CITY OF SOAP LAKE

GRANT COUNTY **WASHINGTON**

WATER SYTEM PLAN

G&O #16040
JUNE 2019

Gray & Osborne, Inc.
CONSULTING ENGINEERS

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
EASTERN DRINKING WATER REGIONAL OPERATIONS
16201 E Indiana Avenue, Suite 1500, Spokane Valley, Washington 99216-2830
TDD Relay 1-800-833-6384

July 2, 2019

Raymond Gravelle, Mayor
Soap Lake Water Department
PO Box 1270
Soap Lake, WA 98851

Subject: Soap Lake Water Department; PWS ID #81300; Grant County Water System Plan; DOH Project #18-0611; **DOH Approval**

Dear Mayor Gravelle:

The Soap Lake Water Department Water System Plan (WSP) received in this office on June 15, 2018, with revisions submitted on February 22, 2019, has been reviewed and in accordance with the provisions of WAC 246-290-100, is hereby **APPROVED**.

An approved update of this WSP is required **on or before July 2, 2028**, unless the Department of Health (DOH) requests an update or plan amendment pursuant to WAC 246-290-100(9). Approval of this WSP is valid as it relates to current standards outlined in Washington Administrative Code (WAC) 246-290, revised January 2017, WAC 246-293 revised September 1997, and RCW 70.116, and is subject to the qualifications herein. Future revisions in the rules and statutes may be more stringent and require facility modification or corrective action.

Standard Construction Specifications for distribution main extensions have been approved as part of this WSP. With this approval and consistent with WAC 246 290 125(2), the Soap Lake Water Department may proceed with the installation of distribution main extensions without additional DOH approval provided that the City maintains on file completed construction completion reports (a copy of which is attached) in accordance with WAC 246 290 125(2) and makes them available for review upon request by DOH.

Disclaimer: The department's approval of your Water System Plan does not confer or guarantee any right to a specific quantity of water. The approved number of service connections is based on your representation of available water quantity. If the Washington Department of Ecology, a local planning agency, or other authority responsible for determining water rights and water system adequacy determines that you have use of less water than you represented, the number of approved connections may be reduced commensurate with the actual amount of water and your legal right to use it. A copy of the Department of Ecology's correspondence dated July 17, 2018, and March 14, 2019, regarding your water rights are enclosed.

Under 2016 water usage, water usage for current, single-family residential connections corresponds to an average day demand (ADD) of 257 gallons per day and a maximum day demand (MDD) of 720 gallons per day. The overall water system serves 732 connections, according to Worksheet 6-1 in the WSP (while the WFI shows 831 connections), whose water usage corresponds to 1,307 ERUs (Equivalent Residential Units), which includes distribution system leakage that consists of 369 ERUs. The following table shows a comparison of connections and connection categories provided in the WSP and those given in the current WFI (Water Facilities Inventory Form).

Connection Category	WSP	WFI
Full-time Single Family Residential	619	617
Multi-family Residential Buildings	42	46 (281 units)
Commercial	71	168
Totals	**732**	**831 (1,066)**

This Water System Plan (WSP) includes capacity information that demonstrates the physical and legal ability of this water system to provide water during the 9-year period for which the approval of the WSP is valid. Based on the analysis presented in the WSP, the limiting factor in determining the approved number of connections is the **Standby Storage**.

The number of approved connections is based upon Worksheet 6-1 that was included in your WSP and the current WFI:

From Worksheet 6-1
Water System Capacity: 2795 ERUs (limiting component is **Standby Storage**)
Total Existing ERUs: - 1307 ERUs (based on 732 existing connections)
Available ERUs: 1488 ERUs

Existing number of active service connections (from current WFI): 1066
Available connections (=ERUs)*: 1488
Approved number of connections: 2554 connections

* Assumes all new connections are single family connections.

Accordingly, the approved number of connections that will be reflected on the Water Facilities Inventory (WFI) form is **2,554.**

The Soap Lake Water Department is responsible for permitting new service connections in a manner consistent with the water system plan so that the physical capacity and water right limitations are not exceeded. As new water services are requested, the Soap Lake Water Department must evaluate each connection for the expected water demands and adjust the remaining connection allowance. The water system should keep an updated list that compares the overall ERUs expended against the overall number of connections placed into service. This will allow a better estimate of the system's adequacy.

Pursuant to RCW 90.03.386(2), the "UGA BOUNDARY" identified on Figure 1-2, *Water Service Area* in the WSP now represents "place of use" for this system's water rights. Future changes in service area should be made through a WSP amendment or update.

The Soap Lake Water Department has a duty to provide new water service within its retail service area. This WSP includes service policies to describe how your system plans to provide new service within your retail service area.

Submittal of the WSP included local government consistency determinations from the City of Soap Lake, Grant County Planning Development Services, and Grant County Public Health District (representing the Grant County Coordinated Water System Plan). This WSP meets local government consistency requirements for WSP approval pursuant to RCW 43.20 for these entities.

The Soap Lake Water Department is located within Grand Coulee WRIA #42. Ecology has not determined whether the WSP was not inconsistent with an approved watershed plan. DOH encourages the water system to contact Ecology regarding this matter.

Thank you for your cooperation. DOH recognizes the significant effort and resource commitment involved in the preparation of this WSP. If you have any comments or questions concerning our review please contact either of us at (509) 329-2116 or (509) 329-2137, respectively.

Sincerely,

Russell Mau, PhD, PE
Regional Engineer
Office of Drinking Water
Division of Environmental Public Health

Jamie Gardipe
Regional Planner
Office of Drinking Water
Division of Environmental Public Health

Enclosures: Department of Ecology correspondence
Construction Completion Form

cc: Grant County Public Health District
Grant County Development Services
Darin Fronsman, PW Director
Nancy Wetch, PE, Gray & Osborne, Inc.
Tim DeVries, PE, Gray & Osborne, Inc.
Ying Fu, Department of Ecology, Eastern Regional Office
George Simon, DOH Compliance Program Manager
Matt Hadorn, DOH Regional Specialist

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
4601 N Monroe Street • Spokane, Washington 99205-1295 • (509)329-3400

July 17, 2018

Raymond Gravelle, Mayor
Soap Lake Water Department
POB 1270
Soap Lake, WA 98851

Re: Soap Lake Water Dept.; PWS ID # 81300P; Grant County Water System Management; DOH Project #18-0611

Dear Mr. Gravelle:

I have reviewed the above referenced document in accordance with the *2007 Memorandum of Understanding* between Department of Health (DOH) and Department of Ecology (Ecology), and in accordance with RCW 90.03.386. Ecology's review is focused only on the subject water system's water rights legitimacy, adequacy and related issues affecting the submitted report.

The City of Soap Lake has three state issued ground water certificates: 1012-D, 1324-D and G3-24343C. The city's water right quantity total is Qi of 2050 gpm, and Qa of 896 ac-ft/yr. The system has adequate water rights to meet existing 10 year, and 20 year growth demands. The city consolidated the three water rights in 1997 and no new water right activities needed for the next 20 years.

These are my comments at this time. Please contact me at (509) 329-3451 or yifu461@ecy.wa.gov if you have any questions regarding this letter.

Sincerely,

Ying Fu
Water Resources Program

YF: sm

cc: Jamie Gardipe, DOH

Gardipe, Jamie C (DOH)

From: Fu, Ying (ECY)
Sent: Monday, March 4, 2019 11:03 AM
To: Gardipe, Jamie C (DOH)
Subject: 2nd draft Soap Lake WSP

Good morning Jamie,

I just reviewed the 2nd draft report for Soap lake. I have no further comments.

Thanks

Ying

Ying Fu
Department of Ecology
Eastern reginal Office
4601 N. Monroe St.
Spokane, WA 99205

https://www.ecology.wa.gov/Water-Shorelines/Water-supply
email: yifu461@ecy.wa.gov
phone: 509-329-3451

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

DOH COMMENT RESPONSE FORM
City of Soap Lake – 2018 Water System Plan

DOH No.	DOH Comment	Water System Response	Page Number of Response
Chapter 1			
1.	For Well No. 3 (DOH Source S03), for the item "Casing Diameter", you show: "20/ 16/ 10"; but, Note 2 text states: "20/ 16/ 12/8". Also, the "12/8" do not apply to "casings", because liners are not casings.	The "20/16/10" in the table has been changed to "20/16." Note 2 has been revised and the reference to the liner has been split into a second sentence.	1-3
2.	In the paragraph immediately following Table 1-4, you state, in part: "... plumbed to four commercial customers ..." — who are these customers?	The list of commercial customers has been added to this paragraph. The list includes a 4-plex apartment building located at 22 S. Canna Street, the Healing Water Spa, the Soap Lake Natural Spa & Resort (Inn and Cottages), and the Soap Lake Natural Spa & Resort (Notaras Lodge).	1-7
3.	For the Booster Pumping Station, you state that the first service pump's VFD operates at 45Hz that "typically meets system demands". To What "percentage" of operation does 45 Hz correspond?	The maximum frequency is 60 Hz. The flow meter in the BPS is not functional, and without knowing the current flow rates, it is not possible to determine where on the pump curve the system is operating. Pump affinity laws show that flow is proportional to shaft speed and head is proportional to the square of shaft speed. Power is proportional to the cube of shaft speed. Therefore, at 45 Hz (out of 60 Hz max), the pump and motor are operating at approximately 42 percent of maximum power.	1-7

4.	Soap Lake is located within the Grant County Critical Water Supply Service Area. According to the Soap Lake service area boundary and service area agreement (attached) from the Grant County Coordinated Water System Plan (CWSP) on file with DOH, Soap Lake is proposing to expand their service boundaries beyond the boundaries approved in the CWSP. Please address the following: • Address the Grant County, Coordinated Water System Plan under related planning documents. • Follow the service area agreement procedures for changing the service area boundaries in the CWSP and document in the WSP. • A Local Government Consistency Form has been provided for Grant County Health District. Specify on the Form if the form is intended to cover the CWSP. If not, provide a separate consistency form for the CWSP. • Add current CWSP boundary to Figure 1-2 and make note that the UGA Boundary will also be the new water service area in the CWSP.	• The Grant County Coordinated Water System Plan has been added to the related planning documents. • A discussion of the service area agreement has been added to page 1-10. • The Local Government Consistency Form approves the service area boundary adjustment and this has been specified on the form. • Figure 1-2 has been updated with the CWSP boundary and note.	1-9, 1-10, Appendix E, Figure 1-2
5.	Provide signed copies of the Local Government Consistency Forms in Appendix E.	Grant County Public Health District and the City of Soap Lake have signed the form and the signed versions have been added to the Appendix.	Appendix E
Chapter 2			
6.	For City population as discussed in the paragraph immediately preceding Figure 2-1, from where does the City obtain its population information?	The City listed the population from previous census reports. In future WFI Forms, the City will list a number which coincides with the current OFM census data.	2-1
7.	Regarding service meters, please confirm that all water uses — irrigation, parks, schools, cemeteries, industrial, commercial — are metered.	All water uses are metered.	2-2
8.	Regarding the clarifying discussion for Table 2-3, found under Table 2-2, Well No. 1 was re-built in the summer 2016, which may explain, in part, the lesser water produced from Well No. 1 in 2016.	"Well No. 1 was used less in 2016 because it was being rebuilt during the summer" has been added to the paragraph.	2-3

9.	Regarding water consumption data provided in Table 2-4, why was SF Residential so much less in 2016 than any other year (except 2013)? Also, please note that the title for Table 2-4 should identify "2011" and not "2014".	As noted in the paragraph preceding the table, the City is not confident that its billing system provided reliable water usage data. The discussion of Distribution System Leakage (DSL) following the table also notes that 2016 was an anomaly and showed significantly increased DSL. The City is implementing Automatic Meter Reading (AMR) to improve the accuracy of their consumption data. The reference to 2014 has been corrected to 2011.	2-4
10.	Distribution System Leakage (DSL) numbers provided in Table 2-5 do not match WUE Annual Reports. Edit the table or provide an explanation for the discrepancy.	The production and consumption numbers in the WUE Annual Reports do not match the production and consumption numbers provided by the City for analysis in the WSP. It appears that the WUE reports are based on a timeframe from May to May, but the production and consumption numbers evaluated in the WSP are from January through December of each year. The numbers in the WSP should be utilized instead of the numbers in the WUE reports.	2-5
11.	For calculating the basis for an ERU, the 2016 data are not representative of usage (as evidenced by Table 2-4). The 2016 data are 14% less than the average and 25% less than the maximum year. The only way to use this extreme, and low, value is to provide a sound rationale that demonstrates that the lesser use is a result of technological (e.g., all homes equipped with low—flow flush toilets, low-flow shower heads, and/or "intelligent" lawn-watering systems) and cultural (e.g., all City residents have pledged to reduce water use). Furthermore, DOH suggests including 2017 data to assist in determining if water usage is trending downward and is sustainable. Finally, if the Residential usage in 2016 reflects a negative population impact, then the usage needs to be applied to lesser connections. Obviously, using a larger ADD value will have a "ripple effect" throughout the planning document.	In communication with DOH, additional data is not necessary. The 2016 data includes a high amount of distribution system leakage which increases the number of ERUs in comparison to the other years. The excess system capacity (limited by reservoir standby storage) would increase if the system were analyzed for the other years, so the 2016 data is actually more conservative in determining the system capacity. The City's existing source and consumption meters likely would not provide accurate data for 2017. The City will install new source meters and new consumption meters in 2019. With these improvements, the City will be able to obtain more reliable data and provide a more accurate assessment of production and consumption in the next plan. As shown in Worksheet 6-1, the system has an excess capacity of over 1,488 connections for the 20-year planning period and is not at risk of exceeding capacity.	
12.	Under Maximum Day Demand, you identify a "2.76" peaking factor for maximum week versus ADD. From where did you determine this "2.76" value?	The City records weekly production data. From these records, the maximum weekly demand is 2.76 times greater than the ADD for the period from 2014 to 2016.	2-6

