TPUD Part A

Chapter 7

Operations and Maintenance Program

Section 7
Operations and Maintenance Program

This section describes Public Utility District No. 1 of Thurston County's (Thurston PUD) operations and maintenance (O&M) program. Provided in the section are:

- A summary of staff certifications
- An overview of routine and preventative maintenance activities
- Thurston PUD's emergency response program
- Customer complaint response procedures
- A summary of record keeping and reporting procedures
- Thurston PUD's design standards
- A description of Thurston PUD's contract O&M services

7.1 Staff Certifications

A description of water system personnel and their organization is provided in Section 2.1. Field staff certifications, as of April 2014, are shown in Table 7-1.

Table 7-1
Thurston PUD Staff Certifications

Name	Position	Certification Level	Certification #
Kim Gubbe	Operations Manager	WDM-II, CCS, BTO	7314
Sherri Bair	Field Technician I	WDM-I	011050
Jacob Larson	Field Technician II	WDM-II, CCS	11740
Brad Chatwood	Field Technician I	WDM-I	013160
Robert Scott Dixon	Field Technician II	WDM-III, CCS	D-08590

Notes: WDM = Water Distribution Manager, CCS = Cross Connection Control Specialist, BTO = Basic Treatment Operator

Pursuant to DOH regulations, Thurston PUD must have at a minimum one level two Water Distribution Manager (WDM-II) on staff at all times. In the event of non-compliance by not having a WDM-II on staff, DOH will be notified as soon as possible and Thurston PUD will either hire a WDM-II immediately or contract with an approved SMA to establish compliance.

7.2 O&M Service Areas

Our 158 systems are split into two O&M service areas, North and South, with the divider line being Rainier Road. Our two Field Technician II's are responsible for one of the service areas. Our Field Technician I's work in both service areas assisting the Field Technician II's.

7.3 Routine and Preventative Maintenance Activities

7.3.1 Operation Procedures

Thurston PUD has established routine operations and maintenance procedures and schedules. Table 7-2 provides a summary of these activities. Appendix J contains the

Group A and Group B routine maintenance checklist templates. Also enclosed in the appendix are pumphouse and storage checklists, which are specific items, listed in Table 7-2, scheduled for completion on a routine basis.

Table 7-2
Thurston PUD Routine Maintenance Schedules

Group A Systems	Group B Systems
Weekly	***Weekly***
Treatment system checked	Treatment system checked
Flushing as needed	Flushing as needed
Monthly	***Monthly***
Check system pressure	Read source meter
Check for leaks	***Quarterly***
Booster pump check (noise, overheating, etc.)	Check system pressure gauges
Well pump check (noise)	Check for leaks
Bladder tanks checked for air/water ratio	Booster pump check (noise, overheating, etc.)
Hydropneumatic tanks for air/water ratio	Well pump check (noise)
Read source meter	Bladder tanks checked for air/water ratio
Air compressor – drain water	Hydropneumatic tanks for air/water ratio
Quarterly	Pumphouse checklist – complete
Flushing as needed	Flushing as needed
Pumphouse checklist – complete	Check production of well
Check production of well	Check pressure switch on/off
Check pressure switch on/off	***Annually***
Semi-Annually	Check electrical draw of well pump
Exercise pumphouse valves	Check air in pressure tanks
Storage checklist – complete	Exercise distribution valves
Annually	Hydrant flushing & repairs
Check electrical draw of well pump	Exercise pumphouse valves
Check air in pressure tanks	Storage checklist – complete
Exercise distribution valves	Check air compressor filter, oil & belt
Hydrant flushing & repairs as needed	Production of well
Check air compressor filter, oil & belt	Maintenance on chlorine pumps
Maintenance on chlorine pumps	***Every Five Years***
Every Five Years	Reservoir inspecting and cleaning
Reservoir inspecting and cleaning	

7.3.2 Water Quality Sampling Procedures

Water quality sampling and testing is conducted according to DOH requirements. Samples are collected in approved containers by Thurston PUD or Thurston PUD's representative. Collection, storage, and transportation of the samples are in strict conformance with the testing laboratory's instructions.

If any water quality testing exceeds the standards set forth in WAC 246-290-310, DOH will be notified immediately. Thurston PUD water quality technician will contact the appropriate DOH regional office for Group A systems or the appropriate county authority for Group B systems. In addition, if a primary standard is exceeded, the system customers will also be made aware by public notification.

If a bacteriological sample indicates the presence of coliform bacteria, the sample will be specifically tested for fecal or e coli coliform. The state or appropriate county will then be

notified of the presence and Thurston PUD will collect four repeat samples within 24 hours of notification from the lab. Repeat samples will be collected in accordance with the Coliform Monitoring Plan written for each system. The state or appropriate county will again be notified of the results of the repeat samples.

Other more specific notification requirements are described in Thurston PUD's emergency response plan in Appendix E.

7.3.3 Chlorination Operation and Maintenance Procedures

All chlorinated systems are monitored by a service technician on a weekly basis, and daily by a customer of the water system. Customers will call if residuals are out of specific ranges, and a service technician will be dispatched to make adjustments as necessary.

Related weekly maintenance procedures include:

- Take chlorine residual
- Add chlorine, if needed
- Check equipment for leaks
- Check equipment while operating
- Read source meter
- Fill out paperwork
- Dispose of empty chlorine bottles properly

Forms are returned to the office soon after the first of each month and are faxed to the appropriate DOH on the tenth of each month.

Table 7-3 provides a list of all systems that are required to meet CT6 treatment goals, along with their chlorine residual requirements.

Table 7-3
Thurston PUD Water Systems with Chlorine Contact (CT6) Treatment Goals

System No.	System Name	Use	CT6	Monitoring Frequency
213	Crowder	coliforms	0.6	Daily
221	Ivan	coliforms	0.6	Daily
228	Marshall	coliforms	0.6	Daily
230	Prairie Villa	coliforms	0.6	Daily
240	Valley Meadows	coliforms	0.6	Daily
249	Brown S. Prairie	coliforms	0.6	Daily
250	Bald Hills	coliforms	0.6	Daily
251	Smith Prairie	coliforms	0.2	Daily
253	Clegert	coliforms	0.6	Daily
256	Christensen Muck 1	coliforms	0.6	Daily
259	Hansford Muck 1	coliforms	0.6	Daily
260	Hansford Muck 2	coliforms	0.6	Daily
261	Trinity Muck 3	coliforms	0.6	Daily
264	Travis Jack	coliforms	0.3	Daily
276	Red Cloud 2	coliforms	0.6	Daily
291	LCUC 7	coliforms	0.6	Daily
307	Pleasant Valley	coliforms	0.6	Daily

308	Evergreen Vista	coliforms	0.6	Daily
318	Mathias	coliforms	0.6	Daily
354	Terry Lane	coliforms	0.6	Daily
355	Crescent Park	coliforms	0.6	Daily
364	Nisqually Highlands	treatment	0.1	Daily
369	Loma Vista	coliforms	0.6	Daily
381	Tracy #1	coliforms	0.6	Daily
606	Cornerstone	coliforms	0.43	Daily

Examples of chlorination recordkeeping and reporting forms are provided in Appendix I.

