

## CHAPTER 6

### OPERATION AND MAINTENANCE PROGRAM

The following section summarizes the operation and maintenance procedures which assure satisfactory management of the water system operations in accordance with WAC 246-290. Ideally, operation and maintenance programs should be assembled in stand alone documents that clearly outline the day-to-day functions involved in keeping the water system running smoothly and within guidelines. This section is intended to summarize these stand-alone documents when available and provide direction when they are not.

#### 6.1 ASSOCIATION MANAGEMENT AND PERSONNEL

The Three Lakes Water Association is a private non-profit municipal water purveyor which operates under the direction of a Board of Trustees. At the expiration of the normal term, Trustee positions are filled by vote of the members of the Association. Trustee officer positions (e.g., president, secretary, etc.) and vacancies within the Board are filled through nominations and elections by the Board members. There are eight positions on the Board, and each Trustee is required to be an Association member. One trustee is designated the alternate each year and is not allowed to vote at meetings where there is attendance of all eight trustees. This position cannot be held in consecutive years.

By vote and in accordance with the Association by-laws, the Board makes and establishes policies that govern the operation of the Association. The Board conducts its regular meeting at 6:00 p.m. on the second Tuesday of each month. The Association's business address and general information is presented below

*Association address and*

*Phone Number:*

Three Lakes Water Association  
360-568-8022

*Mailing Address:*

Post Office Box 24  
Snohomish, Washington 98291

*Office Address:*

17503 58<sup>th</sup> St SE  
Snohomish, Washington 98290

*Association Contact Person:*

*Donald Kemmis, Manager, WDM 2,  
CCS*

*Certified Operators:*

*Kaila Klicker, Assistant Manager, WDM  
2, CCS  
Renee McCann, Office Administrator,  
Field Technician, CCS*

*Seth Way, Office Assistant, Field Technician, CCS*

*PJ Wilkerson, Regional Engineer*  
*Dept. of Health Identification Number: 88150 6*

*Dept. of Health Contact Persons:* Richard Rodriguez, Regional Planner  
PJ Wilkerson, Regional Engineer.  
Northwest Drinking Water Operations  
PO Box 47800, MS K17-12  
Olympia, WA 98504

The Manager is the certified system operator and is responsible for the performance of the water system. The Manager is supported by a certified operator/assistant manager, an office administrator/field technician and an office assistant/field technician, all of which are certified cross connection control specialists.

The responsibilities of the Manager include, but are not limited to, the following:

- Inspection of major facilities including the standpipe and pump stations
- Inspection and maintenance of distribution system
- Direction of consultants such as legal, financial and engineering
- Investigation of complaints and reported problems
- Locating water facilities as requested
- Response to emergency situations
- Coordination of the repair of leaks, line breaks and the installation of new service connections
- Reading of water service meters on a bi-monthly cycle
- Investigating and resolving reported cross-connection problems
- Inspection of projects which may affect the water system in any way
- Maintenance of all parts required for repairs
- Inspection and clearing around all fire hydrants
- Lock and unlock meters
- Flushing of dead-end mains
- Working with other utilities for coordinated efforts on construction projects
- Water sampling and testing
- Prepare and send water bills
- Make deposits and payments
- Preparation of checks for payment of bills
- Monthly and annual financial statements
- Management of customer accounts
- System inventory update
- Use-Loss Reports
- Backflow Status Report

- Prepare Letters of Availability
- Prepare tax reports, employee records, newsletter
- Board of Trustees coordination and meeting attendance

Many of the specific responsibilities are delegated to or supported by the Board Secretary or Treasurer, and the Assistant Manager and other staff.

## **6.2 OPERATOR CERTIFICATION**

DOH requires the system operator of the Three Lakes Water Association to be certified as a Water Distribution Manager (WDM) 2. The Manager and Assistant Manager are each certified as a WDM 2. All staff members are certified as Cross-connection Control Specialists. Copies of current certifications are included in Appendix B.