13.	For the "Projected Water Demands", as provided in Table 2-9, these data are based, in part, on Table 2-7 that is based on "production", not consumption. So, Table 2-9 is including DSL as part of the demand, versus subtracting DSL from ADD and then only peaking ADD for MDD and then PHD. While this approach is "conservative", it does not provide the opportunity to tie DSL together with an ERU capacity and then show the "cost" of DSL (i.e., unless DSL is reduced, the associated ERUs are connections that do not have capacity to connect).	The MDD peaking factor is estimated based on the City's production data to be 2.8 times the ADD. This number is used to establish the MDD and PHD for 2016. As noted in Note 2 for Table 2-9, DSL is assumed to remain constant at the 2016 value for the projected years. The City will continue to tracks its DSL percentage in comparison to its single family residential water usage to be aware of the reduced number of allowable connections. No change to the table has been made.	2-9
14.	Population numbers in this chapter do not match the WFI. Please update the WFI or explain the discrepancy.	Population numbers match the census data projections. The population listed in the WFI differs from the census data as noted in the response to DOH comment 6. The City will update the population numbers in its next WFI.	2-1
Chapter 3			
15.	For the nitrate water quality, given on Page 3-4, the two most recent years of data show the following (where "LT" means "Less Than" — and is an indication of the sensitivity of the particular test/device): (Table included in Letter)	The nitrate and nitrite test results have been updated.	3-4
16.	For Table 3-3, please describe and show calculations for "Q (required)".	Additional footnotes have been added to show the calculations.	3-6
17.	For the Qa data evaluated in Table 3-4, does this reflect the water rights discussion presented on Page 1-5?	Yes, the annual water rights shown in the table match the annual water rights discussed on Page 1-5.	3-4
18.	For Operational Storage, please state that the referenced 8 feet apply to the East Reservoir (you do state this on Page 3-13). Also, Table 6-4 identifies 7 feet of operational storage.	"The telemetry references the level in the East Reservoir for operation of the wells" has been added to the discussion. Table 6-4 has been updated.	3-9
19.	For the discussion of City pressure following the expansion of the Upper Pressure Zone, in the paragraph immediately following Table 3-5, what is the resulting pressure when the reservoir is emptied (Fire Flow Storage and Standby Storage have been "consumed")?	A note has been added stating that, per Table 3-5, the lowest pressure in the system after FSS and SB storage have been depleted is 27 psi.	3-11
20.	For the discussion of the Upper Pressure Zone, you identify a pressure of 37 psi; however, this is only a static pressure, what is the result of pumping at 45 psi and then having conveyance head loss?	Head losses within the piping are assumed to be negligible. The land to the north, where the elevation is higher than the BPS, is currently not subdivided into parcels. Even if the land were subdivided into 100 new single family residential parcels, the estimated peak hour demand of 90 gpm would only result in a flow velocity of 0.6 ft/s in an 8-inch diameter pipeline. Assuming a	3-11 to 3-12

		length of 2,000 feet from the BPS, this would result in only approximately 0.33 feet of head loss.	
21.	Also regarding the Upper Pressure Zone, for the summary data provided in Table 3-6, the WSDM states (DOH recommends) that a booster pump station, in a closed system, be evaluated for capacity based on the largest pump out-of-service. Please confirm that all four (4) pumps in the booster pump station can be automatically operated to maintain flow/pressure — and then evaluate one of these pumps being off-line.	The pumps automatically turn on in series (Service Pump 1, then Service Pump 2, then Fire Pump 1, then Fire Pump 2) to maintain flow and pressure if the previous pump(s) cannot meet system demands. The BPS can meet system demands with one pump out of service, but fire flows would be reduced if a pump is out of service.	3-13
22.	For the flow meter for the booster pump station, why has this not been fixed yet?	The City does not measure or bill the upper pressure zone separately and the replacement has not been prioritized. It is agreed that this should be replaced.	3-13
23.	Does Table 3-8 reflect the Qa issue, as described on Page 1-5?	Yes, Table 3-8 includes an instantaneous withdrawal of 2,050 gpm and an annual withdrawal of 896 acre-feet	3-16
24.	For the Source and Qi capacity limits (shown in Worksheet 6-1), do these include "throttling" the sources to only be equal to Qi?	Yes, the sources are assumed to be throttled to prevent exceeding the instantaneous water rights.	3-17
25.	For Worksheet 6-l, can you calculate a specific capacity of the Upper Pressure Zone, based on the booster pumps' collective pumping capacity?	The BPS has been added to Worksheet 6-1.	3-17
Chapter 4			
26.	DOH recommends the WUE goal for reduction in DSL also include improving the recording of DSL. DOH also recommends the chapter be updated to reflect the recording issues.	"Improve recording accuracy for production and consumption values used in DSL calculations" has been added to the supply side goal of reducing DSL. The Water Loss Control Action Plan includes a discussion of the potential recording issues in the source meters or the City's billing software and service meters.	4-2 and 4-6
27.	The minutes from the City Council meeting on January 17, 2018 in Appendix N need to be signed. Additionally, page 4-2 refers to Appendix N for the affidavit. Appendix N does not include this. Please provide or remove the reference.	The signed minutes and Affidavit have been added to the Appendix.	4-2, Appendix N
28.	The Department of Ecology has issued a comment letter regarding this submittal. Please address any issues contained in the letter in the second draft.	The Department of Ecology's letter does not contain any items that need to be addressed.	N/A
Chapter 5			

29.	Under the notifications section, please state the date the last letters were sent (required to be sent every 2 years) or provide a copy of last letter sent with date.	The date that the letters were last sent has been added to the section.	5-8
30.	When were the susceptibility assessments in Appendix I completed? Provide date in text or on assessments.	It is believed that these assessments were completed in 2001, based on the note "in 2001" on Part IV of each assessment. This date has been added to the text.	5-1
Chapter 6			
31.	For Table 6-3, the reservoir hatch should be investigated at least monthly to ensure it is locked closed; the screens on the reservoir vent and the well vents should be investigated at least monthly.	This has been added to the table.	6-2
32.	For Table 6-4 information, it might be reasonable to include a low level alarm.	The City can read the pressure in the reservoir at the treatment plant, but there is not currently an alarm. The City will consider adding an alarm for a low water level in the reservoir.	6-3
33.	For Cross-connections Control, can you provide a listing of all backflow prevention devices, a copy of the letter sent to the "owners" of these devices alerting them to the need to conduct annual testing (as appropriate), and identify the date of the most recent testing?	A copy of the letter sent to owners of the devices, a listing of the owners, and copies of the most recent testing, completed in April and May of 2018, have been added to Appendix F.	Appendix F
34.	Table 6-7 needs to include replacing the flow meter for the Upper Pressure Zone.	This has been added to the table.	6-5
Chapter 7			
35.	Provide some type of specifications or a specification page that identifies: • Approved pipe materials • Bedding and backfill meets WSDOT specifications • Separation/protection requirements for water lines with respect to any other type of nonpotable underground piping • Disinfection for all piping and piping appurtenances, including AWWA C651 for piping • Approved pressure testing • Flushing • Coliform testing (successful) prior to using the piping	The City is in the process of updating their Construction Standards. A draft of the updated standards which addresses these items has been added to the Appendix. When these standards are adopted, the City will send the updated version to DOH for approval.	7-1 and Appendix J
36.	You can remove the Sewer Details and Street Details, unless they have some type of reference for proper water line	The sewer and street details have been removed for the Water System Plan.	Appendix J

	installation — in such a case, please let DOH know of the reference.		
Chapter 8			
37.	On page 8-1, the first paragraph refers to a six year planning period. Revise to ten years.	This reference has been revised to ten years.	8-1
38.	On Figure 8-1, improvements #13 and #14 are shown on the map but not listed under improvements in the legend. Please update.	The figure has been revised so that the numbering matches Table 8-2. Numbers 13 and 14 have been removed. The list of projects has also been slightly revised.	Figure 8-1
Other			
39.	In the Table of Contents, Page ii is missing from our copy. Please provide in second submittal.	Page ii will be included in the final copy.	TOC ii
40.	In Appendix B-2, please confirm that the Coliform Monitoring Plan is updated for both GWR and RTCR.	The Coliform Monitoring Plan has been updated per the current template.	Appendix B-2
41.	Provide signed copies of the SEPA checklist and DNS.	The signed SEPA checklist is included. The City Planner always provides his electronic signature on the DNS.	Appendix L
42.	The water system must meet the consumer input process outlined in WAC 246-290-100(8). Please include documentation, including notice and signed meeting minutes, of a consumer meeting discussing the Water System Plan prior to its approval.	The Affidavit of Publication providing notice of the Water System Plan update and the signed minutes have been added to Appendix N.	Appendix N
43.	When DOH is ready to approve the document we will notify you. At that time the governing body will need to officially approve the Water System Plan and send DOH documentation of plan approval by the governing body, such as a copy of the signed meeting minutes or a copy of the signed resolution. When the documentation is received we will send a letter documenting DOH approval.	Noted.	N/A

Water System Plan Submittal Form

This form must be completed and submitted along with the Water System Plan (WSP). It will expedite review and approval of your WSP. **All water systems should contact their regional planner before developing any planning document for submittal.**

1. City of Soap Lake Water System Name	81300 PWS ID# or Owner ID#	City of Soap Lake Water Systems Owner's Name
Darrin Fronsman Contact Name for Utility	509-246-1211 Phone Number	Public Works Director Title
239 Second Ave SE Contact Address	Soap Lake City	WA 98851 State Zip
2. Nancy Wetch, P.E. Gray & Osborne, Inc. Project Engineer	509-453-4833 Phone Number	Engineer Title
180 Iron Horse Ct Project Engineer Address	Yakima City	WA 98901 State Zip
3. Karen Hand Billing Contact Name (required if not the same as #1)	509-246-1211 Billing Phone Number	509-246-1213 Billing Fax Number
239 Second Ave SE Billing Address	Soap Lake City	WA 98851 State Zip

4. How many services are presently connected to your system? 1,066
5. Is your system expanding (*circle what applies:* seeking to extend service area or increase number of approved connections)? ☐ Yes ☒ No
6. If the number of services is expected to increase, how many *new* connections are proposed in the next six years? 88
7. If your system is private-for-profit, is it regulated by the State Utilities and Transportation Commission? ☐ Yes ☐ No
8. Is the system located in a Critical Water Supply Service Area (i.e., have a Coordinated Water System Plan)? ☐ Yes ☒ No
9. Is your system a customer of a wholesale water system? ☐ Yes ☒ No
10. Will your system be pursuing additional water rights from the Department of Ecology in the next 20 years? ☐ Yes ☒ No
11. Is your system proposing a new intertie? ☐ Yes ☒ No
12. Do you have projects currently under review by us? ☐ Yes ☒ No
13. Are you requesting distribution main project report and construction document submittal exception and if so, does the WSP contain standard construction specifications for distribution mains? ☒ Yes ☐ No
14. The water system is responsible for sending a copy of the WSP to adjacent utilities for review or a letter notifying them that a copy of the WSP is available for their review and where the review copy is located. Has this been completed? ☒ Yes ☐ No
15. The purveyor is responsible for sending a copy of the WSP to all local governments within the service area (county and city planning departments, etc.). Has this been completed? ☒ Yes ☐ No
16. Are you proposing a change in the place of use of your water right? ☐ Yes ☒ No
17. What is the last year of the plan approval period (the year the shortest WSP projection is made)? 2028

If answer to questions 7,8, 11, 14 and/or 15 is "yes," list who you sent the WSP to: Grant County, Grant County Public Health District, City of Soap Lake planner

Is this plan: ☐ an Initial Submittal ☒ a Revised Submittal

Please enclose the following number of copies of the WSP:

3 copies for Northwest and Southwest Regional Offices **OR 2** copies for Eastern Regional Office (We will send one copy to Ecology)
1 additional copy if you answered "yes" to question 7. 2 Total copies attached

Please return completed form to the Office of Drinking Water regional office checked below.

☐ **Northwest Drinking Water Operations**
Department of Health
20425 72nd Avenue South, Suite 310
Kent, WA 98032-2358
253-395-6750

☐ **Southwest Drinking Water Operations**
Department of Health
PO Box 47823
Olympia, WA 98504-7823
360-236-3030

☒ **Eastern Drinking Water Operations**
Department of Health
16201 East Indiana Avenue Suite 1500
Spokane Valley, WA 99216
509-329-2100

For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

Mineral water system downsized
Improved pressure zone

Department of Health, Office of Drinking Water
Eastern Regional Office
Pre-Plan Agreement

Upcoming:
Reservoir maintenance
Well #1 new motor

Water System Name:	Soap Lake Water Dept	**Initial/Update:**	Update
Public Water System ID Number:	81300	**Number of Connections:**	1066/2385
Preplan Date:	June 20, 2016	**Planning Purpose:**	Large System WAC 246-290-100(2)(a)
Existing WSP expiration date:	June 15, 2018	**Operating Permit Color:**	Green
WSP Submittal Due Date:	June 20, 2017		

WAC 246-290-100 requires purveyors of any new water systems, a system in a water coordination act area, a system serving 1,000 or more service connections, or a system that is growing or experiencing problems to submit a Water System Plan (WSP). The purpose of this preplan meeting is to determine the scope and level of detail of the WSP and establish a schedule for submittal of the document. This agreement is valid until the WSP submittal due date above. After this date, the agreement will need to be renegotiated. The operating permit color will change to yellow for planning purposes if the WSP is not received by the existing WSP expiration date noted above.

Pre-Plan Attendees:	Darrin Fronsman, Soap Lake	
Russell Mau, PE, Ph.D., DOH	Nancy Wetch, PE, G&O	
Brian Sayrs, DOH	Jamin Ankney, PE, G&O	

Water System Plan (WSP) Checklist for Municipal Systems

Include in plan	*Content Description*	*WSP Page #*
(√)	**Water System Plan Submittal Form**	
Chapter 1	**Description of Water System**	
(√)	Ownership and management (updated/current WFI)	1-1
(√)	System history and background	1-1
(√)	Brief inventory of existing facilities – listing not unlike what you have in current plan, be more specific in Chapter 3	1-3
(√)	Description of and discussion about related plans: CWSP, ground water management, basin and City/County land use plans & zoning. Include land use maps for 6 & 20-years	1-8
(√)	Service area characteristics, agreements, & policies including conditions of service and how new service will be provided in the retail service area. Include maps for existing water rights place of use service area & for existing, future, retail and expanded water rights place of use service areas	1-8
(√)	Duty to serve statement for the retail service area – current version is fine	1-9
( )	~~Satellite Management Agency information~~	N/A
(√)	Local Government Consistency from planning agencies – City of Soap Lake, Grant County, CWSP Admin	App. E
( )	~~ODW will generate a "not-inconsistent" statement for the appropriate WRIA.~~	N/A

Chapter 2	**Basic Planning Data**	
(√)	**Current data:** population, service connections & ERUs	2-1,2-2,2-10
(√)	**Data Collection:** Monthly and annual production totals per source including purchased water Annual usage by customer class Annual usage for water supplied to other systems Description of seasonal variations in use by customer class	2-3 to 2-5
(√)	**6 & 20 year service area projections for:** Years 2024 (or 2028) and 2038 Land use (Comprehensive Plan) Zoning Population, service connections & ERUs Water demand - use WAC 246-290-221 and include demands with and without expected efficiency savings	2-9 to 2-10
(√)	DSL percentage and volume (provide discussion in Chapter 4)	2-5
(√)	Demand forecast if all measures deemed cost-effective were implemented	4-5
Chapter 3	**System Analysis**	
( )	System design standards (fire flow, system pressures, etc.)	3-2, 3-3
(√)	System inventory, description and analysis – provide full asset descriptions, installation date, expected life	3-4 to 3-12
(√)	Source	3-4
(√)	Storage	3-7
(√)	Distribution system/hydraulics (with equalization & FFS depleted)	3-13
(√)	Add pressure zones – including future pressure zones in the northeast	3-12
( )	~~Treatment~~	N/A
(√)	Written legal & physical system capacity analysis & DOH ERU Determinations (WSDM 6-1) form	3-17
(√)	Water quality analysis	App. B
(√)	Lead component identification and removal plan	3-4
(√)	Summary of system deficiencies	3-16
(√)	Analysis of possible improvement projects	Ch. 8
Chapter 4	**Water Resource Analysis & Water Use Efficiency (WUE)**	
(√)	**Metering Program** • Description of all source meters (existing and new sources) – address data measurement reliability • Description of service meter program include how all meters are operated, calibrated, & maintained~~, if not fully metered submit installation schedule & include in the budget~~ ~~• Description of permanent & seasonal intertie meter program, if not fully metered submit meter installation schedule & include in the budget~~ ~~• Describe activities to minimize leakage if not fully service & intertie metered~~	4-2

For WUE, provide a program update. Provide complete program if not in previous plan.