7.3.4 Procedures for Addressing Secondary Contaminants and Aesthetic Issues

Problems regarding secondary contaminants and unregulated aesthetic issues are typically identified through customer complaints. When such situations arise, the water system is flushed as needed. Flushing frequency is determined by contact with customers, and may be on weekly, bi-weekly, monthly or quarterly bases.

7.4 Emergency Response Program

Thurston PUD's Emergency Response Plan (ERP) is provided in its entirety as Appendix E. The ERP contains emergency contact lists, a priority service customer list, DOH and public notification procedures, response procedures tailored to various emergency situations, and contingency plans. Thurston PUD has developed a coliform monitoring plan (CMP) for each of its water systems. An example CMP is provided in Appendix L.

7.5 Customer Complaint Response Procedures

The following procedures are taken when Thurston PUD receives a complaint from a customer.

- Customer calls into the office and a representative takes the complaint over the phone or in person.
- Complaints are entered as service requests and printed out on golden rod paper.
- Service requests are given to the operations supervisor to be distributed based on importance and personnel available in the location of the problem.
- Completed service requests come back to the customer service staff to be entered into the computer as completed.
- The notes by the field technician are transcribed from the service request to the billing system and then stored in the file, and the appropriate action taken is also noted.
- Closed service request hard copies are filed in the respective water system file in a folder dedicated to service requests.

7.6 Record Keeping and Reporting

Thurston PUD maintains all records in paper files at the District office. Thurston PUD is responsible for maintaining certain records for specified periods. These requirements are listed in Table 7-4.

Table 7-4
Retention of Records of Operation and Analysis

Event	Period of Retention
Bacteriological Analysis	6 years
Turbidity Analysis	6 years
Chemical Analysis	Life of water system
Records of Action Taken to Correct MCL Violations	6 years after last violation.
Records Regarding a Variance or Exemption	10 years following expiration of Variance or Exemption.
Records Concerning Public Notification	3 years after Date of Notification.
Chlorine Residual	3 years (copies sent to DOH monthly)

Thurston PUD is required to provide periodic reports to DOH which summarizes the results of water quality testing. If any maximum contaminant levels are exceeded, DOH must be notified in accordance with methods specified in WAC 246-290-71001 through 246-290-71007.

Thurston PUD maintains five treatment-related reports:

1. Customer Chlorination Form. This is filled out by the customer that does daily free chlorine reads on chlorinated systems. This is faxed to DOH by the tenth of each month.
2. Pumphouse Chlorination Form. This is filled out by the service technician on a weekly basis or when the system residual is out of range and adjustments are made. This is faxed to DOH by the tenth of each month.
3. Soda Ash Form. pH is checked on a weekly basis after treatment on systems to which soda ash has been added to raise pH. This form is filled out on a weekly basis by the service technician. These forms are turned into the office on a monthly basis and are not turned into DOH.
4. Salt Usage Forms. These forms are filled out by a service technician for systems that use salt for softener units. These are usually filled out on a weekly basis, but it does change with the season. These forms are stored in the office when full and are not turned into DOH.
5. Caustic Solution pH adjustment. pH is checked on a weekly basis after treatment for systems to which caustic solution is added to raise pH. This form is filled out by the technician and turned into the office when full and are not turned into DOH.

Examples of the chlorination form are provided in Appendix I. Examples of the other forms are provided in Appendix K.

DOH, through WAC 246-290-71001 (which in turn references 40 CFR 141.201 through 208) has defined situations that require water purveyors to notify customers and DOH of what the circumstances are and what actions are being taken to address certain acute issues. Violations

and other situations are categorized into three tiers, based upon the degree of potential adverse impacts to human health. Details regarding these tiers and their associated reporting requirements are provided in the ERP (Appendix E).

7.7 Design Standards and Construction Specifications

Thurston PUD's design standards and construction specifications (subject to modification and update by Thurston PUD as necessary) are included in the Policies and Procedures Manual (see Appendix A). These standards apply to rural water systems located outside of urban growth area (UGA) boundaries.

For new systems located within a UGA boundary, Thurston PUD will coordinate with the appropriate local jurisdiction for system design standards. For existing systems within a UGA boundary, Thurston PUD will also coordinate with the appropriate jurisdiction for system design standards relating to any replacement or upgrading of facilities. Since the Tanglewilde system is located within the City of Lacey's UGA, Thurston PUD uses the City of Lacey standards for replacements or upgrades for mainline projects.

For water systems located in Pierce County, Pierce County Coordinated Water System Plan regulations must be followed, including Pierce County Chapter 17C.60.165 (fire flow) and Chapter 19D.130 (design standards).

7.8 Contract O&M Services

Thurston PUD is capable of providing contract O&M services. A model contract for such services is provided as Appendix F. As of April 2014 Thurston PUD provides such services to 15 water systems.

9. EMERGENCY RESPONSE PROGRAM

The emergency response program for MWS follows the Emergency Response Plan from TPUD Part A Umbrella Water System Plan, included at the end of this section for easy reference.

Appendix E
Thurston PUD Emergency Response Plan

1 Emergency Response Plan Overview

DOH suggests that an Emergency Response Plan (ERP) be included in the operations program of a water system plan to guide personnel through potential system malfunctions, natural disasters, and other events that might alter routine system operation. Because potential emergency situations vary, it is crucial that the response plan be flexible enough to adapt to most conditions. Proper staffing, training, and communication, as well as a suitable inventory of maintenance and repair parts, are also basic to the ERP.

A basic component of the ERP is evaluating the vulnerability of the system's facilities. As part of the Federal Bioterrorism Act, the PUD has completed and has on file the Vulnerability Assessment (VA) for the Tanglewilde system.

The ERP resources include:

- Emergency contact lists,
- Priority service customer lists,
- DOH notification procedures,
- Public notification procedures,
- Emergency response procedures for specific situations, and
- Contingency plans.

Each of these resources is described below.

1.1 Emergency Contact Lists

Emergency Contact Lists are provided below. Updated copies of these lists are kept at the PUD office; fire and police departments; and other management dispatch and emergency stations. In the event of an emergency, additional personnel will be assigned as deemed necessary by supervisors.

The Emergency Contact Lists provided below are:

- O&M Call Up List
- Telephone Contact List

Table 1
O&M Call-up List(1)

Seq	Name	Title	Phone Number
1	On-Call Center		(360) 357-8783
2	Kimberly Gubbe	Operations Manager	(360) 359-8554
3	John Weidenfeller	General Manager	(360) 628-0090

(1) In an emergency situation, during regular business hours, the PUD's main line (360-357-8783) should be called first, followed by use of the Call-up List.