## **6.3 SYSTEM OPERATION AND CONTROL**

The Association recently completed a standalone Operations and Management (O&M) Manual. The O&M Manual addresses the authority and responsibilities of the Association as a public water system, and as a private corporation. The Manual includes an overview of operating and administrative practices and activities, including an overview of preventative maintenance for its system and equipment. The Manual is supported by an Association Policies and Procedures Manual, a Water Quality Monitoring Program, Continuity of Operations Plan and Employee Handbook and an Emergency Response Plan, as well as documents referenced in this WSP and updated appendices. The following is a description of the major system components including basic operation and maintenance procedures.

### *6.3.1 System Components*

The major system components of the Association include the following (see Figure 3.1):

- two supply connections to the City of Everett's Water Supply System
- source meters at supply connection
- storage standpipe
- two pump stations
- distribution system piping ranging in size from 2 inch to 10 inch
- isolation valves
- service meters
- sample stations
- fire hydrants.

For additional information regarding these facilities, see Section 3.3.

### 6.3.2 Routine System Operation and Maintenance

#### City of Everett Supply Taps

The location at each supply tap is inspected daily during the week and as needed on weekends to verify security and proper operations of the facility. Confirmation of operation is verified by visual inspection of connection points and checking of electrical controls where applicable.

#### Storage Standpipe

The storage standpipe is visually inspected daily during the week and as needed on weekends for volume and security. The standpipe is also observed for signs of leakage or corrosion. Standpipe screens and seals are inspected on an annual basis. The current standpipe was completed in 2010 and was internally inspected in 2018 by a diver. The interior coating, structure and appurtenances were found to be in very good condition. A minimal layer of sediment was removed from the bottom of the standpipe.

#### Distribution Pump Stations

The two pump stations are checked daily during the week and as needed on weekends to verify site conditions, security and the proper operation of all equipment and controls. Major equipment items receive scheduled lubrication or other maintenance as recommended by the equipment manufacturer, and per the operation and maintenance manual for the equipment.

#### Distribution System

The Association does not maintain a significant inventory of pipe or miscellaneous fittings for making repairs. However, they contract with a local contractor for on-call services. The Manager coordinates all emergency pipeline repairs and system work with assistance from the contractor.

Dead-end mains are flushed at least annually, and the system is flushed annually to provide necessary cleaning to avoid potential water quality problems. Additional flushing occurs in response to customer complaints or pipeline repairs that necessitate the flushing of lines.

#### Isolation Valves

Valves are exercised at least annually and more often for valves that are known to be more difficult to operate. Valve maintenance/replacement is scheduled in response to observed deficiencies (or with other water main improvement projects). Valve covers are inspected for damage and proper setting to grade and are adjusted or replaced as necessary.

### Pressure Reducing Valves

The two-system pressure reducing valve (PRV) stations are visually inspected quarterly or in response to customer complaints from the immediate area. Pressure gauge readings are compared to desired set points to determine if adjustments are necessary. The PRVs are less than fifteen years old and were last maintained in July 2018 by contracted professionals.

### Service Meters

The Manager coordinates the installation of all service meters. Meters that are not operating or not operating satisfactorily are identified by the meter readings and are replaced as necessary. Meter usage data is analyzed to determine faulty meters. A meter replacement program targets the replacement of each service meter before registering 80,000 cubic feet of volume. Records for each meter including location, meter number and installation date, and installation date of radio read head are kept in a database.

### Fire Hydrants

Fire hydrants are inspected annually and painted as required. The target is to maintain and update four hydrants per quarter (replace main valve components), to the extent necessary to maintain all hydrants ready for service. Fire hydrant access is cleared of obstructions as necessary. Any identified hydrant deficiencies are addressed as soon as possible.

#### *6.3.3 Preventative Maintenance Program*

Preventative maintenance actions are discussed above.