(√)	**Water Use Efficiency Program (WUE)** A WUE program should be designed to achieve the WUE goal by implementing cost effective measures per WAC 246-290-810 1. Describe the current conservation (WUE) program 2. Describe WUE goal & document public adoption process (include signed minutes) 3. Describe measures that will be implemented to achieve the goal & include schedule & costs in the budget – Provide 5 additional methods 4. Describe process used to evaluate the WUE measures you did not implement – see bracket below 5. Describe yearly consumer education - or provide a sample 6. Estimate projected water savings from selected measures 7. Describe process that will be used to determine effectiveness of the program – what data? who decides? See WUE Guidebook DOH Pub 331-375	4-2 to 4-7
(√)	≥ 1000 Connections For measures evaluated NOT implemented: • Estimate water saved from efficiency measures over the past 6 years • Quantitative evaluation of measures to determine if they are cost-effective, include marginal costs of water production • Evaluate measures for cost-effectiveness if shared with other systems • Quantitative or qualitative evaluation of measures to determine if they are cost-effective from the societal perspective	4-3 to 4-4
(√)	**Distribution System Leakage (DSL)** – please recalculate. Evaluate and report DSL - WAC 246-290-820(2)	4-6
( )	**Water loss control action plan (WLCAP)** ***- if DSL is > 10%*** Submit the WLCAP as required by WAC 246-290-820(4)	4-7
(√)	**Source of supply analysis:** ~~• Evaluate water supply alternatives if additional water rights will be pursued within 20 years~~ • Describe water supply characteristics & discuss any foreseeable impact (quantity & quality) to the resource (WAC 246-290-100 (4)(f) (ii) (B))	4-8
(√)	**Water rights self-assessment: Consult with Ecology regarding water rights prior to plan submittal.** Put all water right information together in Chapter 4, including water right self-assessment forms for existing, 6 (or 10) & 20 year. – match with the dates in your projections	4-10
(√)	Water supply reliability analysis – depth to water at least seasonally or needed improvements in CIP and budget	4-8
( )	~~Interties – descriptions and agreements~~	N/A
(√)	≥ 1000 connections - explore reclaimed water opportunities – at least an inventory of possible uses/locations	4-8
Chapter 5	**Source Water Protection (Check One or Both)**	
(√)	Wellhead protection program or 2 year update (updated inventory, letters, and map) per WAC 246-290-135	Ch. 5
( )	~~Watershed control program (surface water systems)~~	N/A
Chapter 6	**Operation and Maintenance Program**	
(√)	Water system management and personnel	6-1
(√)	Operator certification	6-1
(√)	Routine operating procedures and preventive maintenance	6-2
(√)	Water quality sampling procedures & program	App. B1
(√)	Coliform monitoring plan and map - RTCR	App. B2

(√)	Emergency program, service reliability requirements & water shortage plan per WAC 246-290-420	App. G
(√)	Address sanitary survey findings └> See DOH Publication 331-301	6-4
(√)	Cross-connection control program – provide a copy of annual summary report form	App. F
(√)	Recordkeeping, reporting, and customer complaint program	6-3
(√)	Summary of O&M deficiencies, include cost in budget	6-5, Ch. 8
Chapter 7	**Distribution Facilities Design and Construction Standards**	
(√)	Standard construction specifications for distribution mains	App. J
( )	Design and construction standards for distribution-related projects Optional, if water system wants this	App. J
Chapter 8	**Improvement Program**	
(√)	Capital improvement program including 6-year CIP schedule – or 10-year, match projection	8-4
Chapter 9	**Financial Program (See Financial Viability Manual)**	
	A financial program to demonstrate financial viability:	
(√)	Summary of past income and expenses	9-2
(√)	> 1000 connections – Balanced 1-year operational budget ① ② ③	9-2
(√)	Plan for collecting the revenue necessary to maintain cash flow stability and to fund capital and emergency improvements – for full CIP timeframe. If DWSRF is used, include asset management program or funded work plan.	9-4 to 9-5
(√)	Rate structure evaluation that considers the feasibility of implementing rate structure that encourages water demand efficiency -- evaluation of seasonal rate or inclining block rate, qualitative is fine.	4-7
Chapter 10	**Miscellaneous Documents**	
(√)	Informational meeting for the consumers, include notification and signed minutes	need
(√)	Attach notice to adjacent utilities that WSP is available for review & comment. Attach comments received.	App. M
(√)	>1000 connections - completed SEPA process with signed Determination – City is lead agency	App. L
(√)	Agreements: franchise, wheeling, mutual aid, inter-local and other agreements	N/A
( )	~~Satellite Management Contract and Water User Agreement~~	N/A
(√)	When DOH is ready to approve the final WSP, the plan must be adopted by the governing body; include meeting minutes	need

***All maps should be a minimum of 11”x17”**
***If requesting source approval with WSP include all source documents in a separate section**

Please deliver **2** copies of the water system plan to arrive by the WSP Submittal Due Date above. We will forward one copy to Ecology. Ecology copy may be electronic.

The fee for review of the first and second drafts is **$3,705**. An additional 25% fee will apply for the review of additional drafts. DOH will invoice you upon receipt of the first draft.

CITY OF SOAP LAKE

GRANT COUNTY **WASHINGTON**

WATER SYSTEM PLAN

NANCY J. WETCH
STATE OF WASHINGTON
42805
REGISTERED
PROFESSIONAL ENGINEER

6.27.19

G&O #16040
JUNE 2019

Gray & Osborne, Inc.
CONSULTING ENGINEERS

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CHAPTER 5 – WELLHEAD PROTECTION PROGRAM

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EXECUTIVE SUMMARY

The objectives of this water system plan are to evaluate the performance and adequacy of Soap Lake's existing water supply and distribution system and to describe steps the City must take to meet the demands of its 10-year and 20-year planning periods. This plan has been written to comply with WAC 246-290-100, the Washington State Department of Health's rules for developing a water system plan.

PLANNING

The City's residential population, estimated at 1,535 in 2016, is expected to grow at an annual rate of 1.5 percent to 2,130 by 2038. This growth will result in an increase in the City's water demands. The City's average day demand is expected to increase from an average of 337,000 gallons per day in 2016 to 430,000 gallons per day in 2038. Its maximum day requirement is expected to increase from 656 gpm in 2016 to 836 gpm in 2038.

CAPITAL IMPROVEMENTS

Improvements needed to meet the City's future demands are summarized below.

- *Source/Supply.* The City has two wells, Well No. 1 and Well No. 3 that have capacities of 1,000 gpm and 1,100 gpm, respectively. These wells provide the City with sufficient supply capacity to meet its 2038 MDD with its larger well, Well No. 3, out of service. Well No. 1 was drilled in 1940 and may need to be replaced within the next 20 years.

- *Water Rights.* The City's instantaneous water rights provide 2,050 gpm. The two wells have a combined capacity of 2,100 gpm. Well No. 1 has a VFD which can be used to throttle production to keep the City within its water rights in the event that both wells are needed simultaneously. The City's annual withdrawal rights, 896 acre-feet per year, are sufficient to meet its 20-year requirements of 498 acre-feet per year. Consequently, no new water rights are needed for the 20-year planning period.

- *Storage.* The City's two 500,000 gallon reservoirs provide sufficient storage to meet 20-year requirements of 743,200 gallons. The City has determined that the bolted steel West Reservoir should be replaced within the 20-year planning period because it is a significant source of leakage and ongoing maintenance has been expensive.

- *Treatment.* The City does not provide disinfection and is currently not required by the Department of Health to do so. The City plans to continue its efforts to provide a high level of water quality in its system without disinfection.

- *Telemetry.* The City's telemetry system meets its current needs. Replacement of software is planned within the 10-year planning period and replacement of the equipment is planned within the 20-year planning period.

- *Booster Pumping Station/Upper Pressure Zone.* The City operates a booster pumping station that serves residential customers in the northeast section of town near the East Reservoir. No major improvements are required.

- *Transmission and Distribution.* The City plans to make several distribution system improvements within the 20-year planning period to improve fire flow and system operation. The City plans to complete various water main improvements within the planning period. The City also plans to replace a significant number of fire hydrants and install a new Automatic Meter Reading (AMR) system to assist in identifying leakage and reducing staff time spent reading meters.

- *Operation and Maintenance.* The City plans to implement several operation and maintenance items, continuing to inspect the bolted connections at the West Reservoir for leakage, periodically replacing or calibrating source and large service meters, replacing aging valves, hydrants, and service meters, and replacing aging distribution lines.

CAPITAL IMPROVEMENT PROGRAM

The City's 10-year capital improvement program is summarized in Table ES-1.

TABLE ES-1

Capital Improvement Program

Project	2017 Cost	Schedule
Source		
New Well (1,000 gpm)	$1,500,000	2029-2038
Storage		
West Reservoir	$500,000	2029-2038
Telemetry		
Software Upgrades	$15,000	2021
Equipment Upgrades	$171,000	2029-2038
Distribution		
Fireflow Improvements	$875,000	2020
Distribution Improvements	$1,780,000	2020
Fire Hydrant Replacement	$234,500	2020
Automatic Meter Reading System	$280,000	2020
Operation & Maintenance		
Maintain Bolted Steel Reservoir	$5,000	Annually
Source Meter Replacement/Calibration	$2,000	2019 & biennially
2-in Meter Replacement/Calibration	$2,000	2019 & biennially
Valves, Hydrants, Service Meters	$3,000	Annually

FINANCING

The 10-year financial analysis performed for this plan was based on assumptions that the City's growth would remain flat, and that its expenses would increase an annual inflation rate of 3 percent. Projected rate increases were consistent with the recommendations made by FCS Group in 2017, which included a 20 percent rate increase in 2018, annual rate increases of 18 percent for from 2019-2020, and then 3.5 percent annually thereafter. The analysis assumed that the City would complete the Distribution improvements identified in Table ES-1 utilizing the USDA Rural Development (RD) program. The rate increases recommended by FCS Group are projected to allow the City to repay the RD loan while continuing to accumulate reserves for future projects and emergency reserves.

CHAPTER 1

DESCRIPTION OF THE WATER SYSTEM

This chapter presents information on ownership and management of the system, system background data, the existing system facilities inventory, related planning documents, existing and future service areas and characteristics, and service area agreements and policies.

OWNERSHIP AND MANAGEMENT

A Mayor and City Council govern the City of Soap Lake. The water system is owned by the City and operated and managed by City employees. The City's Public Works Director is Mr. Darrin Fronsman, and the City's Finance Director is Ms. Karen Hand. The City's current mailing address and primary phone number are the following:

City of Soap Lake
PO Box 1270
239 Second Ave SE
Soap Lake, Washington 98851
(509) 246-1211

The City's Department of Health (DOH) identification number is 81300P. A copy of the City's Water Facility Inventory form is provided in Appendix A, and a copy of the City's operating permit is provided in Appendix C. A vicinity map is shown on Figure 1-1.

The City's Public Works Director, Mr. Darrin Fronsman, maintains a certification as Water Distribution Manager (WDM) 2. The Public Works Director has discretionary control of the water system budget to make purchases and to have work performed. For situations where large expenses are required or long term decisions are needed, the Public Works Director works in conjunction with the Mayor and City Council to determine a course of action and method of funding. The Public Works Director consults the City's most current Water Facility Inventory form and recent planning documents to determine the number of connections the system can serve, and uses these documents to guide planning efforts and to plan short-term project phasing. The Public Works Director works with the City Engineer, Gray & Osborne, when large projects are necessary, when the City is seeking funding for a project, or if a developer requires above average fire flow.

BACKGROUND

HISTORY OF THE WATER SYSTEM

The healing powers of Soap Lake's mineral water were well-known to Native Americans long before the Lewis and Clark Expedition passed through the state. The area's development as a healing center and resort destination for American settlers began at the turn of the 20th century with the arrival of the railroad. During this period, several

sanitariums were built to treat patients with Buerger's disease, psoriasis, and other skin, circulatory and digestive ailments. A separate mineral water distribution system, still partially intact today, was constructed to make the lake's healing water available to these and other facilities.[1] The City saw a more diverse population develop during the 1930s with the construction of Grand Coulee Dam, and an agricultural base took root as dam construction transitioned to the expansion of the Columbia Basin Project. Recently, the City has seen an influx of artists, and has become the home for many retirees.

The City's original water system consisted of the original Well No. 1, a small distribution system, and a 300,000 gallon concrete reservoir. Records do not clearly indicate when these facilities were constructed. The City's current Well No. 1 was drilled in 1940 and is located approximately 50 feet south of the original Well No. 1. The original well was decommissioned in 1958. Well No. 2 was drilled in 1952, and has been taken out of service because of its proximity to the City's wastewater treatment facility.

In 1974, the City constructed a 500,000 gallon welded steel reservoir on the east side of town. At that time, the City had plans to remove the original 300,000 gallon reservoir, but funding to do so was not available. However, that reservoir was disconnected from the City's distribution system. The City constructed the 500,000 gallon bolted steel reservoir and Well No. 3 in 1997. Both are still in use. Well No. 2 was taken out of service at that time.

WORK COMPLETED SINCE THE LAST PLAN

The City has completed the following capital improvements which were identified in Chapter 8 of the 2012 Water System Plan Update:

- Booster Station Modification (Improvement 8)
- Pressure Zone 2 Expansion (Improvement 9)
- Repair Leaks on Bolted Steel Reservoir (Improvement 11)
- Adjust Altitude Valve at West Reservoir (Improvement 12)
- Replacement of fire hydrants throughout the City

WATERSHED PLANNING

Soap Lake is located in Water Resource Inventory Area (WRIA) 42. In January 2015, the Department of Ecology issued an updated "Focus on Water Availability" for the Grand Coulee Watershed, WRIA 42. There is no watershed plan for the area.

INVENTORY OF EXISTING FACILITIES

The following section summarizes the quantity, type, and capacities of the various components of the existing water system. The potable water system for the City currently

[1] Currently only four customers have access to the mineral water system. The mineral water system is non-potable, is separately plumbed, and is not connected to the City's domestic water system.

SOAP LAKE

WELL NO.3

WELL NO.2 (INACTIVE)

WEST RESERVOIR

WWTF

WELL NO.1

CITY HALL

BOOSTER STATION

EAST RESERVOIR

UPPER PRESSURE ZONE

MAIN PRESSURE ZONE

LAKE SHORE DR

3RD AVE NW

5TH ST

MAIN

ST W

1ST AVE NE

MAIN AVE

2ND AVE NE

3RD AVE NE

4TH AVE NE

WOODLAND ST

SCENIC DR

EAST LAKE AVE

JUNIPER ST

HEMLOCK ST

GINKGO ST

FIR ST

EVERGREEN ST

DOGWOOD ST

CHERRY ST

BIRCH ST

ASH ST

DIVISION ST N

2ND AVE SE

2ND AVE SW

3RD AVE SE

4TH AVE SE

5TH AVE SE

6TH AVE SE

7TH AVE SE

8TH AVE SE

ASTER ST S

BUTTERCUP ST S

DIVISION ST S

2ND PL SE

3RD PL SE

LAKEMORE DR

CANNA ST N

ELDER ST N

FERN ST N

GLADIOLA ST N

CANNA ST S

ELDER ST S

FERN ST S

GLADIOLA ST S

SR 17

SR 28

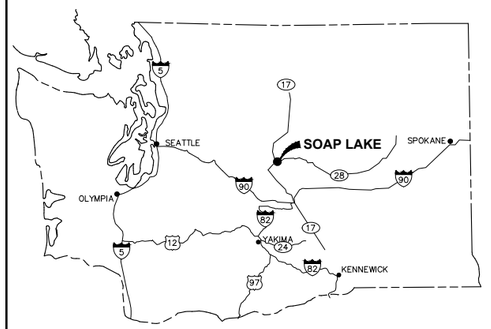
1000' 500' 0 1000' 2000'

SCALE: 1"=1000'

LEGEND

- R RESERVOIR
- W WELL
- B BOOSTER STATION
- CITY LIMITS
- UGA BOUNDARY
- PRESSURE ZONE

PVC	DI	AC	STL
<3" WATER	<3" WATER	<3" WATER	<3" WATER
4" WATER	4" WATER	4" WATER	4" WATER
6" WATER	6" WATER	6" WATER	6" WATER
8" WATER	8" WATER	8" WATER	8" WATER
12" WATER	12" WATER	12" WATER	12" WATER



VICINITY MAP

CITY OF SOAP LAKE

WATER SYSTEM PLAN

FIGURE 1-1

EXISTING WATER SYSTEM

Gray & Osborne, Inc.

CONSULTING ENGINEERS

M:\Soap Lake\16040 – Water System Plan\Figures\FIGURE 1-1.dwg, 1/17/2019 1:31 PM, TIM DEVRIES

consists of two wells, two reservoirs, a small booster pumping station that provides service to a small upper pressure zone, and approximately 15 miles of water distribution lines. A map of the water system is shown on Figure 1-1.