Table 2 Telephone Contact List	
Phone Numbers Common to all Counties	
Police/Fire/Medical	9-1-1
Call Before You Dig	(800) 424-5555
Washington Emergency Response Commission	(360)438-7572
National Response Center	(800) 424-8802
KOMO TV and Radio	(206) 443-4000
710 KIRO Radio	(206) 726-7000
KING 5 TV	(206) 448-5555
Washington State	
Department of Health (DOH) Emergency Contact (24 Hours)	(877) 481-4901
Washington State Department of Ecology 24-Hour Spill Response	(360)407-7300
Department of Health SW Regional Office	(360) 236-3030
Department of Health NW Regional Office	(253) 395-6750
Department of Health SW Regional Office – Sandy Brentlinger	(360)236-3044
Department of Health NW Regional Office – Carol Stuckey or Ingrid Salmon	(253) 395-6775
Thurston County	
Thurston County Emergency Management	(360)754-3360
Thurston County Environmental Health	(360)786-5490
City of Olympia Water Section	(360)753-8468
City of Olympia Public Works Emergency Calls (non-working hours)	(360)753-8333
City of Lacey Water Section	(360)491-5644
City of Lacey Public Works Emergency Calls (non-working hours)	(360)704-2740
Olympic Air Pollution Control Authority	(360)886-0593
Lacey/Thurston County Fire Prevention	(360)491-9555
Newspaper – The Olympian	(360)754-5400
Power – Puget Sound Energy	(888) 225-5773
Lewis County	
Lewis County Emergency Management	(360)740-1151
Lewis County Environmental Health	(360)740-2691
Newspaper – The Chronicle	(360)807-8203
Power – Lewis County PUD	(360)496-6100
Power – City of Centralia	(360)736-7040
Grays Harbor County	
Grays Harbor County Emergency Management	(360)249-3911
Grays Harbor County Environmental Health	(360)249-4413
Newspaper – The News Tribune	(253) 941-9700
Power – Grays Harbor Co. PUD	(800) 562-7726
Mason County	
Mason County Emergency Management	(360)427-7535
Mason County Environmental Health	(360)427-9670
Newspaper – The News Tribune	(253) 941-9700
Power – Mason Co. PUD	(360)426-8255

Table 2 (cont.) Telephone Contact List	
Pierce County	
Pierce County Emergency Management	(253) 798-6595
Tacoma-Pierce County Health Department	(253) 798-6470
Newspaper – The News Tribune	(253) 941-9700
Power – Puget Sound Energy	(888) 225-5773
Power – Elmhurst Mutual	(253) 531-4646

Power – OHOP Mutual	(253) 847-4363
Power – Tacoma Power	(253) 502-8000

1.2 Priority Service Customer List

A Priority Service List is recommended to protect individuals and/or organizations that depend on an uninterrupted supply of water and/or have strict water quality requirements. Possible candidates for this service include individuals on home care kidney dialysis equipment, medical facilities, and organizations requiring uninterrupted water for specialized commercial or industrial processes.

Public information and education concerning priority service is important so those in need of continuous water service know that they can contact the PUD and request that they be included on the list. In addition, the PUD will create a list of individuals who require priority service. A warning marker will be attached to the water meter warning staff not to discontinue service for these residents.

As of July 2013, the PUD presently has no customers that match the priority service definition.

1.3 DOH Notification Procedures

PUD staff will immediately notify the appropriate DOH Regional Engineer if:

- A water shutdown is threatened or required for more than 24 hours,
- Water quality is determined to be unacceptable, or
- A public health risk associated with the water system is detected.

The PUD has 24 hours to notify its customers of a Tier 1 violation. Tier 1 violations include fecal coliform-positive samples, failure to confirm a positive total coliform for fecal coliform bacteria, maximum contaminant level (MCL) violation for nitrates, and waterborne disease outbreak.

1.4 Public Notification Procedures

The Drinking Water Regulations of the State Board of Health Regarding Public Water Supplies (WAC 246-290) require minimum levels of performance to ensure safe drinking water supplies. These regulations also give public water system owners and operators the responsibility of publicly disclosing the circumstances and/or conditions that may affect drinking water quality.

Public notification is important to develop public awareness of the problems facing water systems, educate the public of the extent to which a water system is adequately or inadequately serving its customers, and encourage customer support to resolve the problem.

The notification requirements and criteria may not apply to all cases; the DOH Regional Engineer can modify the prescribed format. In all cases, the Regional Engineer should be contacted before issuing a notice.

The following basic elements must be included in the public notice as a minimum; however, the details will vary according to the situation.

- Who (the utility or notifying agency).
- What (the nature of the violation).
- When (the time of the MCL violation or the date when a variance and/or exemption was granted).
- Authority (the regulating authority, either the local health department or DOH).
- Regulation involved (the standard involved and the related WAC number).
- Health significance (possible health effects involved).
- Precaution to be taken (actions to be taken by the consumer, such as boiling water).
- Action by water system (corrective measures that are proposed).

Table 3 below summarizes the public notification requirements resulting from the passage of the Groundwater Rule.

Table 3
Groundwater Rule Public Notification Requirements

Issue	Notification Requirements
E. coli- positive ground water source sample (1)	Tier 1 PN, Special Notice in CCR and CCR
Failure to take corrective action	Tier 2 PN, CCR
Failure to maintain at least 4-log treatment of viruses	Tier 2 PN, CCR
Failure to meet monitoring requirements	Tier 2 PN, CCR
Uncorrected significant deficiency (2)	Special notice in CCR
Unaddressed E coli-positive ground water source sample (3)	Special notice in CCR

1. Consecutive systems served by the ground water source must also notify the public
2. Systems must continue to notify the public annually until the significant deficiency has been corrected
3. Systems must put a notice in the CCR annually until the positive source water sample has been addressed

Follow Up Procedures

If a coliform presence (or other violations or situations with significant potential to have serious adverse effects on human health as a result of short term exposure) has been confirmed, the PUD will employ the follow-up procedures described below:

- Notify Department of Health within 24 hours
- Collect repeat samples within 24 hours
- Issue notices to customers (door hangers, letters or bill stuffers, and media) based on type of violation
- Within 24 hours for coliform violation (Tier 1)
- Within 30 days for monitoring/testing procedure violations or for major repeat violation (Tier 2)
- Within 1 year for monitoring or testing violation not addressed above (this will be included in the annual Consumer Confidence Report) (Tier 3)
- Distribution System: observe and repair leaks, disinfect system, flush dead end segments, investigate potential unknown cross connections.
- Storage Reservoir: observe for damage to screened vents or other openings, observe reservoir interior for signs of dirt, insects, growth, sediment or debris.
- Submit certification statement of public notification requirements to DOH within 10 days
- Issue follow-up "problem corrected" notices to customers and media.

The PUD has public notification templates (based on DOH materials) on file at the District Office. Examples are included as Exhibit 1 and 2 at the end of this emergency response plan. Additionally, the process the PUD follows to respond to a positive total coliform sample and a positive fecal or e-coli sample is located at the end of this emergency management plan as Exhibit 3 and 4.

1.5 Emergency Response Procedures

The plan includes emergency response procedures for specific scenarios and plans of action to mitigate the emergency conditions. Emergency responses described in this section are tailored to the following emergency situations that may affect the PUD's water systems:

- Earthquake,
- Flooding,
- Power failure,
- Water supply contamination,
- Water transmission line failure,
- Distribution line break,
- Backflow incident

Reservoir

Vulnerability concerns for reservoirs center on the potential for damage to the structure and/or contamination of its contents. Storage reservoirs are constructed to reduce the potential for vandalism by being completely sealed with locked hatches. However,

reservoirs are susceptible to natural and manmade disasters such as earthquakes and vandalism.

Vandalism cannot be totally prevented, but can be deterred. Reservoir areas are fenced and locked where appropriate. Reservoir sites are inspected frequently to ensure security.