#### *6.3.4 Equipment and Supplies*

The Association does not maintain a significant inventory of repair parts, although more routinely needed items are purchased for ready use. Parts which are needed for repairs or minor improvements are supplied by the local contractors on the Association's roster. The Association does maintain a small inventory of 3/4" x 5/8" service meters as well as meter setters.

## **6.4 WATER QUALITY MONITORING**

Water quality sampling is performed by the Manager and submitted to a local lab which reports the results to DOH. Chlorine residual is monitored seven days a week. Routine water quality samples are taken monthly at two rotating sample locations within the distribution system. In the event a positive bacteriological sample is discovered, the Association takes repeat samples at the predetermined

locations as specified in the Association's Coliform Monitoring Plan. This plan is included as Appendix F.

Water sampling for lead, copper and additional inorganic and organic substances is also performed by the Manager as requested by the City of Everett and as required by DOH. All water sampling is conducted per Chapter 246-290-300 WAC and results are forwarded to the City. Results from the City's testing are distributed to the Association's customers through the Annual Water Quality Report.

DOH implemented new requirements starting October 1, 2011, regarding Lead and Copper monitoring. The Lead and Copper Rule Short-Term Revisions (LCR-STR) are now required for all Group A Community and nontransient noncommunity (NTNC) water systems. The new requirements apply to consumer notification, new sources and long-term treatment changes, clarification of compliance and monitoring periods, reduced monitoring, public education, consumer confidence report, lead service lines, and resources for assistance in complying with the rule revisions. The Association adheres to the Lead and Copper Rule in order to achieve DOH compliance by participating in the City of Everett lead and copper regional testing and monitoring program. Samples are collected and provided to the City and the City provides regional data for the Association to share with its members in its annual water quality report.

The Association is responsible for delivering a safe water supply to its members and customers. Monitoring and sampling are required by several state and federal regulations as discussed below. The Association has developed their own water quality monitoring program as a comprehensive resource to manage all monitoring activities and requirements. It is updated as notice is received of new regulations or updates.

The Association will continue to work with the City to comply with the new requirements.

The Association is subject to the Stage 2 Rules. A monitoring plan was prepared in 2006 and it concluded that quarterly sampling for TTHM and HAA5 at two locations in the system was required, beginning in the first quarter following April 1, 2012. Such monitoring began in May 2012. The second quarterly sample was taken in August 2012. Both samples reported very low detection levels. Quarterly sampling at one location was required through February 2022. Based on low detection levels, the Association's required frequency was reduced to annual testing at one location during the month of May. Depending on the detection levels for each annual testing, the Association may be required to return to quarterly sampling if the levels are determined to be too high per DOH.

The following table summarizes the Association’s testing requirements including individual tests, testing locations and descriptions of the test.

**Table 6.1  
State and Federal Water Quality Testing Requirements**

<b><i>Required Testing</i></b>	<b><i>Location</i></b>	<b><i>Description</i></b>
Total Coliform	From monitoring locations as specified in Coliform Monitoring Plan	Coliform testing is required monthly. Two samples shall be taken as designated by the Coliform Monitoring Plan and submitted for testing.
Lead-Copper	From the distribution system at targeted sample tap locations	Testing is performed by the City of Everett. The Association contributes to the testing by providing samples from their system.
Stage 2 Rule	From the distribution system at targeted sample tap locations	Testing is performed by the City of Everett. The Association contributes to the testing by providing samples from their system.
Daily Chlorine Residual	From the distribution system at targeted sample tap locations	Testing is performed by the Association.

In addition to the above sampling the Association is required to take asbestos samples once every nine years. The Association completed the asbestos sample in August 2020. The results indicated detected levels well below the reporting level. The present Manager and his assistant recall the Association has had only one positive coliform sample October 2010 and very few complaints regarding water quality issues. No other routine coliform samples since then have tested positive for coliform bacteria. Everett is responsible for monitoring associated with their use of fluoride addition to the water supply.

The last two DOH sanitary surveys were completed in March 2017 and August 2022.