SOURCE OF SUPPLY

The City's water supply is provided by two wells, Well No. 1 and Well No. 3. The City has a third, inactive well, Well No. 2, that was removed from active status following construction of the City's wastewater treatment infiltration lagoons that are located a few hundred feet upgradient. The pump and motor have been removed from this well. At this time, DOH has not indicated whether this well, which was cased to 96 feet below ground surface (bgs), can be put back into service, or whether it must be decommissioned. The City plans to continue to monitor the well before deciding whether to decommission it. Pertinent data for the City's wells are provided in Table 1-1. Well logs are provided in Appendix I.

TABLE 1-1

Existing Water System: Active Sources

Parameter	Well No. 1	Well No. 2	Well No. 3
DOH Source Name	S01	S02	S03
Usage	Permanent	Inactive	Permanent
Year Drilled	1940	1952	1997
Well Tag Number	AEH357	Unknown	AEH358
Well Depth, feet	466	435	901
Casing Diameter, inches	8	16	20/16 (2)
Casing Depth, ft	466 (1)	96	505/686/901 (2)
Ground Surface El., ft,	1118	1110	1135
Static Water Level, ft bgs	+5 to -15 (3)	57	25
Pump Type	Turbine	NA	Submersible
Pump Manufacturer	American-Marsh	NA	Byron Jackson
Motor Size, hp	75	NA	75
Motor Manufacturer	U.S. Motors	NA	Byron Jackson
Motor Speed, rpm	3,500	NA	1,800
Rated Flow, gpm	1,000	NA (4)	1,100

(1) See discussion below.
(2) The well includes a 90 ft long, 20-in diam. surface seal and a sealed 16-in casing from 0 to 505 ft bgs. The well also includes a 12-in liner perforated between 586 and 686 ft bgs, and an 8-inch liner perforated between 755 and 901 ft, bgs.
(3) The well log indicates an artesian pressure of up to 2 psi, depending on the time of the year.
(4) The 1952 well log indicates the yield for this well was 1,000 gpm.

Well No. 1, originally drilled in approximately 1940, is described on a 1975 well log as

being cased the entire 466-foot length of the 8-inch borehole. Reports written prior to the 1975 log support this description of the well. The 1975 log also indicates that "fair quality water" was encountered between 54 and 270 feet, bgs, and "excellent water quality" was found between 430 and 460 ft, bgs. It is not clear why these water bearing zones would have been sealed off, and it does not seem likely that the source of the entire 1,000 gpm capacity is obtained from a single opening at the bottom of the well, which is described in the well log as being "solid basalt." In 2016, a new pump, motor, and VFD were installed in Well No. 1, increasing its capacity from 800 gpm to 1,000 gpm. The VFD can be used to manage the output from the well, preventing the City from exceeding its instantaneous water rights.

Well No. 3 was drilled in 1997 and is equipped with a submersible turbine pump. Its water bearing zones include 3/16-inch by 2.5-inch perforations from a depth of 586 feet bgs to 686 feet bgs and from 755 feet bgs to 901 feet bgs. The well is believed to be in good condition.

WATER RIGHTS

As indicated in Table 1-2, the City currently holds water rights for a total instantaneous withdrawal (Qi) of 2,050 gpm and an annual withdrawal (Qa) of 896 acre-feet per year.

TABLE 1-2

Existing Water System: Water Rights

Parameter	Water Right Certificate Number		
	1012-D (1)	**1324-A**	**G3-24343**
Name on Certificate	Soap Lake	Soap Lake	Soap Lake
Priority Date	May 1937	16 Nov 1951	15 Nov 1974
Purpose of Use	Municipal	Municipal	Municipal
Original Certificate			
Source Name	Well No. 1 (2)	Well No. 2 (3)	Well No. 3
Instantaneous, Qi, gpm	400	1000	650
Annual, Qa, ac-ft/yr	224	672	0
Superseding Certificate			
Source Name	Wells No. 1, 2 & 3	NA (4)	Wells No. 1, 2 & 3
Date Issued	2004	NA (4)	2004
Combined Qi, gpm	2,050	NA (4)	2,050
Combined Qa, ac-ft/yr	896	NA (4)	896

(1) This certificate issued in 1951 under RCW 90.44.090, which provided a declaration period during which certificates could be issued for ground water withdrawals vested prior to adoption of the 1945 ground water code.

(2) Both the old and the current Well No. 1 are located in the same Government Lot 4 identified on the original certificate, and are therefore covered under this right.

(3) This well was originally called Well No. 3.

(4) Ecology did not issue a superseding certificate for this right, but returned it to permit subject to the conditions of the 1997 Report of Examination. See discussion below.

The combined Qi and Qa quantities listed at the end of the table represent a 2004 consolidation of the water rights associated with Well No. 1, Well No. 2, and Well No. 3. This consolidation allows the City to withdraw its Qi and Qa quantities from any combination of these three wells.

During the consolidation process, Ecology recognized that the annual quantity authorized under 1012-D (224 ac-ft/yr) and G3-24343 (0 ac-ft/yr) had been perfected, but that the quantity under 1324-A (672 ac-ft/yr) had not. Consequently, Ecology issued superseding certificates for the two perfected rights and returned 1324-A to permit, subject to the conditions of the 1997 Report of Examination.

The October 6, 2004 letter from the Department of Ecology extended the deadline for Proof of Appropriation of water right 1324-A to July 1, 2022. At that time, assuming the water has not yet been fully put to beneficial use, the City may decide to file a permit extension until the right has been fully perfected.

Copies of the superseding certificates for 1012-D and G3-24343, the Report of Examination for 1324-A, and the October 6, 2004 letter are provided in Appendix H.

STORAGE

Storage for the City's water system is provided by one 500,000 gallon welded steel reservoir located on the east side of the City and one 500,000 gallon bolted steel reservoir located on the west side. An inactive 300,000 gallon concrete reservoir is located next to the welded steel reservoir; however, this reservoir has no connection to the City's water system. Table 1-3 summarizes the characteristics of the City's storage facilities.

TABLE 1-3

Existing Water System: Storage

Characteristic	East Reservoir	West Reservoir
Year Constructed	1974	1996
Type of Construction	Welded Steel	Bolted Steel
Nominal Capacity, gal	500,000	500,000
Diameter, ft	46.5	48 (nominal)
Height, ft	40	40
Base Elevation, ft	1207.9	1208.9
Overflow El., ft(1)	1246.7	1248.2

(1) Survey data indicates that the West Reservoir is higher than the East Reservoir. The overflow elevation of the West Reservoir is 1.1 feet below the top of the reservoir per the record drawings. The overflow elevation of the East Reservoir is assumed to be 1.0 feet below the top of the reservoir. The City has reported that the west reservoir fills to the overflow before the east reservoir. The City has an altitude valve that allows the East Reservoir to be filled after the West Reservoir has filled to capacity.

TREATMENT

The City does not currently provide continuous disinfection or other treatment to its water supply.

TRANSMISSION AND DISTRIBUTION

The majority of the City's transmission and distribution piping consists of ductile iron and asbestos cement pipe. The City completed a major upgrade to the distribution system in 1995, which accounts for the majority of the 6-inch and 8-inch ductile iron pipe. It is unknown when the asbestos cement pipe and the steel pipe were installed. The City currently uses AWWA C900 PVC pipe for system upgrades or extensions. Table 1-4 presents the pipe lengths in the existing water system.

Previous planning documents stated that there was approximately 6,500 linear feet of 2-inch steel piping within the distribution system. The City has replaced 2-inch piping along Woodland Street, Ward Street, the RV park, and Gladiola Street. These sections are estimated to total 5,000 LF, indicating that approximately 1,500 linear feet of 2-inch or smaller steel piping may still be in the system. The City is aware of approximately

800 linear feet of 2-inch or smaller steel piping within the system. The City will continue to investigate possible locations of 2-inch steel piping and replace these sections, as this aged piping may contribute to distribution system leakage.

TABLE 1-4

Existing Water System: Distribution System

Water Main Size (in)	Pipe Type (1)				Total Quantity (lin. Ft)	Percent of Total (%)
	DI	Steel	PVC	AC		
2		1271		269	1,540	2%
3			836		836	1%
4		372		5,157	5,529	7%
6	8,973		3,281	28,090	40,344	49%
8	18,658		2,247	10,781	31,686	38%
12	1,347			1,238	2,585	3%
Total	**28,978**	**1,643**	**6,364**	**45,535**	**82,520**	**100%**
	35%	**2%**	**8%**	**55%**	**100%**	

(1) DI = Ductile Iron, AC = Asbestos Cement, PVC = polyvinyl chloride.

A second, separate water system provides mineral water from the lake to a portion of the City. This system is not potable and is separately plumbed to the four commercial customers. These customers include a 4-plex apartment building located at 22 S. Canna Street, the Healing Water Spa, the Soap Lake Natural Spa & Resort (Inn and Cottages), and the Soap Lake Natural Spa & Resort (Notaras Lodge). The City has no evidence that the system is interconnected to its domestic water system. The City is in the process of completing a Mineral Water System Plan to evaluate the mineral water system.

BOOSTER PUMPING STATION

The City operates a booster pumping station (BPS) that serves residences in the northeast portion of the City above elevation 1,155. This facility was installed in 1996 to improve pressures in this upper zone. In 2017, the City completed improvements to the BPS, including the installation of a VFD and a new 5 hp Cornell service pump and a new motor. The other 5 hp Weinman service pump and the two 7.5 hp Weinman fire pumps were not replaced. The motor for one of the fire pumps was replaced. The VFD operates the first motor and service pump to maintain a pressure of 45 psi in the system. If the first service pump cannot meet system demands, the second service pump will turn on as the pressure drops below the programmed low pressure set point and turn off when the pressure has risen to the programmed high pressure set point. If the service pumps cannot meet system demands, the fire pumps will turn on. Characteristics of the City's BPS are summarized in Table 1-5. The first service pump typically meets system demands while the VFD is operating at approximately 45 Hz. The maximum frequency of the VFD is 60 Hz. Flow testing of fire hydrants conducted in December of 2017

indicated that the available flow in the upper pressure zone is approximately 800 gpm.

TABLE 1-5

Existing Water System: Booster Pumping Station

Characteristic	Booster Pumping Station	
Purpose	Service	Fire
Number of Pumps	2	2
Pump Manufacturer	Cornell; Weinman	Weinman
Motor Horsepower, hp	5	7.5
Speed, rpm	3,500	3,500
Design Flow (each pump), gpm	125	250
Total Dynamic Head, ft	110	80
Date Installed	1996/2017	1996/2017

TELEMETRY

System monitoring and operation is provided by a radio telemetry system. The system consists of connections between the two wells and the east reservoir. The wells typically operate on an alternating basis. A chart recorder collects reservoir data. City staff manually records flow meter data at the two wells on a weekly basis.

INTERTIES

The City does not have an intertie with another water system.

RELATED PLANNING DOCUMENTS

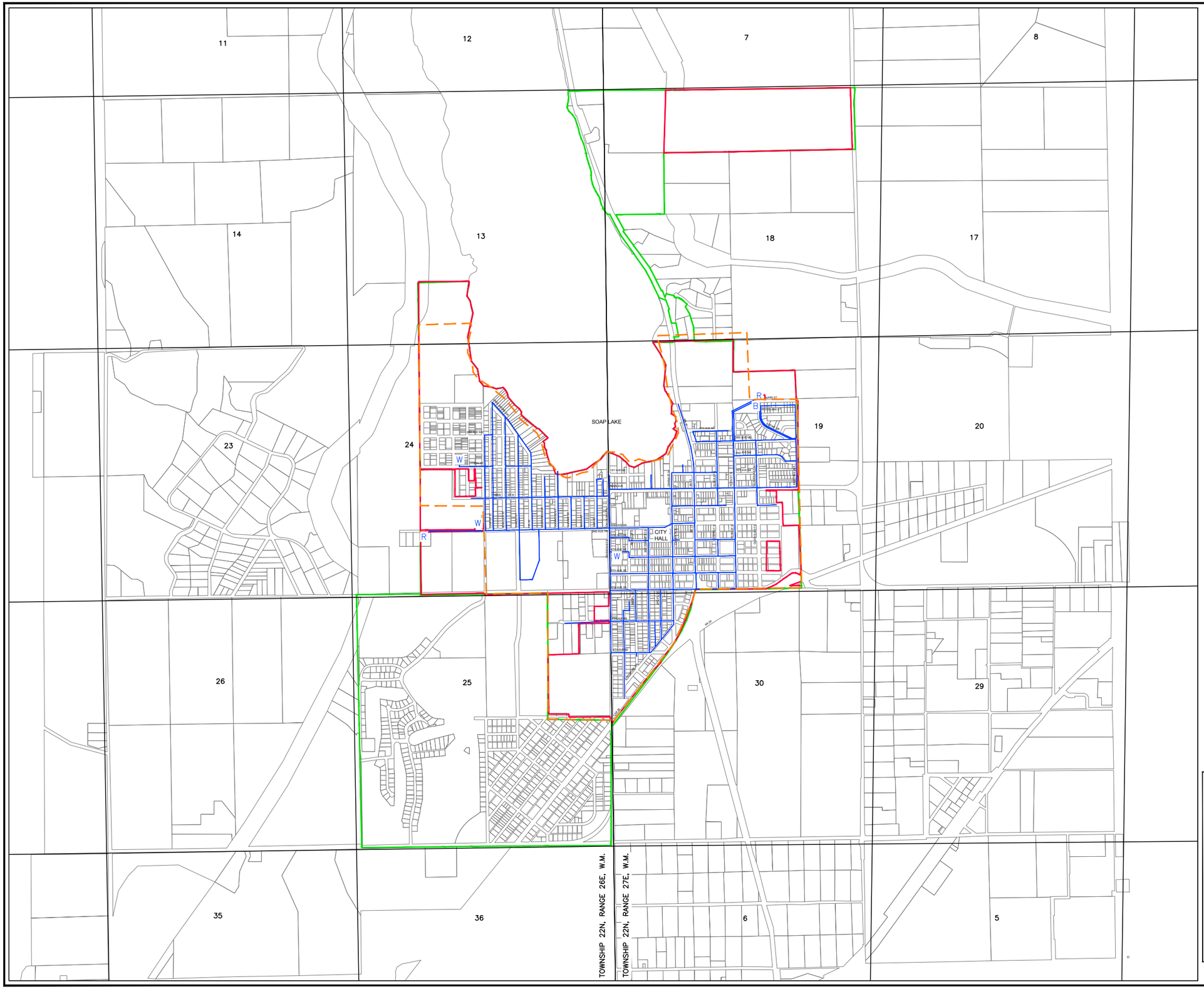
The following planning documents were used in the preparation of this Plan:

- 2002 Comprehensive Water System Plan
- 2006 Grant County Comprehensive Plan Update
- Grant County Coordinated Water System Plan
- 2009 City of Soap Lake Comprehensive Plan Update
- 2012 Water System Plan Update

The City and County planners have signed Consistency Review Checklists indicating that this plan is consistent with local plans and regulations. Copies of the signed checklists are provided in Appendix E.

SERVICE AREA AND ZONING

The City's retail water service area is defined by the City's urban growth area. Growth over the next 20 years is expected to continue to infill the existing City limits and to expand into the Urban Growth Area. Figure 1-2 shows the boundaries of the City's water

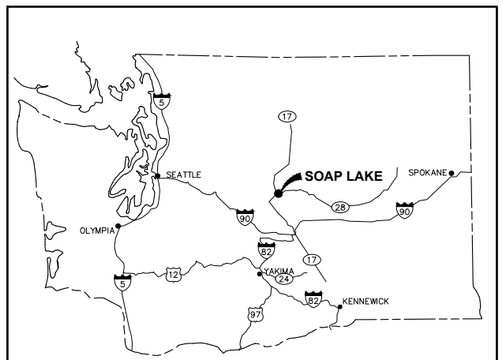


2000' 1000' 0 2000' 4000'

SCALE: 1"=2000'

LEGEND

- R — RESERVOIR
- W — WELL
- B — BOOSTER STATION
- CITY LIMITS
- UGA BOUNDARY = WATER SERVICE AREA = WATER RIGHTS PLACE OF USE
- WATER LINES
- APPROXIMATE LOCATION OF PREVIOUS GRANT COUNTY COORDINATED WATER SYSTEM PLAN (CWSP) SERVICE AREA BOUNDARY. THE UGA BOUNDARY WILL BE THE NEW SERVICE AREA BOUNDARY IN THE CWSP.