Booster Pump Stations

Booster pump stations are vulnerable to mechanical failure, vandalism, power and telephone outages, and earthquakes. Booster pump station accesses are locked.

As of July 2013, the PUD does not own portable generators to support the booster pump stations in case of emergency, but will arrange for a rental contract if these are needed. The PUD will continue to evaluate the feasibility of purchasing a portable generator in the future.

Transmission and Distribution System

The transmission and distribution systems are susceptible to both manmade and natural disasters such as vandalism, pressure surges, contamination, corrosion, erosion, earthquake, and material failure. To reduce the number of breaks to the system, standards for pipeline construction and materials have been established and must be followed. In addition, standards are in place to require the strategic placement of valves and looping lines so broken pipes can be isolated while continuing water service.

The PUD has a mapping system of pipes and valves for some systems, and performs its own underground facilities locates to prevent accidental dig ups. The PUD has also developed and implemented a Cross Connection Control Program so foreign substances are not accidentally back-siphoned into the water system.

Material Supplies

The PUD stores surplus and emergency supplies and chemicals. If particular items are not in storage, the appropriate vendor(s) is contacted for provision of emergency materials and equipment.

Priorities

All water served by the PUD must meet all applicable State and Federal drinking water quality standards. If the supply of water is not adequate to meet all of the water system demands, the water that is available should be allocated based on the following usage ratings, which are listed from highest to lowest priority:

- Firefighting (life threatening),
- Life-sustaining needs,
- Medical needs,
- General drinking water needs,
- Firefighting (property threatening),
- Sanitary uses,
- Industrial uses,

- Commercial uses, and
- Recreational/landscaping uses.

1.6 Earthquake Response

Description

A major earthquake, with the magnitude of 5.0 or greater on the Richter scale, could disrupt the source, transmission, pumping, storage and distribution components of a water system. In addition, power failures and interruption to conventional transportation and communication systems may occur.

Response

PUD staff will anticipate critical water use needs for firefighting or medical facilities resulting from an earthquake. These are given due priority in assessing the emergency, preparing damage reports, and organizing repair efforts.

Pipelines and other buried facilities are hidden from view but are at least as susceptible to ground movement as aboveground structures, so these facilities must be closely examined after an earthquake for any unexplained drop in line pressure, reduction in flow rate, pump failure, leakage, or other damage. Crews are equipped to:

- Maintain constant contact with dispatch and other field personnel,
- Barricade hazardous areas,
- Shut off valves to isolate broken mains,
- Turn off water services,
- Make repairs, and
- Help residents secure a safe supply of drinking water.

1.7 Flooding Response

Description

The PUD has water systems located in areas that may be vulnerable to flooding.

Response

PUD staff will anticipate which facilities will most likely be impaired by flooding. All major system components must be checked thoroughly to assess physical damage. Crews are equipped to:

- Maintain constant contact with dispatch and other field personnel,
- Barricade hazardous areas,
- Shut off valves to isolate broken mains,
- Turn off water services,
- Make repairs, and
- Help residents secure a safe supply of drinking water.

1.8 Power Failure Response

Description

Short- and long-term interruptions in power can occur for a variety of reasons, which may or may not be associated with emergencies. Power outages may be localized to one or more blocks or may affect the entire region. The facilities most affected by this type of emergency are the well pumps and booster pumping stations.

Response

In addition to their field response, PUD staff will immediately contact the appropriate electrical service provider to determine the nature, extent, and expected duration of the power outage. Staff will assess the availability of standby storage in the system and the corresponding need to arrange for auxiliary power if the outage is expected to be long term.

1.9 Water Transmission Line Failure Response

Description

Rupture or leakage in transmission lines from any source could result from an earthquake, pressure surge, vandalism, bomb blast, construction, soil scour, and corrosion or material failure. A major break could interrupt the water source and present a flood and erosion threat to adjacent landowners.

Response

Such an event requires prompt action by PUD staff to isolate the damaged section of line and minimize the impacts to the rest of the system. The size and nature of the rupture must be evaluated promptly to ensure that adequate repair materials, excavation equipment, de-watering facilities, and proper personnel are deployed.

Loss of transmission lines could present a water supply shortage. If deemed absolutely necessary, emergency interties could be activated or trucked water could be imported (see Section 1.12).

1.10 Distribution Line Break Response

Description

Water distribution line breaks could result from an earthquake, pressure surge, vandalism, bomb blast, construction, soil scour, corrosion, or material failure. Due to strategically placed valves and looped systems, most line breaks can be isolated to minimize service outages.

Response

Such an event requires prompt action by PUD staff to isolate the damaged section and minimize impacts to the rest of the system. The size and nature of the rupture must be evaluated promptly to ensure that adequate repair materials, excavation equipment, de-watering facilities, and proper personnel are deployed. In most cases, the initial response

person will be able to assess the situation to determine the extent of the problem and course of action to make the repair.

Water line repairs will be made in accordance with standard procedures. The PUD has procedures in place and/or materials on hand to address line break emergencies. Such materials include repair clamps for all types of pipe materials and sizes that are in the system, ductile iron pipe, various sizes of water main valves, chlorine for disinfection, bedding and backfill material, copper tubing, and service fittings. Additionally, the PUD maintains a small works roster and is, therefore, able to deploy contractors quickly to assist during emergencies if necessary.

1.11 Backflow Incident Response

The response plan for a backflow incident is contained in the PUD's Cross Connection Control Program.

1.12 Contingency Plans

In the event that water sources are temporarily unavailable due to one of the reasons stated above, the PUD is prepared to provide emergency sources of water as a contingency. Three PUD systems have interties with other water systems, which can be exercised in emergency situations. Both the Crescent Park and Terry Lane water systems have interties with the Spanaway Water Company. The Tanglewilde system has two interties with the City of Olympia (at locations other than the primary source connection with the City) and four interties with the City of Lacey.

For those PUD water systems that do not have interties with other systems, the PUD will consider the use of trucked water as an emergency source of supply. This may be a necessity for those systems that have remote locations and an inability to obtain water from other sources. When conditions necessitate trucked water, the PUD will first consult with the appropriate DOH regional Office of Drinking Water, to ensure proper steps are taken. When providers are contacted for trucked water, the PUD will ensure that their procedures are consistent with DOH's trucked water guidelines, which are included as Exhibit 5 at the end of this emergency response plan.

Exhibit 1
IMPORTANT NOTICE ABOUT YOUR WATER SYSTEM
Coliform Maximum Contaminant Level (MCL) Exceeded: Acute MCL

The _____ Water System, ID #_____, located in _____ **County** is contaminated with fecal coliform/*E. coli* bacteria.

Fecal coliform/*E. coli* bacteria were detected/confirmed in the water supply on _____. These bacteria can make you sick and are a particular concern for people with weakened immune systems.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a rolling boil for one minute. Let it cool before using. Boiled or purchased bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until ***further notice***. Boiling kills bacteria and other organisms in the water.

Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems. The symptoms above are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care provider.

What happened? What is the suspected or known source of contamination?

The following is being done to correct the problem:

We have consulted with the _____ County Department of Health about this incident. We will notify you when you no longer need to boil the water which we anticipate to be _____.

