial performance is achieved
8 through efficiency, as is the case for New Jersey-American Water, the interests
9 of customers, employees and investors are aligned.

10 **106. Q. Does incentivizing employees to control and reduce operating costs provide**
11 **other customer benefits?**

12 A. Yes. Where NJAWC can reduce operating expenses, it can increase investment
13 in infrastructure without increasing rates, because every dollar of operating
14 expenses saved can fund over \$8 of investment. Therefore, customers also benefit
15 from NJAWC's enhanced ability to invest in the infrastructure that it needs to
16 meet its service obligations to customers. Thus, it is simply wrong and short-
17 sighted to assume that customers receive no appreciable benefit from financial-
18 goal based performance pay.

19 **107. Q. How else does financial-goal based performance pay benefit customers?**

20 A. Financial-goal based performance pay mitigates the cost of service to customers
21 another way. Water and wastewater operations are capital intensive. Using low-
22 cost debt and internal funds to finance water and wastewater infrastructure

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 investment mitigates the financing costs that customers ultimately pay through
2 rates. The availability of those sources of capital at reasonable costs, however,
3 depends on the utility's financial performance, including credit and bond ratings.
4 So it is important to focus utility employees on the financial health of the
5 organization. Simply put, a financially healthy utility benefits customers because
6 it enables the utility to meet its service obligations at reasonable financing costs.

7 **108. Q. Are there other ways that financial-goal based performance pay benefits**
8 **customers?**

9 A. Yes. Long-term financial-goal performance pay programs, such as the LTPP, are
10 particularly intended to reduce attrition at the higher ranks of the organization.
11 Excessive instability at that level may have significant negative financial effects
12 on the organization, such as on EPS, which ultimately impact customer rates.
13 Additionally, senior management turnover and the loss of expertise can degrade
14 the continuity of strategy and execution. So, as Mr. Mustich explains, these types
15 of performance pay programs are well accepted in the industry. Importantly, the
16 LTPP achieves its goals of reducing leadership attrition at a lower cost to
17 customers than simply increasing leadership's base pay, because performance
18 pay under the LTPP is stock-based. Employees must remain with the
19 organization to realize the vesting of their awards.

20 **109. Q. How have NJAWC's customers benefited from NJAWC's achievement of**
21 **the safety, customer satisfaction, environmental leadership, and operational**

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **efficiency goals under its performance pay program from the years of 2016**
 2 **to date?**

3 A. NJAWC’s performance in these areas over the last several years, incentivized by
 4 its short-term variable pay plans, makes clear the operational improvements that
 5 benefit customers. For example, 2019 year to date results compared to 2016
 6 numbers demonstrate improvement in each of the following operational metrics:

Operational Metric	2016	2019 YTD
OSHA Recordable Incident Rate	3.39	1.17
OSHA Days Away/Restricted or Job Transfer Rate	N/A	0.52
Customer Satisfaction	84%	83%
BPU Inquiries	618	519
Water Quality Inquiries	7,579	5,243
O&M Efficiency Ratio	30.1%	29.3%

7 Reducing OSHA incidents increases safety—customer safety and employee
 8 safety. No one can credibly dispute the benefits of improved safety. Further,
 9 reduced accidents reduce the attendant costs—workers’ compensation, damage
 10 repair, etc.—which mitigates the operating costs that customers pay through rates.
 11 NJAWC continues to improve its performance in reporting near misses, another
 12 illustration of the Company’s high-performing safety culture. Exceptional safety
 13 performance reflects an engaged workforce that is focused on providing safe,
 14 reliable and affordable service to NJAWC’s customers.

15 Maintaining and improving high quality customer satisfaction and service quality
 16 also provide customer benefits. NJAWC’s customer satisfaction performance
 17 goals measure customer contacts at NJAWC’s call centers and in the field. They
 18 are benchmarked against other utilities’ performance, as reported by third-party

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 customer satisfaction surveys. In 2019, NJAWC was again ranked in the upper
2 tier of the Northeast Region for customer satisfaction in J.D. Power's 2019 Water
3 Utility Residential Customer Satisfaction Study. J.D. Power's Overall Water
4 Utility Satisfaction Index measures key performance indicators in six areas:
5 delivery (including quality), price, conservation, billing and payment,
6 communications, and customer service.