VICINITY MAP

CITY OF SOAP LAKE

WATER SYSTEM PLAN

FIGURE 1-2

WATER SERVICE AREA

Gray & Osborne, Inc.

CONSULTING ENGINEERS

M:\Soap Lake\16040 – Water System Plan\Figures\FIGURE 1-2.dwg, 1/17/2019 1:31 PM, TIM DEVRIES

service areas and defines its water rights place of use. As indicated, the City has defined its water service area and its water rights place of use as the area within its Urban Growth Area boundary. Figure 1-3 shows the zoning designations within the City's corporate limits. Figure 1-4 shows County zoning for areas outside the City's corporate limits.

Soap Lake is located within the Grant County Critical Water Supply Service Area. The City is required to follow the "service area agreement for establishing water utility service area boundaries in the Grant County Critical Water Supply Service Area." If the City's Urban Growth Area (UGA) is adjusted, the service area in the Grant County Coordinated Water System Plan (CWSP) needs to be adjusted and approved. The Local Government Consistency Form signed by Grant County Health District in Appendix E approves the City's UGA and service area adjustment.

DUTY TO SERVE

Per RCW 43.20.260, the City has a duty to serve within its retail service area if a potential user approaches the City with a request for connection and the following threshold factors apply:

- The City has sufficient capacity to serve water in a safe and reliable manner.
- The service request is consistent with adopted local plans and development regulations.
- The City has sufficient water rights to provide service.
- The City can provide service in a timely and reasonable manner.

The Mayor and staff determine whether the request meets the above criteria, and make recommendations to the City Council.

SERVICE AREA POLICIES AND CONDITIONS OF SERVICE

Table 1-6 summarizes the service area policies and definitions recommended by the DOH and those adopted by the City of Soap Lake.

TABLE 1-6

Service Area Policies

Policy Name	Policy Summary	Soap Lake Policy Reference
Connection Policy	Policy requiring new developments within corporate limits to connect to the water system.	SLMC 13.18.110
Extensions	Policy requiring developer to pay for water main extensions.	SLMC 16.33.030
Water Right Policy	Policy requiring developers to provide water rights for their projects or provide in-lieu-of fees for the City to acquire water rights.	NA (1)
Design and Performance Policy	Policy establishing construction and design standards in accordance to the City's standards for all connection and extensions.	SLMC 16.33
Materials Policy	Policy stating minimum requirements for materials in providing water service.	City Construction Standards
System Extensions Policy	Policy stating that extensions meet certain criteria, including cost responsibilities, design standards, design responsibilities, and DOH approval.	SLMC 16.33
Satellite and Remote Systems	Policy stating whether developments must connect to system or if they may operate as satellite systems.	SLMC 13.18.110
Latecomer Agreement Policy	Policy that allows developers to recover the cost of improvements through Latecomers Fees.	SLMC 16.36
Connection Fee Policy	Policy that requires a connection fee to be paid in full before connection to the system.	SLMC 13.18.030
Surcharge Policy	Policy determining surcharge assessed to water connections outside corporate limits.	SLMC 13.18.290
Meters Policy	Policy requiring all services in place, or to be installed, to have a meter installed.	SLMC 13.18.030
Oversizing	Policy providing funds to install larger facilities than needed so that future developments may be served.	SLMC 16.33.030
Water Meter Test Policy	Policy providing for the testing of service meter accuracy.	SLMC 13.18.050
Cross Connection Control	Policy establishing the requirements for cross connection prevention devices.	SLMC 13.18.190

(1) The City has determined that its water rights are adequate for the 20-year planning period, and does not plan to consider a water right policy at this time.

SOAP LAKE

CITY HALL

1000' 500' 0 1000' 2000'

SCALE: 1"=1000'

LEGEND

- R-1 RESIDENTIAL
- R-2 MULTIPLE DWELLING
- R-3 PERMANENT MOBILE
- R-4 TRAILER COURTS AND CAMPS
- C-1 1ST CLASS COMMERCIAL
- 2ND CLASS COMMERCIAL
- M-1 INDUSTRIAL
- UR-3 URBAN RESIDENTIAL
- CITY LIMITS
- UGA BOUNDARY

CITY OF SOAP LAKE

WATER SYSTEM PLAN

FIGURE 1-3

CITY ZONING

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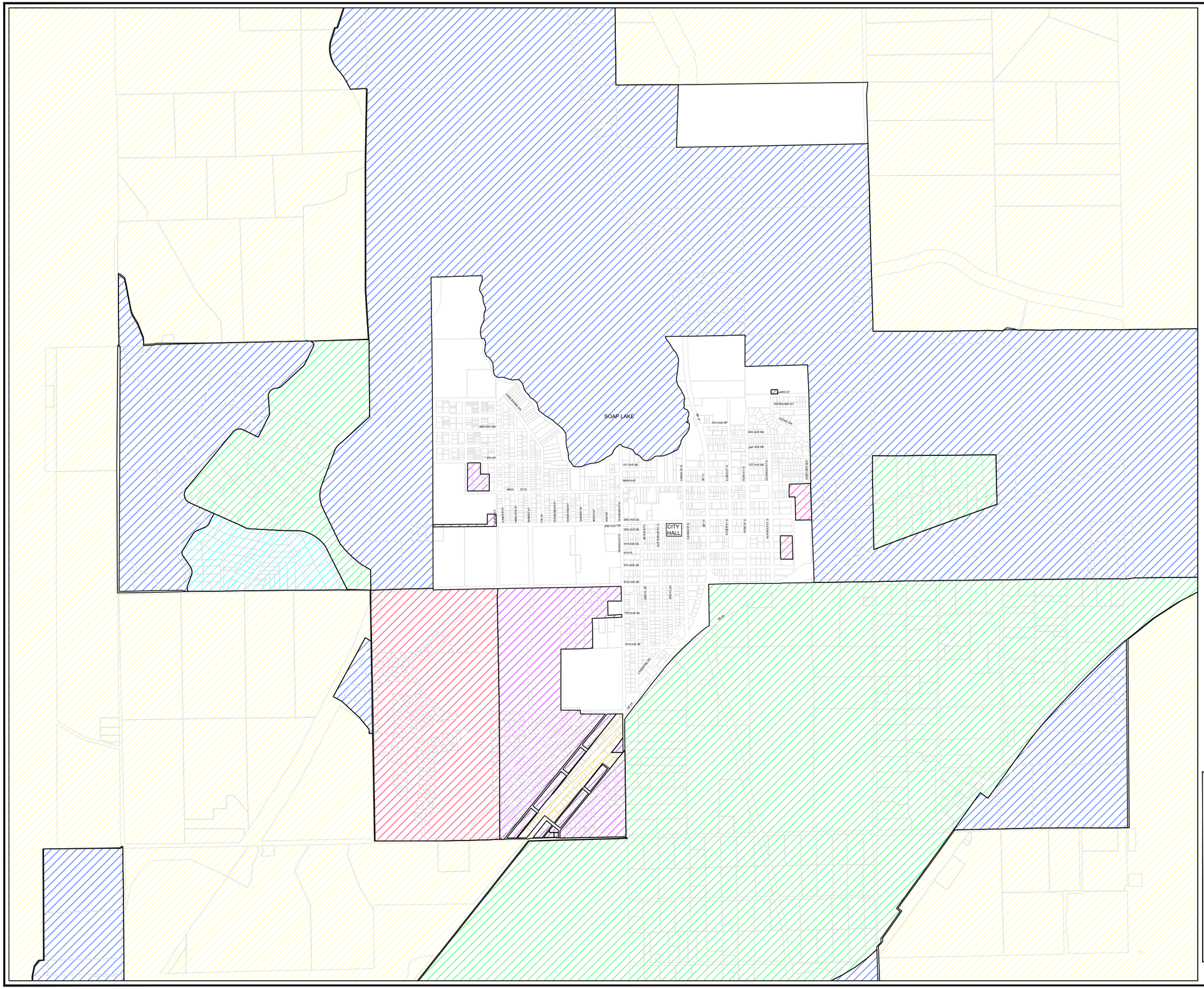
CONSULTING ENGINEERS

M:\Soap Lake\16040 - Water System Plan\Figures\FIGURE 1-3.dwg, 1/17/2019 1:32 PM, TIM DEVRIES



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SCALE: 1"=2000'

LEGEND

- AGRICULTURE
- RURAL RESIDENTIAL 1
- RURAL RESIDENTIAL 2
- RURAL RESIDENTIAL 3
- URBAN COMMERCIAL 1
- URBAN RESIDENTIAL 2
- URBAN RESIDENTIAL 3
- URBAN RESIDENTIAL 4

CITY OF SOAP LAKE

WATER SYSTEM PLAN

FIGURE 1-4

COUNTY ZONING

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M:\Soap Lake\16040 – Water System Plan\Figures\FIGURE 1-4.dwg, 1/17/2019 1:32 PM, TIM DEVRIES

CHAPTER 2

BASIC PLANNING DATA

This chapter presents the basic planning data used to estimate Soap Lake's future water demands. Water demand projections are used in Chapter 3 to evaluate the adequacy of the City's existing water system.

HISTORICAL DATA

The following sections provide historical population trends, number of services, and water production and consumption data for the City's water system.

HISTORICAL POPULATION

As shown on Figure 2-1, the population within the City limits of Soap Lake has varied over the years, but has remained reasonably stable since 2000. Population data for Figure 2-1 were obtained from the Washington State Office of Financial Management (OFM). Census data indicates that the population of the City was 1,514 in 2010 and 1,535 in 2016. The City lists a full-time residential population (residents served by the system 180 or more days per year) of 1,765 in its 2016 Water Facilities Inventory Form (WFI) in Appendix A.

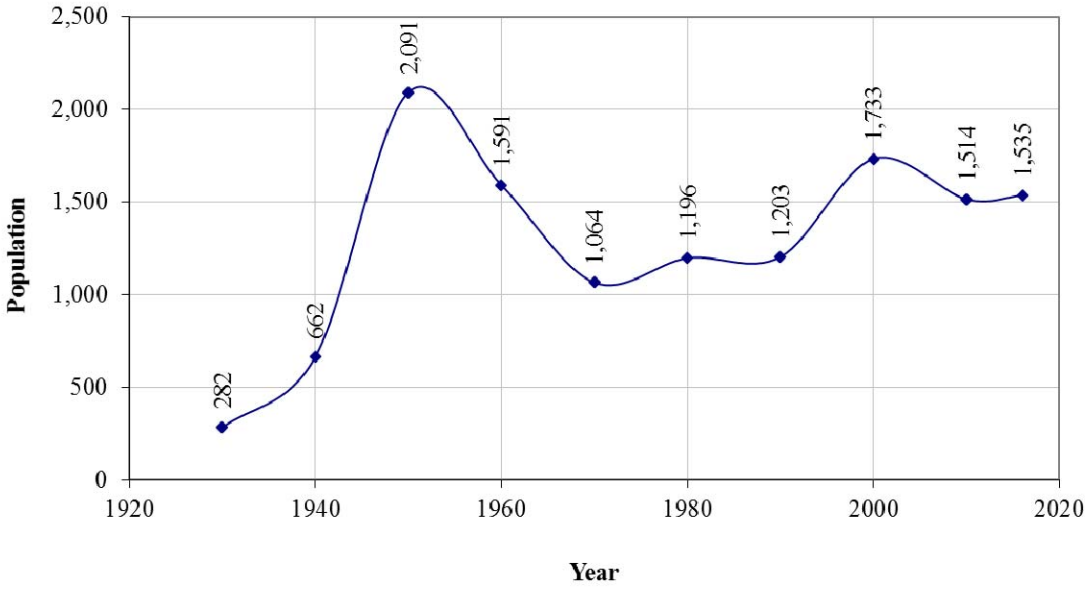


FIGURE 2-1

Historical Population

SERVICE METERS AND APPROVED CONNECTIONS

One measure of the size of a system is the number of its active service meters. The number of Soap Lake's metered services for major customer classifications is summarized in Table 2-1. All water uses are metered. This amount has remained stable over the last several years.

TABLE 2-1

2016 Active Service Meters

Customer Class	Number of Active Service Meters	% of Total Meters
Single Family Residential (1)	619	84%
Multi-Family Residential (2)	42	6%
Commercial (3)	71	10%
Total	**732**	**100%**

(1) Includes the following classifications defined by the City: "Residential", "Lawn Meters", "Residential Outside", and "Standby Charge Residential".
(2) Includes "Commercial Residential" classification.
(3) Includes "Commercial" and "Standby Charge Commercial" classifications.

The number of "active service meters" shown in this table is not the same as the number of "active connections" in the City's WFI Form. As indicated, Table 2-1 represents actual meter installations, whereas the WFI list of "active connections" includes all living units within, for example, each multi-family residential metered service. The City estimates that it currently serves 1,066 "active connections," according to its WFI. According to the WFI, the City is approved for 2,385 connections.

WATER USE

Water production is metered at the City's two wells where meters are read weekly throughout the year. Water consumption is recorded monthly at individual water service meters, except during those winter months when meters are snow-covered and inaccessible. During those months, customers are billed the base rate only and the first spring reading is averaged for unread months. Customers are then charged accordingly for any overages.

Average Day Production

Table 2-2 summarizes water production between 2011 and 2016. Annual production, or demand, is commonly reduced to a daily value, and is referred to as the average daily production. Average daily production is important in determining the adequacy of the City's annual water right quantities. To address variability in water use due to factors such as summer temperatures, an average daily production is used to project future demands.

TABLE 2-2

2011-2016 Average Daily Production

Year	Population (1)	Production (2) (gal)	Production (ac-ft)	Average Daily Production (gpd)	Average Daily Production/ Capita (gpd/capita)
2011	1,518	98,814,000	303	271,000	179
2012	1,522	106,674,000	327	292,000	192
2013	1,526	96,854,000	297	265,000	174
2014	1,530	109,685,000	337	301,000	197
2015	1,534	118,173,000	363	324,000	211
2016	1,535	122,937,000	377	337,000	220
Average		**108,856,000**	**334**	**298,000**	**195**

(1) Source: Washington State Office of Financial Management estimate.
(2) Source: Soap Lake records.

Table 2-3 shows the annual production from each well. Well No. 3 was used much less in 2015 because its telemetry was being fixed. Well No. 1 was used less in 2016 because it was being rebuilt during the summer.

TABLE 2-3

2011-2016 Production by Source

Year	Well No. 1 (gal)	Well No. 3 (gal)	Well No. 1 (ac-ft)	Well No. 3 (ac-ft)	Total (ac-ft)
2011	32,290,000	66,524,000	99	204	303
2012	50,236,000	56,438,000	154	173	327
2013	34,180,000	62,674,000	105	192	297
2014	60,922,000	48,763,000	187	150	337
2015	102,528,000	15,645,000	315	48	363
2016	46,289,000	76,648,000	142	235	377
Average	**54,407,500**	**54,448,667**	**167**	**167**	**334**

As required by DOH's Water Use Efficiency Rule, a monthly distribution of the City's water demands for the last three years is provided on Figure 2-2. Typical of most eastern Washington communities without separate irrigation, demands increase significantly in the summer as the result of lawn irrigation.