The 2017 survey recognized the Association’s increasing efforts to improve the reliability and sustainability of the system, supported by the Board’s increasing emphasis from reactive management to proactive management. Many improvements were noted including addition of a second certified operator and a

third in training, accelerated meter replacement program, updated website, cell lease revenue and new office/shop building. The only significant deficiency was a result of the inability for DOH to inspect the reservoir top hatch and vent due to a recall on the reservoir ladder safety harness. That inspection was completed as directed in the survey. There were no significant findings noted. The Association was encouraged to review and update their coliform monitoring plan and that has been completed (see Appendix F). The survey included a recommendation to consider developing a plan for booster chlorination.

The August 2022 survey was complimentary of the operation and management of the system, and included no significant deficiencies, significant findings or observations. The survey report included recommendations to work with the City of Everett to mitigate flooding of the City's meter vaults and for the Association to consider sampling chlorine residual at more sites to start to build a chlorine residual profile of the distribution system. Gathering such data will provide more information to determine if a chlorination booster system is warranted.

## 6.5 EMERGENCY RESPONSE PROGRAM

The Association has prepared an emergency response plan. The plan was reviewed and updated in February 2019. The plan outlines general information regarding possible emergencies and responses to them. Specifics such as notification procedures, vulnerability analysis and contingency operations are addressed in the following sections.

### 6.5.1 *Emergency Association Call Up List*

During Office Hours                      Contact the Association Manager  
**Phone: 360-568-8022**

Office Closed                                      Calls to the Association office are forwarded to the Association's voice mail system. The message instructs the caller to call the Manager and the Manager's cell phone number is in the message.

**After Hours Emergency Contact Numbers**  
**Phone:            360-568-8022**

### 6.5.2 *Notification Process*

The following outlines the steps that should be taken in case of an emergency situation in the water system (e.g., health risk, hazardous situation, natural disaster, security breach, vandalism, terrorism, etc.):

- A.     The responding person shall notify the Manager immediately. If they are not available, the person shall contact the designated person.



- B. In the case of a loss of water service which is projected to last more than 24 hours, customers should be notified.
- C. In the case of a positive routine distribution sample for *E. coli*, the Board of Trustees determined in February 2017 that they do not want to wait until repeat tests are available before issuing advice to the Members.

### 6.5.3 Vulnerability Analysis

Improvements proposed to maintain or improve the reliability of the Association's facilities are presented in Chapters 3 and 8. These improvements are focused on eliminating existing system deficiencies in the facilities, replacing older portions of the system that have or will soon reach the end of their useful life and the provision of fire flows that are appropriate throughout the water service area.

A water system's vulnerability assessment identifies areas of the system which are in danger of damage or failure during various types of emergency or threat scenarios. The assessment also evaluates alternative operating modes and provides additional emergency response procedures.

On June 12, 2002, the federal Public Health Security and Bioterrorism Preparedness and Response Act (PL. 107-188) was enacted. Section 1433(a) of the act requires water systems that serve a population of more than 3,300 people to complete a Vulnerability Assessment (VA). These systems must also certify to the US EPA that the VA has been completed and submit a copy the EPA. In January 2003, the US EPA finalized guidance for preparation of a VA.

The Association is under the threshold for purveyors that are required by EPA to complete a vulnerability assessment as defined above. Similarly, the Association is below the threshold for completion of a risk and resilience assessment and updated emergency response plan under the America's Water Infrastructure Act of 2018 (AWIA, Public Law 115-270).

WAC 246-290-420 addresses the requirements for water system reliability and emergency response. Provision of adequate quantity and quality of water in a reliable manner is the overriding requirement imposed by DOH and is the goal of the Association. Standard operation conditions are addressed in Chapter 3. In the case of abnormal operating conditions, the Manager must consider the specific circumstances and determine how best to maintain water quality and delivery to as many connections as possible.