For more information, please contact ***Kim Gubbe*** *at (866) 357-8783 or* _____***Add_Local Agency***

_____

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distribution copies by hand or mail.

Complete the following items (check all that apply):

□ Notice mailed to all water customers on ___/___/___.

□ Notice hand delivered to all water customers on ___/___/___.

_____ _____ _____.
Signature of owner or operator | Position | Date

Send copy of completed notification and certification to:

☐ Northwest Drinking Water
Department of Health
20425 72nd Ave S, Suite 310
Kent, WA 98032-2358
Phone: (253) 395-6750
Fax: (253) 395-6760

☐ Southwest Drinking Water
Department of Health
PO Box 47823
Olympia, WA 98504-7823
Phone: (360) 236-3030
Fax: (360) 664-8058

☐ Eastern Drinking Water
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
Phone: (509) 329-2100
Fax: (509) 329-2104

Exhibit 2
IMPORTANT NOTICE ABOUT YOUR WATER SYSTEM
Coliform Maximum Contaminant Level (MCL) Exceeded: Non-acute MCL

The _____ water system, ID# _____ in _____ County routinely monitors for the presence of total coliform bacteria and in _____ this type of bacteria was detected. Although this incident was not an emergency, as our customer, you have a right to know what happened and what we did or are doing to correct the situation.

Coliforms are bacteria which are naturally present in the environment and are used as indicators that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems. The samples that showed the presence of coliform were further tested to see if other bacteria of greater concern, such as fecal coliform or *E.coli* were present. **None of these bacteria were found.**

You do not need to boil your water. People with severely compromised immune systems, infants, and some elderly may be at an increased risk. These people should seek advice from their health care provider.

What happened? What is the suspected or known source of contamination?

At this time:
- ☐ The problem is resolved. Additional samples collected were found to be free of coliform bacteria.
- ☐ We anticipate resolving the problem by _____.
- ☐ Other _____.

For more information, contact Thurston PUD at (360)357-8783
(owner or operator)

Please share this notice with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is sent to you by Thurston PUD Date Distributed _____.

Coliform Non-acute Public Notice Certification Form
The purpose of this form (below) is to provide documentation to the department that public notice was distributed.
Please check the appropriate box and fill in the date that the notice was distributed:

- ☐ Notice was mailed to all water customers on _____.
- ☐ Notice was hand delivered to all water customers on ___/___/___.
- ☐ Notice was posted (*with department approval*) at:
  _____ on ___/___/____.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

_____ _____ _____
Signature of owner or operator Position Date

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD call (800) 833-6388.

Send copy of completed notification and certification to:

☐ Northwest Drinking Water
Department of Health
20425 72nd Ave S, Suite 310
Kent, WA 98032-2358
Phone: (253) 395-6750
Fax: (253) 395-6760

☐ Southwest Drinking Water
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Olympia, WA 98504-7823
Phone: (360) 236-3030
Fax: (360) 664-8058

☐ Eastern Drinking Water
Department of Health
16201 E Indiana Ave, Suite 1500
Spokane Valley, WA 99216
Phone: (509) 329-2100
Fax: (509) 329-2104

DOH Form 331-263 (Updated 08/10)

April 2014

AVISO IMPORTANTE ACERCA DEL SISTEMA DE SUMINISTRO DE AGUA

Las bacterias coliformes rebasaron el Nivel Máximo de Contaminación: NMC no agudo

El sistema de suministro de agua _____, número (ID#) _____ en el condado de _____ monitorea rutinariamente la presencia de bacterias coliformes totales. En la fecha _____, se encontró este tipo de bacteria. Aunque este incidente no es considerado una emergencia, como consumidor, Usted tiene el derecho a saber que pasó y que se ha hecho o se esta haciendo para corregir esta situación.

Las bacterias coliformes se encuentran naturalmente en el medio ambiente y se usan como indicador de la posible presencia de otras bacterias que pueden causar daño a la salud. En las muestras tomadas, las bacterias se encontraron en mayor número que el permitido y esto es una indicación de posibles problemas. Las muestras con bacterias coliformes se analizaron con más detalle en el laboratorio para ver si bacterias coliformes fecales o E. Coli pudieran también haber estado presentes. Estas bacterias causan daño a la salud de las personas. **No se encontró ninguna de estas bacterias.**

No es necesario que usted hierva el agua. Personas con un sistema inmunológico severamente comprometido, los recién nacidos y algunas personas de edad avanzada pueden tener mas riesgo de salud y deberían llamar a algún personal médico para mayor información.

¿Qué fue lo que pasó? ¿Cuál es la fuente de contaminación de la que se sabe o sospecha?

En este momento:

- ☐ El problema esta resuelto. En muestras adicionales que se colectaron no se encontraron bacterias coliformes.
- ☐ Anticipamos resolver el problema el día ____/____/____.
- ☐ Otro _____.

Para mayor información comuníquese con _____ al teléfono ( ) _____-__ _____ o con

_____	_____	_____
(dueño u operador)	(teléfono)	(dirección)

Pase esta información a todas las personas pudieran tomar agua de este suministro, especialmente aquellas personas que no hayan recibido este aviso (por ejemplo, personas que vivan en apartamentos, asilos de ancianos, escuelas y negocios.) Usted puede hacer esto colocando este aviso en un lugar público donde se pueda leer claramente o distribuyendo copias en persona o enviándolas por correo.

Este aviso es enviado a Usted por el Sistema de Suministro de Agua_____ fecha ___/___/____.

Exhibit 3

What To Do When We Get A Positive Fecal Or E-Coli Sample.

1. Call the agency that governs that system immediately of receiving the results.
   Group A's Pierce - NW Drinking Water, Carol Stuckey or Ingrid Salmon 253-395-6776
   Group A's Thurston, Lewis, Grays – SW Drinking Water, Sandy Brentlinger 360-236-3044.
   Group B's Pierce – Pierce Co. Environment Health, Michelle Harris, 253-798-7683
   Group B's Thurston – Thurston Co. Environmental Health, Sara Brallier, 360-867-2629
   Group B's Lewis – Lewis Co. Environmental Health, Sue Kennedy, 360-740-2691
   Group B's Grays Harbor – Grays Harbor Environmental Health, Jeff Nelson 360-249-4413
   Group B's Mason – Mason Co. Environmental Health, Stephanie Kenny, 360-427-9670

2. Work with agency, we could put the customers on boil water now or wait until the next tests come back. I usually put them on boil water now. Distribute door hangers at this time with a copy of the Acute mcl attached.
   K:\FORMS\Mandatory Language Forms\Acute Coliform MCL
   K:\FORMS\Mandatory Language Forms\Boil Water Advisory Door Hanger

3. Fax form and door hanger to agency after it has been hand delivered to the customers.

4. Take the repeat samples with in 24 hours and run a 24 hour test on them.
   Group A's four samples – follow the Coliform Monitoring Plan. For un-chlorinated systems, new Ground Water Rules are in effect and triggered source water monitoring is required. If more than 1 well was in operations then a raw sample from each will need to be taken, plus the four repeats (which should include one well).

   Group B's two samples – should be taken from the same sample site as routine plus a well sample.