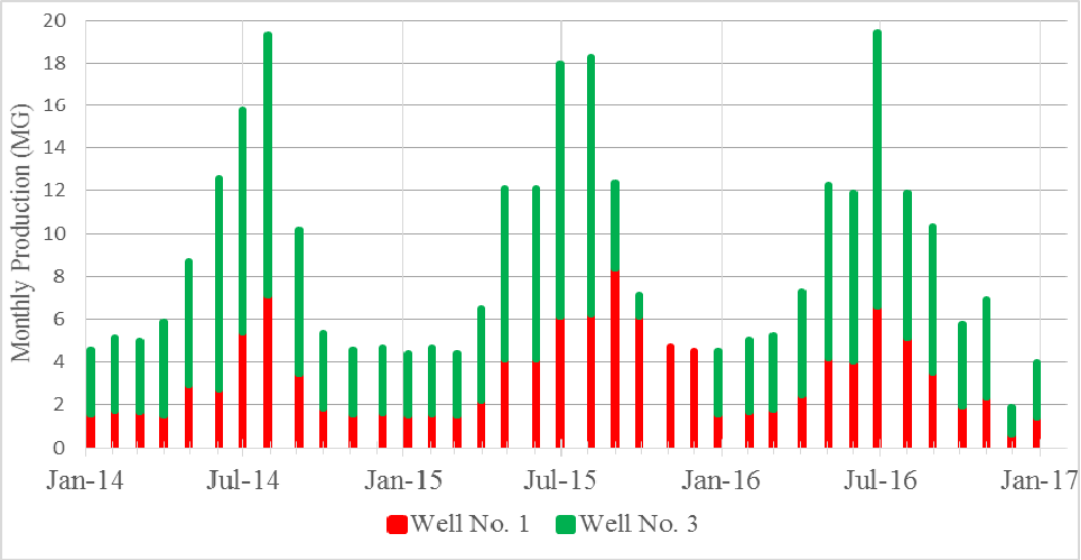


FIGURE 2-2

2014-2016 Soap Lake Monthly Water Production

Consumption History

Table 2-4 shows the City's water consumption history for 2011 through 2016 based on the best available information from the City's billing system. The City is not confident that its billing system, which was acquired in 2008, was completely capable of providing reliable water usage data for this Plan. Consequently, the City plans to track monthly water production and consumption data and to work with its billing software vendor to ensure a higher level of confidence in future consumption data. The City is considering investing in Automatic Meter Reading (AMR) or Advanced Metering Infrastructure (AMI) to help improve the accuracy of its consumption data.

TABLE 2-4

2011-2016 Water Consumption

Year	SF Residential[(1)] (gal)	MF Residential[(2)] (gal)	Commercial[(3)] (gal)	Total (gal)
2011	68,645,000	26,983,000	12,723,000	108,351,000
2012	69,071,000	18,046,000	11,824,000	98,941,000
2013	62,997,000	16,086,000	12,958,000	92,041,000
2014	68,261,000	18,333,000	11,230,000	97,824,000
2015	72,580,000	18,488,000	12,581,000	103,649,000
2016	58,141,000	17,174,000	12,971,000	88,286,000
Average	**66,327,000**	**17,998,000**	**12,323,000**	**96,648,000**
% of Tot.	**69%**	**19%**	**13%**	**100%**

(1) SF=Single Family. Includes "Residential," "Lawn Meters," "Residential Outside," and "Standby Charge Residential" classifications.
(2) MF = Multi-Family. Includes "Commercial Residential" classification.
(3) Includes "Commercial" and "Standby Charge Commercial" classifications.

Distribution System Leakage

Section 8 of WAC 246-290, which defines the requirements of the 2003 Municipal Water Law, requires municipal water suppliers with 500 or more connections to meet a 3-year average distribution system leakage (DSL) standard of no more than 10 percent. DSL must be reported as a volume and as a percentage of total production. The City's DSL for 2011 through 2016 is summarized in Table 2-5.

TABLE 2-5

2011-2016 Distribution System Leakage

Year	Metered Production[(1)](gal)	Metered Consumption[(2)](gal)	Distribution System Leakage	
			Volume[(3)] (gal)	Percentage[(4)]
2011	98,814,000	108,351,000	(9,537,000)	-9.7%
2012	106,674,000	98,941,000	7,733,000	7.2%
2013	96,854,000	92,041,000	4,813,000	5.0%
2014	109,685,000	98,010,000	11,675,000	10.6%
2015	118,173,000	103,649,000	14,524,000	12.3%
2016	122,937,000	88,286,000	34,651,000	28.2%
2014-2016 Average	**116,931,667**	**96,648,333**	**20,283,333**	**17.3%**

(1) Table 2-2.
(2) Table 2-4.
(3) DSL = (Annual Production) – (Annual Consumption).
(4) Percent of Total Production = DSL / (Annual Production).

The data indicates that the City's 3-year average DSL is greater than the 10 percent standard. This is an increase from the last Water System Plan Update, which showed the City within compliance of the DSL standard. In particular, the year 2016 shows a notable increase in DSL. The City has not seen any major leaks in its distribution system. Also, 2011 showed greater consumption than production. This anomaly suggests that consumption data may not be completely reliable. As indicated above, the City plans to track monthly production and consumption over the next planning period to determine the cause for the inconsistency. Meter replacement may also help address this issue.

Equivalent Residential Units

Equivalent residential units (ERUs) are a way to express water use by non-residential customers as an equivalent number of residential customers. The average consumption per single family customer for 2016 was 257 gpd/ERU (58,141,000 gallons/yr ÷365 days/yr ÷ 619 single family residential connections). This number is divided into the annual consumption for each customer class to arrive at the number of ERUs for that class. Table 2-6 summarizes the number of ERUs represented by each classification.

TABLE 2-6

2016 Equivalent Residential Units

Classification	2016 Amount (gal)[(1)]	No. of Meters[(2)]	ERUs[(3)]	ERUs/Conn.	Percent of Total ERUs
Residential - SF	58,141,000	619	619	1.0	47.4%
Residential - MF	17,174,000	42	183	4.4	14.0%
Commercial	12,818,000	71	136	1.9	10.4%
DSL	34,651,000		369		28.2%
Total	**122,784,000**	**732**	**1,307**		**100%**

(1) From City billing records.
(2) From Table 2-1.
(3) 2016 Amount ÷ 257 gpd/ERU ÷ 365 days/yr.

Maximum Day Demand

The maximum amount of water pumped from the City's wells in a 24-hour period is referred to as the maximum day demand (MDD). MDD values are used to determine whether the water system has sufficient source capacity to meet current and future production demands and to determine its requirements for instantaneous water rights.

An analysis of the City's weekly production data (the City does not record daily production data) indicates that its maximum monthly average demand (MMAD) is approximately 2.15 times its ADD. From the City's weekly production data, the maximum weekly demand is approximately 2.76 times its ADD for the period from 2014 to 2016. The City's MDD would be expected to be slightly higher than these ratios. DOH's 2009 Water System Design Manual (WSDM) recommends using a ratio of MDD to MMAD in eastern Washington of 1.3, which results in an MDD/ADD ratio of 2.8 (2.15 * 1.3) for Soap Lake. This method and value are consistent with the estimate in the previous Water System Plan. Estimated MDD data for 2011 through 2016 are presented in Table 2-7. Based on the ADD of 257 gpd/ERU, the 2016 MDD is 720 gpd/ERU (257 gpd/ERU * 2.8).

Peak Hour Demand

The maximum amount of water used in a one-hour period during a maximum day is the peak hour demand (PHD). PHD is an important parameter in determining the amount of reservoir storage needed to make up the difference between the peak hour usage requirement and the system's pumping capacity.

The City currently has no means to record data needed to calculate the PHD. In the absence of actual field data, DOH provides a means to estimate PHD using Equation 5-1 from its WSDM.

$$PHD = \left(\frac{MDD}{N}\right) \times \left[(C)(N) + F\right] + 18$$

where PHD is in gpm, MDD is in gpm, N is the number of equivalent residential units (ERUs), and C and F are coefficients based on N. For 2016, MDD = 656 gpm (Table 2-7), N = 1,307 ERUs (Table 2-6), C = 1.6 (WSDM) and F = 225 (WSDM),

$$PHD = \left(\frac{656}{1{,}307}\right) \times \left[(1.6)(1{,}307) + 225\right] + 18$$
$$= 1{,}181\, gpm,$$
$$So, \quad PHD / MDD = 1{,}181 / 656\, gpm$$
$$= 1.80, \quad say\ 1.8$$

Table 2-7 summarizes Average Daily Production and the estimated Maximum Daily Production and Peak Hour Production for 2011 through 2016.

TABLE 2-7

2011-2016 Water Production

Year	Service Area Population[1]	Average Daily Production[1] (gpd)	Maximum Daily Production[2] (gpd)	Maximum Daily Production[2] (gpm)	Peak Hour Production[3] (gpm)
2011	1,518	271,000	759,000	527	949
2012	1,522	292,000	818,000	568	1,023
2013	1,526	265,000	742,000	515	928
2014	1,530	301,000	843,000	585	1,054
2015	1,534	324,000	907,000	630	1,134
2016	1,535	337,000	944,000	656	1,180
Average		**298,000**	**836,000**	**580**	**1,044**

(1) From Table 2-2.
(2) Based on MDD/ADD = 2.8. See text above for discussion.
(3) Based on PHD/MDD = 1.8. See text above for discussion.

LARGEST WATER USERS

Table 2-8 lists the City's 15 largest retail water users in 2016, which account for 27 percent of the total water consumed in 2016. No single user's water consumption is significant enough to project future use for the water system using consumer-specific water use estimates.

TABLE 2-8

2016 Largest Water Users

Customer Classification	2016 Annual Usage (gallons)	2016 Daily Usage (gallons)	Percent of Total Consumption
Grant County Housing	4,016,800	11,005	4.5%
City of Soap Lake Treatment Plant	2,856,700	7,827	3.2%
United Market- SL Garden	2,419,800	6,630	2.7%
Camas Court Ltd Partnership	1,861,100	5,099	2.1%
United Market- SL Garden (Lawn Meter)	1,743,600	4,777	2.0%
Westhaven Condominium	1,514,700	4,150	1.7%
McKay Healthcare & Rehab Center	1,416,000	3,879	1.6%
Commercial/Residential Rental	1,362,900	3,734	1.5%
Westhaven Condominium (Lawn Meter)	1,352,400	3,705	1.5%
McKay Healthcare & Rehab Center (Lawn Meter)	1,089,100	2,984	1.2%
Soap Lake Natural Spa & Resort, LLC (Lawn Meter)	1,084,600	2,972	1.2%
Lake Apartments	1,036,000	2,838	1.2%
Commercial/Residential (Leak fixed)	792,200	2,170	0.9%
Soap Lake Natural Spa & Resort, LLC	656,000	1,797	0.7%
Commercial/Residential (Leak fixed)	630,600	1,728	0.7%
Total	**23,832,500**	**65,295**	**27.0%**
2016 Total Consumption	**88,286,000**	**241,879**	

PROJECTED POPULATION AND WATER DEMANDS

The following section provides population and water use projections based on the historical data presented in the previous sections.

PROJECTED POPULATION

The City's future service area population is projected to grow at an annual rate of 1.5 percent, consistent with the 2006 Grant County Comprehensive Plan Update (p. 3-25). However, the City's 2009 Comprehensive Plan Update cautions that while the County's growth rate represents the highest rate allowed under the Growth Management Act, that rate may not reflect true growth rates within Soap Lake. Consequently, the City plans to monitor actual growth during the planning period, and to make adjustments if necessary.

Land use and zoning are shown within Chapter 1.

PROJECTED WATER DEMANDS

To project future water demands, it is useful to determine the Average Day Demand (ADD), the Maximum Day Demand (MDD), and Peak Hour Demand (PHD) in terms of gallons per day per ERU or gallons per minute per ERU. Table 2-9 summarizes the City's population, ADD, MDD, and PHD projections for the current year and the 20-year planning period, using the 2016 ADD and ERU values from Table 2-7 as the starting point. The number of ERUs for each customer classification are assumed to grow proportionally throughout the planning period.

TABLE 2-9

Projected Water Demands

Year	Population[(1)]	ERUs[(2)]	ADD (gpd)[(3)]	Annual Prod. (af/yr)	MDD (gpd)[(4)]	MDD (gpm)	PHD (gpm)[(5)]
2016	1,535	1,307	337,000	377	944,000	656	1,180
2017	1,558	1,321	340,100	381	952,300	661	1,190
2018	1,581	1,336	343,700	385	962,400	668	1,203
2019	1,605	1,350	347,500	389	973,000	676	1,216
2020	1,629	1,365	351,300	394	983,700	683	1,230
2021	1,654	1,380	355,100	398	994,300	690	1,243
2022	1,678	1,395	359,000	402	1,005,200	698	1,257
2023	1,704	1,410	363,000	407	1,016,400	706	1,271
2024	1,729	1,426	367,000	411	1,027,600	714	1,285
2025	1,755	1,442	371,100	416	1,039,100	722	1,299
2026	1,781	1,458	375,200	420	1,050,600	730	1,313
2027	1,808	1,474	379,400	425	1,062,400	738	1,328
2028	1,835	1,491	383,700	430	1,074,400	746	1,343
2029	1,863	1,508	388,000	435	1,086,400	754	1,358
2030	1,891	1,525	392,400	440	1,098,800	763	1,374
2031	1,919	1,542	396,900	445	1,111,400	772	1,389
2032	1,948	1,560	401,400	450	1,124,000	781	1,405
2033	1,977	1,577	406,000	455	1,136,800	789	1,421
2034	2,007	1,596	410,700	460	1,150,000	799	1,438
2035	2,037	1,614	415,400	465	1,163,200	808	1,454
2036	2,067	1,633	420,200	471	1,176,600	817	1,471
2037	2,098	1,652	425,100	476	1,190,300	827	1,488
2038	2,130	1,671	430,000	482	1,204,000	836	1,505

(1) Based on an annual growth rate of 1.5 percent.
(2) Based on an annual growth rate of 1.5percent for the single-family residential, multi-family residential, and commercial connections. ERUs from DSL are assumed to remain constant at the 2016 value of 369.
(3) Based on the 2016 value of 257 gpd/ERU.
(4) Based on a peaking factor of MDD/ADD=2.8
(5) Based on a peaking factor of PHD/MDD=1.8

Potential savings from water use efficiency measures are discussed in Chapter 4.

CHAPTER 3

SYSTEM ANALYSIS

The purpose of this chapter is to determine the ability of the City's existing water system to meet current and future water quality and quantity requirements. The major sections of this chapter are:

- System Design Standards
- Water Quality
- Facility Analysis
- Water System Physical Capacity Analysis
- System Deficiencies

SYSTEM DESIGN STANDARDS

Water systems are regulated by federal, state, and local design and construction standards. Standards that affect Soap Lake's water system are summarized in the sections below.

GENERAL FACILITY STANDARDS

WAC 246-290 is the primary drinking water regulation used by DOH to assess capacity, water quality, and compliance with drinking water standards. The 2009 Water System Design Manual (WSDM) serves as guidance for the preparation of plans and specifications for Group A public water systems in compliance with WAC 246-290. The WSDM also references the following codes and guidelines.

- International Building Code
- Uniform Plumbing Code
- Recommended Standards for Water Works (RSWW), Ten State Standards
- Local codes
- American Water Works Association (AWWA) Standards
- American Society of Civil Engineers (ASCE) Standards
- American Public Works Association (APWA) Standards

Table 3-1 lists the suggested WSDM guidance and the City's policies with regard to each standard for general facility requirements.