7 Customer satisfaction often goes hand-in-hand with reduced customer complaints
8 to the Board. NJAWC's BPU inquiries for 2019² are down by 9% as compared
9 to 2016 levels.

10 Finally, increases in operational efficiency equate to controlled or reduced
11 operating costs. Reduced or controlled operating expenses benefit customers by
12 reducing or controlling the costs ultimately recovered through rates and
13 increasing the time between rate cases. Financial performance goes hand-in-hand
14 with the operational efficiencies that mitigate costs and, therefore, rate increases.

15 As discussed above, NJAWC's proposed O&M expenses have dropped from
16 \$335 per customer in 2010 to \$309 per customer. This over \$25 per customer
17 reduction in operating expenses since 2010 is the result of improvements in
18 operating efficiency driven by employees that are incentivized, through
19 compensation, to find ways to be more productive and efficient. Please keep in
20 mind that operating expenses include the assimilation of all acquisitions the

² The Company estimated the number of 2019 BPU inquiries at 576 using 11 months of actual 2019 data and historical data from December 2018.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Company has made since 2010, the effects of inflation over the 9 year period and
2 the fact that performance pay is included in operating expenses. This also includes
3 performance pay increases due to the inclusion of union employees in the
4 Company's at-risk employee compensation program. The Company saw the
5 exceptional benefits of this compensation program with management and the
6 effects it had on controlling and reducing operating expenses and thought to
7 include all employees in an effort to further improve efficiencies.

8 **110. Q. Is there other evidence of the tangible benefit to customers from NJAWC's**
9 **performance pay programs?**

10 A. Yes. Again, it's important to consider the impact of a utility's financial health on
11 its access to reasonable cost capital. NJAWC's customers have benefitted from
12 the Company's access to capital at favorable rates. Because utilities are capital
13 intensive and must constantly and consistently access the capital markets at
14 reasonable costs, plainly, customers benefit when their utility has the financial
15 health to do so. In fact, as Mr. Tomac explains, NJAWC has been able to achieve
16 approximately \$14 million in annual interest expense savings associated with
17 favorable refinancing terms.

18 Also, customers receive a benefit when a utility retains a talented workforce,
19 because a stable workforce avoids the costs of hiring and training new employees.
20 Because NJAWC's performance pay program makes NJAWC employees' total
21 compensation reasonable, as Mr. Mustich explains, the Company's performance
22 pay helps ensure a stable workforce.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **111. Q. Please summarize why it is appropriate to include in rates the costs of the**
2 **Company's performance-based compensation.**

3 A. The Company's performance compensation plans align the interests of our
4 customers, employees and investors. They contain tangible goals that are
5 designed to do several things. They measure and compensate employees for
6 performance based on delivering clean, safe, reliable and affordable water service
7 and providing good customer service when doing so. The operational components
8 measure performance that can most directly influence customer satisfaction,
9 health and safety, environmental performance, and operational efficiency.
10 Customers derive a direct benefit from our focus on these key measures in the
11 plan. Further, the plans' well-grounded financial measures keep the organization
12 focused on improved performance at all levels of the organization, particularly in
13 increasing efficiency, decreasing waste, and boosting overall productivity. As
14 discussed earlier, the Company has demonstrated that its overall compensation
15 levels are in line with the market, and thus, are a reasonable and prudently
16 incurred cost of service that is appropriate for inclusion in rates.

17 **112. Q. Does this conclude your direct testimony?**

18 A. Yes, it does.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

Appendix A

1 **Q. Please describe your educational background and professional associations.**

2 A. I hold a bachelor of science from the New Jersey Institute of Technology, W-2, T-2,
3 and professional engineering licenses. I am a member of the American Water Works
4 Association (“AWWA”).

5 **Q. What has been your business experience?**

6 A. I have 31 years of experience in the water industry. I joined American Water as an
7 Engineering Technician in 1988 inspecting the construction of tanks, booster stations
8 and transmission mains. I also worked with developers and engineers to extend the
9 water system in our system development department. In 1997, I joined the
10 Operations department as a Distribution Supervisor. I have held progressively
11 responsible positions in the operations group including superintendent, manager,
12 director and Sr. Director until being promoted to my current position as VP of
13 operations in November of 2018.



NEW JERSEY OPERATIONS