5. Access the system; try to find where the contamination is coming from. Are there any bad tanks, what does the well head look like, what activity is going on around the well.

6. Call lab in 24 hours from time sample was taken if fax has not been received yet. Confirm that samples were good or bad.

7. If samples are negative take another round of samples, immediately. Run another 24 hour test. If next round are also negative lift the boil water notice.

8. If source sample is fecal indicator-positive, collect five additional source water samples from the same source within 24 hours of being notified of the positive sample. However, the State may direct you to take corrective action after the first fecal indicator-positive sample. In that case, you are not required to collect the five additional samples.

9. Work with State and get permission to start continuous temporary chlorination of the system and notify the customers by door hanger of the chlorination. **This could be done after the first positive sample is found.**

10. Once the chlorine is throughout the system then we need to take two rounds of repeat samples to lift the boil water.

Exhibit 4

What To Do When We Get A Positive Total Coliform Sample.

1. Call the agency that governs that system within 24 hours of receiving the results.
   Group A's Pierce - NW Drinking Water, Carol Stuckey or Ingrid Salmon 253-395-6776
   Group A's Thurston, Lewis, Grays – SW Drinking Water, Sandy Brentlinger 360-236-3044.
   Group B's Pierce – Pierce Co. Environment Health, Michelle Harris, 253-798-7683
   Group B's Thurston – Thurston Co. Environmental Health, Sara Brallier, 360-867-2629
   Group B's Lewis – Lewis Co. Environmental Health, Sue Kennedy, 360-740-2691
   Group B's Grays Harbor – Grays Harbor Environmental Health, Jeff Nelson, 360-249-4413
   Group B's Mason – Mason Co. Environmental Health, Stephanie Kenny, 360-427-9670

2. Take the repeat samples as soon as possible.
   Group A's four samples – follow the Coliform Monitoring Plan. For un-chlorinated systems, new Ground Water Rules are in effect and triggered source water monitoring is required. If more than 1 well was in operations then a raw sample from each will need to be taken, plus the four repeats (which should include one well).

   Group B's two samples – should be taken from the same sample site as routine plus a well sample.

3. Assess the system; try to find where the contamination is coming from. Are there any bad tanks, what does the well head look like, what activity is going on around the well.

4. Call lab in 48 hours from time sample was taken if fax has not been received yet. Confirm that samples were good or bad.

5. If samples are good then all is well. Take an investigative sample the next month on Group B's and 5 routine samples on Group A's.

6. If one other sample comes back positive then notices will need to get out to customers and you'll need to contact the agency again and tell them where you think the contamination is coming from and your plans to fix the problem.
   For total coliforms only, a non-acute mcl letter should be sent to the customers
   K:\FORMS\Mandatory Language Forms\Non acute MCL

   Pierce County had created it own form that can be used for Group B's in Pierce Co only.
   K:\FORMS\Mandatory Language Forms\Pierce Co Bacti Violation

   Need to fill in form with system information and give the customers as much information about how we are going to solve the issue.

7. Fax form to agency after it has been sent to the customers. (see forms for fax numbers)

Disinfection of trucked water

All trucked water must maintain a free chlorine residual of at least 0.5 ppm. To accomplish this, the hauler must add 5 to 6 tablespoons (2.5 to 3 ounces) of common household bleach to each 1,000 gallons of water that does not have a free chlorine residual. The bleach must be 5.25 to 6 percent strength, unscented and without additives. Add the bleach in proportion to the quantity of water at the beginning of each haul during filling to ensure uniform distribution.

For more information

If you have questions, call our nearest regional office:

Eastern Region: Spokane Valley (509) 329-2100
Northwest Region: Kent (253) 395-6750
Southwest Region: Tumwater (360) 236-3030

Office of Drinking Water publications are online at https://fortress.wa.gov/doh/eh/dw/publications/publications.cfm

PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND HEALTHIER WASHINGTON

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD, call (800) 833-6388.

Photo credits: Darigold, LTI Inc. dba Milky Way, and Pierce County Department of Emergency Management.

Truck Transportation

Emergency water supply for public use

October 2012
DOH 331-063
Revised

Washington State Department of Health
Environmental Public Health Division
Office of Drinking Water

Public water systems that truck or receive potable water for the public during

emergencies must follow drinking water standards (WAC 246-290-451(2)).

The Washington State Department of Health doesn't allow trucked water as a long-term source of drinking water. We do recognize that it may be the only option as a temporary source in some emergencies.

Before a water system can truck or receive potable water for the public during an emergency, it must get the current requirements and approval from one of the following:

- Our nearest regional office
- The local health department
- The state emergency management agency
- The local emergency management agency

To protect public health, water systems thinking about receiving trucked water must consider the following:

- The source and quality of the water
- Personnel
- Documentation
- Recordkeeping
- The truck container, including disinfection and condition
- The receiving container

Source and quality of water

Trucked emergency water must come from an approved public water system. If there is no other option, *and* there is a formal written agreement between the receiving water system and the state or local health department, hauled water may be from an unapproved source.

The water system must prove to the health agency that the intended unapproved source is safe to use when treated to the minimal levels described in "Disinfection of trucked water," on page 7.

The water system must confirm that the:

- Truck hauler is familiar with proper handling procedures at the supply source and during transport.
- Delivered trucked water contains a free chlorine residual of at least 0.5 ppm.

The water system must reject the water if it believes the hauler failed to take the steps necessary to ensure the water remains potable.

Personnel

The water system must have the certified operator coordinate the receiving process, collect documentation, and keep records. These procedures must be in the water system's emergency response program (WAC 246-290-415(2)(d)).

Documentation

The water system must document and keep proper records of the trucked water operation. This includes:

- The hauler's name and contact information.
- The amount of water delivered per trip.
- The name of the approved water source or water system.
- Date and time of delivery.

Recordkeeping

The water system must keep the following records for at least one year after the emergency water hauling operation ends.

- Documents to show proper disinfection of the water for each trip.
- Confirmation of initial tanker disinfection method and follow-up coliform monitoring results.
- The free chlorine residual in the container at the start of the haul.
- The free chlorine residual of the water at point of delivery.
- Any conditions observed about the receiving tank.

Records must be available on request for review by health agencies, haulers, or the supplying water system.

Containers designed and used only for potable water service

Properly designed and maintained truck containers dedicated to hauling only potable water may be used without initial tanker cleaning, disinfection, and testing for bacteria.

The truck container must be contaminant-free and maintained to prevent potential water contamination.

The hauler must fill and empty all truck containers through an air gap or other approved method. All containers must be completely enclosed and tightly sealed with lockable lids or hatches. Containers open to the atmosphere during hauling cannot be used.

Bulk water hauling may be acceptable as a *temporary* solution to a water shortage.

It is not an acceptable *long-term* solution for system infrastructure deficiencies such as inadequate water supply sources.

Truck container

Truck containers used for hauling petroleum products, surfactants, or other non-food grade products may not be used for hauling potable water.

Trucks used for hauling food-grade products other than potable water must be evaluated on an individual basis. At minimum, a truck container used to haul a food-grade product other than potable water must be disinfected as directed in "Initial tanker disinfection," below.

Initial testing must show absence of coliform bacteria before using the truck to haul water. We may require additional water quality analysis depending on a truck's prior use.