TABLE 3-1

General Facility Requirements

Standard	Department of Health Water System Design Manual	City of Soap Lake Standards
Average Day and Maximum Day Demand	Average Day Demand (ADD) should be determined from metered water use data. Maximum Day Demand (MDD) is estimated at 1.3 times the Maximum Monthly Average Demand (MMAD) if metered data is not available.	ADD = Metered production MDD = 2.8 * ADD based on City data.
Peak Hour Demand	Peak hour demand (PHD) is determined using the following equation: $PHD = (MDD/1440(CN + F) + 18,$ where MDD is in gpd/ERU, and C and F are coefficients based on N, the number of ERUs. See Eq. 5-3, WSDM	PHD = 1.8 * MDD based on Eq. 5-3, WSDM.
Source Capacity	Capacity must be sufficient to meet MDD	Same as WSDM, Chapter 7.
Storage Requirements	The sum of: Operational Storage Volume sufficient to prevent pump recycling. Equalizing Storage $V_{ES} = (Q_{PH} - Q_S) * 150$ Standby Storage $V_{SB} = (2 * ADD * N) - t_m * (Q_S - Q_L)$ Fire Suppression Storage $V_{FSS} = NFF * T$ ADD = average day demand, gpd/ERU N = number of ERU's Q_{PH} = peak hour demand, gpm Q_S = capacity of all sources, excluding emergency sources, gpm Q_L = capacity of largest source, gpm t_m = daily pump source run time, min (1440) NFF = needed fire flow, gpm T = fire flow duration, min	Same as WSDM, Chapter 9.
Minimum System Pressure	The system should be designed to maintain a minimum of 30 psi in the distribution system under peak hour demand and 20 psi under fire flow conditions during MDD.	Same as WSDM, Chapter 8.
Fire Flow Rate & Duration	The minimum fire flow shall be determined by the local fire authority or WAC 246-293 for systems within a critical water supply service area (CWSSA).	Fire flow requirements are based on the (local) Fire Department standards. 1,000 gpm is required in residential areas, 1,500 gpm is required in the Central Business District, and 2,000 gpm is required at the school.
Minimum Pipe Size	The diameter of a transmission line shall be determined by hydraulic analysis. The minimum size distribution system line shall not be less than 6-inches in diameter.	Same as WSDM, Chapter 8.

TABLE 3-1 (continued)

General Facility Requirements

STANDARD	DEPARTMENT OF HEALTH WATER SYSTEM DESIGN MANUAL	City of Soap Lake Standards
Reliability Recommendations	• Sources capable of supplying MDD within an 18-hour period • Sources meet ADD with largest source out of service • Back-up power equipment for pump stations unless there are two independent public power sources • Provision of multiple storage tanks • Standby storage equivalent to ADD x 2, with a minimum of 200 gpd/ERU • Low and high level storage alarms • Looping of distribution mains when feasible • Pipeline velocities not > 8 fps at PHD • Flushing velocities of 2.5 fps for all pipelines	Same as WSDM, Chapter 5.
Valve and Hydrant Spacing	Sufficient valving should be placed to keep a minimum of customers out of service when water is turned off for maintenance, repair, replacement or addition. As a general rule, valves on distribution mains 12-inches and smaller should be provided at least every 1,000 feet. Fire hydrants on laterals should be provided with their own auxiliary gate valve.	Valve and hydrant standards are outlined in the City's Developer Standards.
Water Quality Standards	The primary drinking water regulation utilized by Health to assess capacity, water quality, and overall compliance with drinking water standards.	WAC 246-290

CONSTRUCTION STANDARDS

The City has prepared a set of standards for developers and the City to follow when constructing water system components. These standards have not been changed since the last plan update was submitted. Approval of the developer standards allows the City to construct distribution mains and distribution-related projects without the requirement to submit project reports (WAC 246-290-110) and construction documents (WAC 246-290-020) to DOH.

FIRE FLOW AND MINIMUM PRESSURE REQUIREMENTS

The fire chief for the City of Soap Lake has determined that the City's fire flow standard is 1,500 gpm for 2 hours for the commercial areas along Main Avenue and Daisy Street, 2,000 gpm for 1 hour for the school, and 1,000 gpm for 1 hour for all other structures, except in the Upper Pressure Zone. The fire chief confirmed that the approximately 800 gpm produced in the Upper Pressure Zone is permissible. Consistent with WAC 246-290-230, the City requires a minimum pressure of 30 psi under PHD conditions with operating and equalizing storage depleted, and 20 psi during concurrent fire flow and MDD conditions with fire suppression storage depleted.

WATER QUALITY

Group A public community water systems must comply with the drinking water standards of the federal Safe Drinking Water Act and its amendments. DOH has adopted these federal standards under WAC 246-290. To enable Group A water systems to comply with the regulations, DOH issues each system a Water Quality Monitoring Schedule (WQMS) listing that system's reporting requirements. The City's current WQMS is provided in Appendix B-1.

The City, which does not currently provide continuous disinfection, has not had any unsatisfactory bacteria samples in recent years. The City is in compliance with all other State and federal water quality requirements. The City's Coliform Monitoring Plan is provided in Appendix B-2, and its 2016 Consumer Confidence Report is provided in Appendix B-3. Per the City's WQMS, complete IOC testing is required every nine years. There are no updated IOC reports since the last Water System Plan.

The City has not had any exceedances for nitrate or nitrite. The two most recent tests were in May 2017 and May 2018. Measurements from Well No. 3 show Nitrate-N and Nitrite-N to be less than 0.07 mg/L, which is the sensitivity limit of the measuring device. The last two measurements from Well No. 1 showed the following levels:

- Nitrate-N: 0.74 mg/L and 0.92 mg/L (MCL= 10 mg/L)
- Nitrite-N: 0.070 mg/L (MCL= 1 mg/L)

The City has not had any exceedances for lead or copper. The average values from its most recent 10 measurements (September 14, 2016) are shown below:

- Lead: 0.00086 mg/L (MCL= 0.015 mg/L)
- Copper: 0.0963 mg/L (MCL= 1.3 mg/L)

The City does not have any lead pipes within its distribution system and it is not aware of any lead piping on private property beyond the service meters. The City has not received any complaints about lead within its water, but it will continue to monitor for both lead and copper in accordance with the Lead and Copper Rule.

FACILITY ANALYSIS

Figure 1-1 shows a map of the City's existing water system. The system serves two pressure zones.

SOURCE

The City's water supply consists of two wells: Well No. 1 and Well No. 3. Well No. 1 has a capacity of 1,000 gpm and Well No. 3 has a capacity of 1,100 gpm, for a total pumping capacity of 2,100 gpm. Additional information about the City's sources is listed in Chapter 1. Well No. 1 was drilled in 1940 and may need to be replaced within the 20-year planning period due to general expected longevity of groundwater wells.

Source and Treatment Capacity

WAC 246-290-222 (4) requires total source capacity to be sufficient to provide a reliable supply of water equal to or exceeding the MDD at all times. For the analysis in Table 3-2, both wells were assumed to be running. However, even with the City's largest well, Well No. 3, out of service, the 1,000 gpm capacity of Well No. 1 is sufficient to meet the City's 20-year MDD.

TABLE 3-2

Source Capacity Analysis

Year	Source Capacity [1] (gpm)	MDD [2] (gpm)	(+ / -) [3] (gpm)
2016	2,050	656	+ 1,394
2017	2,050	661	+ 1,389
2018	2,050	668	+ 1,382
2019	2,050	676	+ 1,374
2020	2,050	683	+ 1,367
2021	2,050	690	+ 1,360
2022	2,050	698	+ 1,352
2023	2,050	706	+ 1,344
2024	2,050	714	+ 1,336
2025	2,050	722	+ 1,328
2026	2,050	730	+ 1,320
2027	2,050	738	+ 1,312
2028	2,050	746	+ 1,304
2029	2,050	754	+ 1,296
2030	2,050	763	+ 1,287
2031	2,050	772	+ 1,278
2032	2,050	781	+ 1,269
2033	2,050	789	+ 1,261
2034	2,050	799	+ 1,251
2035	2,050	808	+ 1,242
2036	2,050	817	+ 1,233
2037	2,050	827	+ 1,223
2038	2,050	836	+ 1,214

(1) Assumes both wells are operating and are within the City's instantaneous water rights of 2,050 gpm.
(2) From Table 2-9.
(3) (+/-) = Source Capacity – MDD.

Source Reliability

Besides meeting the requirements of WAC 246-290-222 (4), the WSDM recommends that systems wishing to provide a high level of reliability to their customers consider the following source criteria for emergency conditions:

1. Provide sufficient source capacity to meet the MDD and replenish fire suppression storage within 72 hours. The largest fire suppression storage requirement is 180,000 gallons (1,500 gpm for 2 hours).
2. Meet the MDD with 18 (rather than 24) hours of pumping.
3. Meet the ADD with the largest source out of service.
4. Provide two independent power feeds, or portable or in-place backup power unless the power grid meets the following minimum reliability criteria:
   - Outage frequency averages three or less per year based on data for the three previous years with no more than six outages in a single year. A power outage is considered a loss of power for 30 minutes or longer.
   - Outage duration averages less than four hours based on data for the three previous years with not more than one outage during the three previous year period exceeding eight hours.

Table 3-3 indicates that in the end of the 20-year planning period, the City will be able to meet the recommended criteria for the first three conditions.

TABLE 3-3

2038 Source Reliability Analysis

Condition	Q (avail.) (1) (gpm)	Q_r (req'd) (gpm)	Surplus/ (Deficit) (+/-) (gpm)
1. Meet MDD & Replenish FSS w/in 72 hrs	2,050	878 (2)	+ 1,172
2. Meet MDD w/ 18 hrs Pumping	1,538	836 (3)	+ 702
3. Meet ADD w/o Largest Source	950	299 (4)	+ 651

(1) Includes Well No. 1, Q = 950 gpm (throttled to remain within instantaneous water rights), and Well No. 3, Q = 1,100 gpm. For the second condition, Q (avail) = (18 ÷ 24) × Q (both wells) = 0.75 × 2,050 = 1,538.
(2) Q_r = 2038 MDD + FSS/(3 Days x 1,440 Minutes/Day)
(3) Q_r = 2038 MDD
(4) Q_r = 2038 ADD/(1,440 Minutes/Day)

Regarding the fourth condition, outage data from Grant County Public Utility District indicate that the City has had three outages in the last three years. The longest was approximately 4.6 hours and the shortest was approximately 1 hour. The average outage was approximately 3.0 hours. Consequently, while backup power would provide

additional dependability for the City's water supply, reliability criteria do not require it at this time.

Source Protection

Source water protection is covered under WAC 246-290-135. Pertinent sections of this rule for Soap Lake include a section on the sanitary control area (SCA) and a section on wellhead protection.

The SCA consists of the area within a 100-foot radius around each well that must be kept free from "construction, storage, disposal, or application of any source of contamination". The City owns all the property within the SCA for Well No. 3, but not for Well No. 1. The City plans to approach property owners within the Well No. 1 SCA to obtain a restrictive covenant per WAC 246-290-135(2)(g) or purchase the property. It is noted that the mobile trailer court has been removed from this area.

The City's wellhead protection plan is provided in Chapter 5.

Water Rights

Table 3-4 summarizes the adequacy of the City's water rights to serve its customers for the 20-year planning period.

TABLE 3-4

Water Rights Adequacy

Year	Instantaneous Quantity (Qi)			Annual Volume (Qa)		
	MDD [1] (gpm)	Qi [2] (gpm)	Surplus/ (Deficit) (+ / -) (gpm)	Annual Prod. [1] (af/yr)	Qa [2] (af/yr)	Surplus/ (Deficit) (+ / -) (af/yr)
2016	656	2,050	+1,394	377	896	+519
2017	661		+1,389	381		+515
2018	668		+1,382	385		+511
2019	676		+1,374	389		+507
2020	683		+1,367	394		+502
2021	690		+1,360	398		+498
2022	698		+1,352	402		+494
2023	706		+1,344	407		+489
2024	714		+1,336	411		+485
2025	722		+1,328	416		+480
2026	730		+1,320	420		+476
2027	738		+1,312	425		+471
2028	746		+1,304	430		+466
2029	754		+1,296	435		+461
2030	763		+1,287	440		+456
2031	772		+1,278	445		+451
2032	781		+1,269	450		+446
2033	789		+1,261	455		+441
2034	799		+1,251	460		+436
2035	808		+1,242	465		+431
2036	817		+1,233	471		+425
2037	827		+1,223	476		+420
2038	836		+1,214	482		+414

(1) From Table 2-9.
(2) Source: Superseding certificates for 1012-D and G3-24343, and Report of Examination for 1324-A.

As indicated, the City's water rights more than adequately meet its needs for the next 20 years. The City's water rights self-assessment form is provided in Table 4-6.

STORAGE

The City has two reservoirs, a 500,000 gallon welded steel reservoir on the east side of town and a 500,000 gallon bolted steel reservoir on the west side of town. The West Reservoir overflow fills to capacity before the East Reservoir, although the data listed in

Chapter 1 indicates that the West Reservoir is higher in elevation. The City uses an altitude valve to allow full utilization of the east reservoir. The City has adjusted the altitude valve so that the east reservoir can be filled to a height of 38 feet, two feet below the top. WAC 246-290 and the WSDM define the following storage volumes for reservoirs.

- *Operational Storage (OS).* Operational storage is the volume at the top of the reservoir that is used to control the well pumps. The City uses the top 8 feet, or approximately 229,000 gallons, for this purpose. The telemetry references the level in the East Reservoir for operation of the wells.

- *Equalizing Storage (ES).* This storage component consists of the amount of storage needed to make up the difference between the PHD and the source capacity of the water system. The WSDM requires sufficient ES to make up this difference for 150 minutes, i.e.,

  $ES = (PHD - Q_S)(150 \text{ min})$,

  where Q_S = the sum of all well capacities (in gpm) in the zone supplying the reservoir. WAC 246-290-230 (5) requires a minimum pressure of 30 psi at the bottom of ES.

- *Fire Suppression Storage (FSS).* Fire suppression storage is the amount of storage required to fight a fire. WAC 246-290-230 (6) requires a minimum pressure of 20 psi when the system is simultaneously providing MDD plus the required fire flow. The required FSS is determined to be the amount of required fire flow multiplied by the fire flow duration. For the City's commercial areas, 1,500 gpm for 2 hour results in a maximum fire flow storage requirement of 1,500 gpm × 120 min = 180,000 gallons. This amount is greater than the amount required for the school (2,000 gpm × 60 min = 120,000 gallons), or residential structures (1,000 gpm × 60 min = 60,000 gallons).

- *Standby Storage (SB).* The purpose of standby storage is to provide a measure of reliability when sources fail, power outages occur, or another emergency places the burden of water system supply solely on storage. With the approval of the local fire authority, WAC 246-290-235 allows fire suppression and standby storage to be nested, with the larger of the two volumes being the minimum required. Section 9.0.4 of the WSDM indicates that SB should provide for two days of ADD assuming the largest water source is out of service, i.e.,

  $$SB1 = (2\ days)(ADD) - t_m(Q_S - Q_L)$$

where Q_L = the capacity of the largest source, and t_m is the time that the sources are pumped during the two-day outage. The WSDM suggests using t_m = 1,440 minutes, or one day of pumping. Alternatively, the WSDM recommends that SB be no less than 200 gallons times the number of ERUs being served by the reservoir.

- *Dead Storage (DS).* Dead storage is water below the minimum design pressure of 20 psi during an emergency event. For Soap Lake the highest service meter in the main pressure zone is at an elevation of approximately 1155, putting the minimum allowable hydraulic gradient at 1202 (= 1155 + (20 ÷ 0.433) + 1 foot head loss). The expansion of the upper pressure zone has significantly improved the usable water levels in the reservoirs by reducing dead storage.

WAC 246-290-235(4) allows fire suppression storage and standby volumes to be combined or "nested," provided the local fire protection authority does not require them to be additive. Table 3-5 shows the analysis of the City's physical storage capacity without nesting.