The Three Lakes system is essentially a single system, with the booster pumps and standpipe directly serving all customers. The western portion of the system is separated by two PRV stations serving the north and south end of a loop.

Reliability in service is provided by the use of two source of supply connections, two booster pump stations with backup pump equipment, one of which has a standby power generator. The system operates automatically to maintain the standpipe nearly full, thus assuring adequate pressure to all customers. The standpipe is operated to maintain fire suppression storage and this volume can also provided limited standby storage should both sources be unavailable. The PRV stations are redundant in that service can continue uninterrupted should one of the stations be inoperable.

In the event of a main break or other unexpected impact on the ability to deliver adequate pressure or volume, the Manager must determine the best course of action to restore the system to normal conditions, and to advise affected customers about interruptions to their service. In most cases this involves advance or emergency notice of an interruption of water supply, construction work to restore the system, following by disinfection and flushing before service is restored. The Association uses a combination of personal contact, door-hangar notices, mailed notices and website announcements to keep affected customers informed.

Additional circumstances are described in the Association's emergency response plan.

## **6.6 SAFETY PROCEDURES**

Association employees are exposed to field and office hazards. As an employer, the Association is required to prepare and implement an employee safety program per the requirements of the Washington Industrial Safety and Health Act.

## **6.7 CROSS-CONNECTION CONTROL PROGRAM**

DOH regulations place the primary responsibility for control of cross-connections with the water purveyor. The Association has prepared a cross-connection control program. The program was reviewed and updated in 2018 and 2022 and is managed by the Assistant Manager. A copy is included in Appendix E.

The more common high hazards in the Association's service area include water supply for agriculture and livestock and secondary sources of supply from the area lakes and private wells. The Association has twelve "Table 9" hazards. They all have the required backflow prevention assemblies, and all have been tested in the past year.

## **6.8 CUSTOMER COMPLAINTS RESPONSE PROGRAM**

The Association maintains a record of customer complaints by making notations in the Association's phone log book and documenting the complaint in the

minutes of the next Board meeting. In addition, complaints which are personally filed by customers who attend the Board meetings are logged into the minutes of the meeting.

Complaints are responded to by the Manager who determines the appropriate corrective action. Multiple complaints which arise from maintenance activities (such as dirty water complaints which often come after water is run through hydrants) are not individually documented.

## **6.9 RECORDS AND REPORTS**

The Manager is assigned the responsibility of maintaining all records pertaining to water use, billings, receipts and water utility financial records. In addition, they also maintain records regarding the system facilities, utility locate requests, repairs, water quality monitoring and reporting. All programs and manuals are reviewed and updated on an annual basis.

## **6.10 OPERATIONS AND MAINTENANCE IMPROVEMENTS**

Several operations and maintenance improvements are discussed throughout this plan. The following is a summary of the specific plan elements which should be completed along with recommended completion dates.

- We recommend the Association continue at least annual flushing, with adjustments for specific lines or areas based on results of flushing (more or less frequent)
- The PRV's should continue to be serviced annually (check strainers, inspect for leaks, etc.) and every five years each valve should be rebuilt (disassemble valve, replace main valve diaphragm, etc.). The PRVs were last rebuilt in July 2018.
- The standpipe should be comprehensively visually inspected externally and internally every seven years. This schedule may be reduced to five years in the future depending on the age and findings in the subsequent inspection. Internal standpipe inspection may be made by draining the standpipe or by a commercial diver. If inspected by a diver, the standpipe must first be isolated from the water system and all connection valves shall be locked out. All equipment, clothing, and personnel entering the standpipe must be cleaned thoroughly, and it must be certified that the equipment and clothing has been used only for potable water inspections. Two certified divers should be on site, and an additional diver should be available outside the standpipe in case of emergency. Before anyone or any equipment is allowed to enter the standpipe, the residual chlorine should be checked to determine that it is adequate. Air should be supplied to the divers from external air-supply equipment. The next inspection should be scheduled for December 2025.

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