After emergency hauling begins and safety measures are in place to prevent contamination, any health authority can require repeat testing at any time. An extended water-hauling emergency warrants additional water quality monitoring, including chlorine residuals.

Initial tanker disinfection

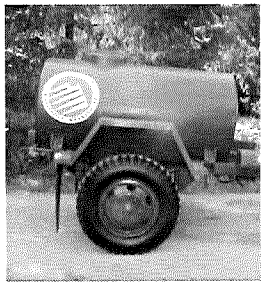
Truck containers used to transport food-grade products other than potable water must be cleaned and disinfected before potable water hauling operations begin.

1 Rinse and flush all water-hauling containers, hoses, truck-mounted pumps, and other equipment until they are free of rust, sediment, and other matter.

2 Use water with chlorine levels of at least 50 to 60 parts per million (ppm) to completely fill the tank, pumps, hoses, and other hauling equipment that will contact potable water. About one gallon of liquid bleach is required in every 1,000 gallons of water to produce 50 to 60 ppm. Bleach must be 5.25 to 6 percent hypochlorite with no scent, cleaning enhancer, or other additives. Add the bleach to the water while filling the tank to ensure uniform distribution.

All surfaces that will contact potable water must be disinfected with the chlorine solution for at least 4 hours.

All equipment used to collect, transport, and deliver drinking water must be designed to handle potable water and endure disinfection.



3 After 4 hours, flush the chlorine solution from the tank and all pieces of equipment. *Do not discharge directly into a stream because the chlorine in the water can kill fish and plants*. To dechlorinate the water, treat it with citric acid or thiosulfate before discharging it.

4 When the tank, hoses, pipes, and pumps are empty, refill them with potable water and test for coliform bacteria. If coliform are present, repeat the disinfection steps. If coliform is still present after a second attempt to disinfect, the tanker cannot be used to haul potable water.

Handling

All hoses and other handling equipment used in the operation must always be stored off the ground. Hoses must be capped at each end when not in use.

All surfaces that contact potable water, including fill-point equipment, containers, caps, valves, filters, fittings, and other plumbing attachments, must be inspected regularly and disinfected or replaced as needed.

Receiving container

Inspect the water system's receiving tanks to confirm water quality during filling and later distribution to consumers. Clean and disinfect receiving tanks using the disinfection steps in "Initial tanker disinfection," at left.

Secure and protect the receiving tanks from contamination throughout the emergency response process. Keep written records of any comments about the receiving tanks.

The water system must inspect each water delivery for appearance or odor problems, check the chlorine residual, and fill water through an air gap or other approved method.

APPENDIX A – Water Facilities Inventory Form

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

WATER FACILITIES INVENTORY (WFI) FORM

ONE FORM PER SYSTEM

Quarter: 1
Updated: 10/19/2017
Printed: 1/26/2018
WFI Printed For: On-Demand
Submission Reason: Owner Update

RETURN TO: Central Services - WFI, PO Box 47822, Olympia, WA, 98504-7822

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
87784 Q	MEADOWS LLC	THURSTON	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

KIMBERLY S. GUBBE [MANAGER]
1230 RUDDELL RD SE
LACEY, WA 98503

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

7. OWNER NAME & MAILING ADDRESS

PUD NO 1 OF THURSTON COUNTY
JOHN G. WEIDENFELLER GENERAL MANAGER
1230 RUDDELL RD. SE.
LACEY, WA 98503

8. OWNER NUMBER: 018163

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

9. 24 HOUR PRIMARY CONTACT INFORMATION		10. OWNER CONTACT INFORMATION	
Primary Contact Daytime Phone: (360) 357-8783		Owner Daytime Phone: (360) 357-8783	
Primary Contact Mobile/Cell Phone: (360) 359-8554		Owner Mobile/Cell Phone: (360) 628-0080	
Primary Contact Evening Phone: (xxx)-xxx-xxxx		Owner Evening Phone: (xxx)-xxx-xxxx	
Fax: (360) 357-1172	E-mail: xxxxxxxxxxxxxxxxxxx	Fax: (360) 357-1172	E-mail: xxxxxxxxxxxxxxxxxxx

WAC 246-290-420(9) requires that water systems provide 24-hour contact information for emergencies.

11. SATELLITE MANAGEMENT AGENCY - SMA (check only one)

- ☐ Not applicable (Skip to #12)
- ☒ Owned and Managed
- ☐ Managed Only
- ☐ Owned Only

SMA NAME: PUD No 1 of Thurston County SMA Number: 147

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)

- ☐ Agricultural
- ☐ Commercial / Business
- ☐ Day Care
- ☐ Food Service/Food Permit
- ☐ 1,000 or more person event for 2 or more days per year
- ☐ Hospital/Clinic
- ☐ Industrial
- ☐ Licensed Residential Facility
- ☐ Lodging
- ☐ Recreational / RV Park
- ☒ Residential
- ☒ School
- ☐ Temporary Farm Worker
- ☐ Other (church, fire station, etc.):

13. WATER SYSTEM OWNERSHIP (mark only one)

- ☐ Association
- ☐ City / Town
- ☐ County
- ☐ Federal
- ☒ Investor
- ☐ Private
- ☐ Special District
- ☐ State

14. STORAGE CAPACITY (gallons)

291,000

- SEE NEXT PAGE FOR A COMPLETE LIST OF SOURCES -

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
87784 Q	MEADOWS LLC	THURSTON	A	Comm

15	16	17	18										19			20	21						22	23	24				
	SOURCE NAME	INTERTIE	SOURCE CATEGORY										USE				TREATMENT						DEPTH		SOURCE LOCATION			
Source Number	LIST UTILITY'S NAME FOR SOURCE AND WELL TAG ID NUMBER. Example: WELL #1 XYZ456 IF SOURCE IS PURCHASED OR INTERTIED, LIST SELLER'S NAME Example: SEATTLE	INTERTIE SYSTEM ID NUMBER	WELL	WELL FIELD	WELL IN A WELL FIELD	SPRING	SPRING FIELD	SPRING IN SPRINGFIELD	SEA WATER	SURFACE WATER	RANNEY / INF. GALLERY	OTHER	PERMANENT	SEASONAL	EMERGENCY	SOURCE METERED	NONE	CHLORINATION	FILTRATION	FLUORIDATION	IRRADIATION (UV)	OTHER	DEPTH TO FIRST OPEN INTERVAL IN FEET	CAPACITY (GALLONS PER MINUTE)	1/4, 1/4 SECTION	SECTION NUMBER	TOWNSHIP	RANGE
S01	WELL #1 AKB320		X										X			Y	X						768	149	NE NE	24	18N	01W
S02	WELL #2 AKB321		X										X			Y	X						93	30	NE NE	24	18N	01W
S03	WELL #3 AKB322		X										X			Y	X						309	78	NE SE	13	18N	01W
S04	WELL #4 AKB323		X										X			Y	X						276	182	NE SE	13	18N	01W
S05	WELL #5 AKB324		X										X			Y	X						327	30	NE SE	13	18N	01W
S06	WELL #6 AKB325		X										X			Y	X						309	186	NE SE	13	18N	01W
S07	43500Y / LACEY	43500 Y													X	N	X							0			00N	00E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
87784 Q	MEADOWS LLC	THURSTON	A	Comm

	ACTIVE SERVICE CONNECTIONS	DOH USE ONLY! CALCULATED ACTIVE CONNECTIONS	DOH USE ONLY! APPROVED CONNECTIONS
25. SINGLE FAMILY RESIDENCES (How many of the following do you have?)		798	1894
A. Full Time Single Family Residences (Occupied 180 days or more per year)	798		
B. Part Time Single Family Residences (Occupied less than 180 days per year)	0		
26. MULTI-FAMILY RESIDENTIAL BUILDINGS (How many of the following do you have?)			
A. Apartment Buildings, condos, duplexes, barracks, dorms	0		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	0		
C. Part Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied less than 180 days/year	0		
27. NON-RESIDENTIAL CONNECTIONS (How many of the following do you have?)			
A. Recreational Services and/or Transient Accommodations (Campsites, RV sites, hotel/motel/overnight units)	0	0	0
B. Institutional, Commercial/Business, School, Day Care, Industrial Services, etc.	5	5	0
28. TOTAL SERVICE CONNECTIONS		803	1894

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 2070

30. PART-TIME RESIDENTIAL POPULATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many part-time residents are present each month?												
B. How many days per month are they present?												

31. TEMPORARY & TRANSIENT USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. How many total visitors, attendees, travelers, campers, patients or customers have access to the water system each month?												
B. How many days per month is water accessible to the public?												

32. REGULAR NON-RESIDENTIAL USERS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A. If you have schools, daycares, or businesses connected to your water system, how many students daycare children and/or employees are present each month?	500	500	500	500	500	500	60	60	500	500	500	500
B. How many days per month are they present?	20	20	20	20	20	20	15	15	20	20	20	20

33. ROUTINE COLIFORM SCHEDULE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
* Requirement is exception from WAC 246-290	3	3	3	3	3	3	2	2	3	3	3	3

34. NITRATE SCHEDULE	QUARTERLY	ANNUALLY	ONCE EVERY 3 YEARS
(One Sample per source by time period)			

35. Reason for Submitting WFI:

☐ Update - Change ☐ Update - No Change ☐ Inactivate ☐ Re-Activate ☐ Name Change ☐ New System ☐ Other _____

36. I certify that the information stated on this WFI form is correct to the best of my knowledge.

SIGNATURE: _____ **DATE:** _____

PRINT NAME: _____ **TITLE:** _____

APPENDIX B –System Maps

APPENDIX B –System Maps

TABLE 7.3 - EXISTING FACILITIES SUMMARY

Component	*Unit*	*Quantity*	*Unit Cost*	*Cost*	*Year Installed*	*Expected Life (yrs)*	*Remaining Life (yrs)*
Well #1	LF	789	$ 100.00	$ 78,900	1979	100	61
Well #2	LF	103	$ 100.00	$ 10,300	1981	100	63
Well #3	LF	307	$ 100.00	$ 30,700	1983	100	65
Well #4	LF	293	$ 100.00	$ 29,300	1983	100	65
Well #5	LF	336	$ 100.00	$ 33,600	1986	100	68
Well #6	LF	325	$ 100.00	$ 32,500	1989	100	71
Well #1 Pump - 15 hp	EA	1	$ 10,000	$ 10,000	1979	25	-14
Well Drop Pipe	LF	789	$ 20.00	$ 15,780	1979	25	-14
Well #2 Pump - 1.5 hp	EA	1	$ 3,000	$ 3,000	1981	25	-12
Well Drop Pipe	LF	103	$ 10.00	$ 1,030	1981	25	-12
Well #3 Pump - 5 hp	EA	1	$ 6,000	$ 6,000	1983	25	-10
Well Drop Pipe	LF	307	$ 15.00	$ 4,605	1983	25	-10
Well #4 Pump - 20 hp	EA	1	$ 12,500	$ 12,500	2007	25	14
Well Drop Pipe	LF	293	$ 20.00	$ 5,860	2007	25	14
Well #5 Pump - 5 hp	EA	1	$ 6,000	$ 6,000	1986	25	-7
Well Drop Pipe	LF	336	$ 15.00	$ 5,040	1986	25	-7
Well #6 Pump - 20 hp	EA	1	$ 12,500	$ 12,500	2006	25	13
Well Drop Pipe	LF	325	$ 20.00	$ 6,500	2006	25	13
Well Site Improvements	LS	3	$ 25,000	$ 75,000	1985	100	67
Reservoirs	GAL	370,000	$ 1.50	$ 555,000	1995	100	77
Booster Pump Stations	LS	3	$ 50,000	$ 150,000	1995	25	2
Auxillary Power	EA	1	$ 25,000	$ 25,000	2016	25	23
Pump Houses	SF	1,200	$ 50.00	$ 60,000	1990	50	22
8-in PVC - 1st install	LF	250	$ 55.00	$ 13,750	1979	100	61
8-in PVC - 2nd install	LF	3,530	$ 55.00	$ 194,150	1981	100	63
8-in PVC - 3rd install	LF	280	$ 55.00	$ 15,400	1983	100	65
8-in PVC - 4th install	LF	1,850	$ 55.00	$ 101,750	1989	100	71
8-in PVC - 2016 install	LF	2,100	$ 55.00	$ 115,500	2016	100	98
6-in PVC - 1st install	LF	12,700	$ 50.00	$ 635,000	1979	100	61
6-in PVC - 2nd install	LF	6,300	$ 50.00	$ 315,000	1981	100	63
6-in PVC - 3rd install	LF	6,300	$ 50.00	$ 315,000	1983	100	65
6-in PVC - 4th install	LF	1,800	$ 50.00	$ 90,000	1989	100	71
6-in PVC - 2016 install	LF	3,910	$ 50.00	$ 195,500	2016	100	98
4-in PVC - 1st install	LF	2,825	$ 45.00	$ 127,125	1979	100	61
4-in PVC - 2nd install	LF	2,693	$ 45.00	$ 121,185	1981	100	63
4-in PVC - 3rd install	LF	4,150	$ 45.00	$ 186,750	1983	100	65
4-in PVC - 4th install	LF	-	$ 45.00	$ -	1989	100	71
4-in PVC - 2016 install	LF	50	$ 45.00	$ 2,250	2016	100	98
2 & 2.5-in PVC - 1st	LF	1,350	$ 35.00	$ 47,250	1979	75	36
2 & 2.5-in PVC - 2nd	LF	990	$ 35.00	$ 34,650	1981	75	38
2 & 2.5-in PVC - 3rd	LF	1,500	$ 35.00	$ 52,500	1983	75	40
2 & 2.5-in PVC - 4th	LF	1,500	$ 35.00	$ 52,500	1989	75	46
2 & 2.5-in PVC - 2016	LF	-	$ 35.00	$ -	2016	75	73
Service Meter Sets	EA	850	$ 500	$ 425,000	1995	50	27
Fire Hydrants	EA	42	$ 3,500	$ 147,000	1995	75	52
Controls	LS	1	$ 50,000	$ 50,000	2008	25	15
		Replacement Cost:		**$ 4,406,375**	**Ex. Weighted Life:**		**58** yrs