TABLE 3-5

Storage Volumes Without Nesting

Year	Storage Component (Amounts in gal)					(+/-) [3] (gal)	Res. El. [4] (ft)	Lowest Press. [5] (psi)
	OS	ES [1]	FSS	SB [2]	Total			
2016	229,000	-	180,000	261,500	670,500	329,500	1,220	28
2017	229,000	-	180,000	264,300	673,300	326,700	1,220	28
2018	229,000	-	180,000	267,200	676,200	323,800	1,220	28
2019	229,000	-	180,000	270,100	679,100	320,900	1,220	28
2020	229,000	-	180,000	273,000	682,000	318,000	1,220	28
2021	229,000	-	180,000	276,000	685,000	315,000	1,220	28
2022	229,000	-	180,000	279,000	688,000	312,000	1,220	28
2023	229,000	-	180,000	282,100	691,100	308,900	1,220	28
2024	229,000	-	180,000	285,200	694,200	305,800	1,220	28
2025	229,000	-	180,000	288,400	697,400	302,600	1,219	28
2026	229,000	-	180,000	291,600	700,600	299,400	1,219	28
2027	229,000	-	180,000	294,900	703,900	296,100	1,219	28
2028	229,000	-	180,000	298,200	707,200	292,800	1,219	28
2029	229,000	-	180,000	301,600	710,600	289,400	1,219	28
2030	229,000	-	180,000	305,000	714,000	286,000	1,219	28
2031	229,000	-	180,000	308,500	717,500	282,500	1,219	28
2032	229,000	-	180,000	312,000	721,000	279,000	1,219	28
2033	229,000	-	180,000	315,500	724,500	275,500	1,218	27

TABLE 3-5 (continued)

Storage Volumes without Nesting

Year	Storage Component (Amounts in gal)					(+/-) [3] (gal)	Res. El. [4] (ft)	Lowest Press. [5] (psi)
	OS	ES [1]	FSS	SB [2]	Total			
2034	229,000	-	180,000	319,200	728,200	271,800	1,218	27
2035	229,000	-	180,000	322,900	731,900	268,100	1,218	27
2036	229,000	-	180,000	326,600	735,600	264,400	1,218	27
2037	229,000	-	180,000	330,400	739,400	260,600	1,218	27
2038	229,000	-	180,000	334,200	743,200	256,800	1,218	27

(1) The capacity of the City's two wells exceeds the City's PHD for the 20-year planning period.
(2) SB = 200 × ERUs was the higher value in all cases.
(3) Total storage in both reservoirs = 1,000,000 gal.
(4) Top of storage is El. 1246 ft. Bottom of storage is at El. 1208 (east reservoir). The elevation given is the elevation when OS, ES, FSS, and SB are depleted.
(5) Highest service in the City's main pressure zone is at approximately El. 1155. Lowest Pressure = (Reservoir El – 1155) × 0.433. The pressure given is the pressure when OS, ES, FSS, and SB are depleted.

As indicated, without nesting the City has adequate reservoir capacity for the next 20 years. The expansion of the upper pressure zone has corrected the previous pressure deficiencies in the area. When the reservoir is full at an elevation of 1246, the static pressure at the highest service is 39 psi ((1246 - 1155) × 0.433), well above the required 30 psi for normal operation. As shown in Table 3-5, the lowest pressure in the system after FSS and SB storage have been depleted is 27 psi.

Both reservoirs are structurally sound, but the west reservoir, the bolted steel tank, leaks occasionally due to expansion and contraction. The City plans to continue to monitor the reservoir and tighten the bolts as necessary. The Sanitary Survey completed on March 7, 2017 only indicated minor items to be addressed for each reservoir, such as ensuring that the hatch seals are tight and that 24-mesh vent screens are installed. The City anticipates replacing this tank during the 20-year planning period due to the ongoing maintenance concerns, but does not plan to do so in the near future.

The City has a cleaning and maintenance contract with Utility Service Co., Inc. for the east reservoir. The contract includes an annual inspection of the reservoir and recoating of the reservoir when the interior and exterior coating thicknesses become insufficient.

Additional Pressure Zones

The City does not anticipate the need to establish additional pressure zones in the northeast portion of the City. The highest potential service within the City Limits near the booster pump station is at an elevation of approximately 1225, while the booster pump station is at an elevation of approximately 1206. With the current setting of 45 psi at the booster pump station and negligible head loss in the 8-inch diameter pipe, a pressure of 37

psi (45 psi - ((1225 – 1206) x 0.433)) can be provided throughout the existing upper pressure zone.

No plans have been made to provide water service to the City Limits in Section 18 on Figure 1-2, approximately 1 mile north of the BPS and East Reservoir. An off-road vehicle park had previously been planned for this area, but this plan has been canceled. In order to serve this area, which is 400 feet higher than the majority of the City, the City would need to install additional booster pump stations and approximately two miles of transmission main. Alternatively, the City could construct a new well and reservoir for this area. At this time, it does not appear likely that development will occur in this area in the near future.

BOOSTER PUMPING STATION

The City constructed a small closed-system BPS in 1996 to improve pressures to about a dozen residences located east of the east reservoir. Since the upper pressure zone was expanded, it is estimated that 30 single family residences are served by the BPS. The BPS provides service to elevations above 1155. In 2017, the City completed improvements to the BPS and installed a VFD which keeps the upper pressure zone at 45 psi under normal operating conditions. Two service pumps are installed to provide 250 gpm at 110 feet total dynamic head (TDH) and two fire pumps are installed to provide 500 gpm at 80 TDH.

WAC 246-290 and the WSDM require that a closed system BPS meet the criteria shown in Table 3-6.

TABLE 3-6

Closed Booster Station Design Criteria

	Main Pressure Zone			Upper Pressure Zone	
Condition	**Demand Condition**	**Reservoir Level**	**Minimum Pressure**	**Demand Condition**	**Minimum Pressure**
1	PHD	ES Depleted	30	PHD	30
2	MDD + Fire Flow	ES & FSS Depleted	20	PHD	30
3	PHD	ES & FSS Depleted	20	MDD + Fire Flow	20

The hydraulic model described below indicates that the two 125 gpm (250 gpm total) pumps that serve the current upper pressure zone can meet conditions 1 and 2. The two 250 gpm (500 gpm total) fire pumps, in combination with the service pumps provide approximately 800 gpm for fire flows at 20 psi, which is permissible for the upper pressure zone.

The BPS should also be evaluated for capacity based on the largest pump out of service. If the first service pump is out of service or is unable to meet demand, the next service pump automatically turns on to provide for system demand. If the service pumps are not able to meet system demands, the first fire pump will turn on. If the first fire pump is still not able to provide for system demands, the second fire pump will automatically turn on. As discussed in Chapter 1, one service pump operating at a reduced speed is sufficient to provide system demands. Even if one pump is out of service, the BPS can still provide sufficient capacity, except fire flows would be reduced.

Because the City's upper pressure zone is a closed system, standby power facilities must be considered (WSDM, Section 10.5). Per the discussion on source reliability, the City's power supply meets the requirements of WAC 246-290-222 and standby power is not required. The existing flow meter does not function and is recommended to be replaced. The City can utilize its annual budget to accommodate this replacement and considers this to be system maintenance, rather than a capital improvement project.

TREATMENT

The City does not currently disinfect its water supply, and is not currently required to do so. The City does not plan to provide disinfection within the planning period.

TELEMETRY

The City uses a radio telemetry system to operate its water system. The system uses water level information from the East Reservoir to activate both of the City's wells. Data are returned to the wastewater treatment facility office where the reservoir level is digitally displayed and also tracked on a chart recorder. At this time, the telemetry system is operating reliably and does not have any significant deficiencies. The City will monitor the condition of its telemetry equipment and plan for replacement within the 20-year planning period.

TRANSMISSION AND DISTRIBUTION

The following section provides a discussion of the hydraulic model calibration and results.

Hydraulic Capacity Analysis – Modeling

A hydraulic model was developed in 2011 for the City's water system by creating an H_2ONet database of the distribution system, reservoirs, and wells. This model was recalibrated for this plan. H_2ONet uses a graphical interface loaded into AutoCAD to develop the water system grid and components. A linked computer model performs hydraulic calculations and returns output flows and pressures.

Field fire flow testing was conducted on March 24, 2011 to obtain data necessary for calibration of the model. During this testing, fire hydrants throughout the City were

opened and flows were recorded with a pitot gauge on the hydrant. Pressures at nearby locations were recorded before, during, and after the testing. These values were used to adjust parameters in the H_2ONet model until its output closely matched the field results obtained through hydrant testing.

In the model runs, it was assumed that the City's reservoirs were drawn down to El. 1,231, the level where OS, ES, and FSS are depleted, that Well No. 1 was operating (i.e., the City's largest well, Well No. 3, was out of service), and the system demand was set to fire flow plus the 2038 MDD. This case was more severe than the 2038 PHD with OS and ES depleted and the reservoirs at an elevation of 1,238.

In general, the model indicates that the majority of the City's distribution system can provide the City's fire flow requirement while supplying the MDD and providing minimum or better pressures. There are, however, several 4- and 6-inch lines that do not meet these requirements.

Figure 3-1 shows the pressure within the water system during peak hour demands.

Fire Flow Deficiencies

There are several lines with hydrants in residential areas that are unable to deliver the City's required fire flow of 1,000 gpm. Table 3-7 summarizes these deficiencies. The model indicates that if the lines supplying these hydrants are upsized or if loops are provided with a nearby pipeline, they would meet the City's fire flow standard. These improvements are identified in Chapter 8. Hydrants in the City's commercial and school zones are capable of meeting the higher fire flow requirements for those areas.

The City has several fire hydrants which need to be replaced, as shown in Figure 3-2. In 2017, the City replaced 16 fire hydrants. Five hydrants are still designated by the fire chief to need replacement and several others are in poor condition.

Other Distribution Deficiencies

The City has noted that the water line between Daisy Street and Elder Street on 1st Ave SE is only ¾-inch diameter. This line needs to be upsized to provide looping and sufficient flows.

SOAP LAKE

EAST RESERVOIR

BOOSTER STATION

UPPER PRESSURE ZONE

MAIN PRESSURE ZONE

WELL NO.3

WELL NO.2 (INACTIVE)

WELL NO.1

WEST RESERVOIR

CITY HALL

WWTF

LAKE SHORE DR

3RD AVE NW

5TH ST

MAIN AVE

ST W

1ST ST

JUNIPER ST

HEMLOCK ST

GINKGO ST

FIR ST

EVERGREEN ST

DOGWOOD ST

CHERRY ST

BIRCH ST

ASH ST

DIVISION ST N

WOODLAND ST

SCENIC DR

SR 17

4TH AVE NE

3RD AVE NE

2ND AVE NE

1ST AVE NE

CANNA ST N

ELDER ST N

FERN ST N

GLADIOLA ST N

EAST LAKE AVE

2ND AVE SW

3RD AVE SE

4TH AVE SE

5TH AVE SE

6TH AVE SE

7TH AVE SE

8TH AVE SE

ASH ST S

BUTTERCUP ST S

DIVISION ST S

CANNA ST S

ELDER ST S

FERN ST S

GLADIOLA ST S

2ND PL SE

3RD PL SE

SR 28

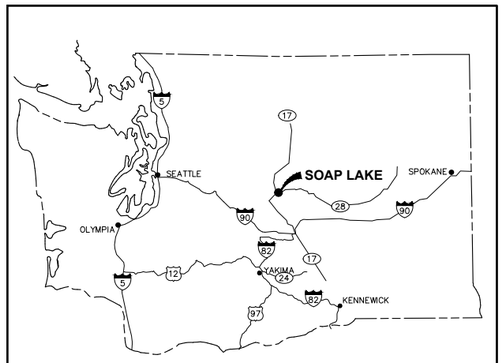
LAKEMORE DR

1000' 500' 0 1000' 2000'

SCALE: 1"=1000'

LEGEND

- R RESERVOIR
- W WELL
- B BOOSTER STATION
- PRESSURE ZONE
- WATER MAIN
- 20 PSI CONTOUR
- 30 PSI CONTOUR
- 40 PSI CONTOUR
- 50 PSI CONTOUR
- 60 PSI CONTOUR
- 70 PSI CONTOUR



VICINITY MAP

CITY OF SOAP LAKE

WATER SYSTEM PLAN

FIGURE 3-1

PEAK HOUR DEMAND SYSTEM PRESSURES

Gray & Osborne, Inc.

CONSULTING ENGINEERS

M:\Soap Lake\16040 – Water System Plan\Figures\FIGURE 3-1.dwg, 1/17/2019 1:32 PM, TIM DEVRIES

SOAP LAKE

R EAST RESERVOIR

B BOOSTER STATION

UPPER PRESSURE ZONE

MAIN PRESSURE ZONE

W WELL NO.2 (INACTIVE)

W WELL NO.1

R WEST RESERVOIR

CITY HALL

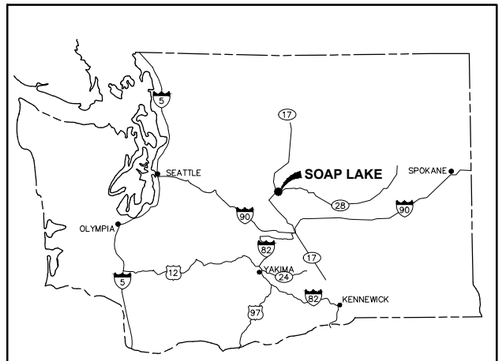
WWTF

1000' 500' 0 1000' 2000'

SCALE: 1"=1000'

LEGEND

- R RESERVOIR
- W WELL
- B BOOSTER STATION
- CITY LIMITS
- UGA BOUNDARY
- PRESSURE ZONE
- WATER MAIN
- HYDRANT – GOOD CONDITION
- HYDRANT – POOR CONDITION
- HYDRANT – NEEDS REPLACEMENT



VICINITY MAP

CITY OF SOAP LAKE

WATER SYSTEM PLAN

FIGURE 3-2

EXISTING FIRE HYDRANT MAP

Gray & Osborne, Inc.

CONSULTING ENGINEERS

M:\Soap Lake\16040 – Water System Plan\Figures\Figure 3-2.dwg, 1/17/2019 1:42 PM, TIM DEVRIES

TABLE 3-7

Fire Flow Deficiencies

Location	Required Fire Flow (gpm)	Available Fire Flow [(1)] (gpm)	Residual Pressure [(2)] (psi)
Main St. west of Maple St. [(3)]	1,000	880	20
Evergreen St. north of Main St.	1,000	390	20
Dogwood St. north of Main St.	1,000	880	20
Lakemore Drive	1,000	540	20
SR 17 north of 4th Ave.	1,000	850	20
Intersection of 1st Ave. NE and Division St.	1,000	880	20
Intersection of Fern St. and 4th Ave.	1,000	880	20
7th Ave SW West of Division Ave [(3)]	1,000	920	20

(1) OS, ES and FSS depleted, Well No. 1 running.
(2) Residual pressure at hydrant at the listed available fire flow.
(3) Improvements will be completed via future looping as the area develops.

As indicated, these deficiencies occurred with storage volumes depleted and Well No. 1 operating. Slightly better results were obtained with both wells running, but the improvement was not sufficient to remove the deficiencies.

WATER SYSTEM PHYSICAL CAPACITY ANALYSIS

Worksheet 6-1 from the WSDM, presented at the end of this chapter, shows that the City has sufficient source, water rights, and storage capacity to meet the City's 2016 needs. Table 3-8 summarizes the adequacy of the City's water system components to meet existing, 10-year, and 20-year demands. As indicated, all components will have sufficient capacity to meet 20-year demands.

TABLE 3-8

System Component Adequacy

Component	Available Capacity	Requirement			Reference
		2016	2028	2038	
Source, MDD, gpm	2,050	656	746	836	Table 3-2
Water Rts, Qi, gpm	2,050	656	746	836	Table 3-4
Water Rts, Qa, ac-ft/yr	896	377	430	482	Table 3-4
Equalizing Storage, gal	0	0	0	0	Table 3-5
Fire Supp. Storage, gal	180,000	180,000	180,000	180,000	Table 3-5
Standby Storage, gal	591,000 (1)	261,000	298,000	334,000	Table 3-5
BPS (one pump), gpm	125	15	15	15	(2)

(1) SB Available= 1,000,000 (total) – 229,000 (OS) – 180,000 (FSS) = 591,000 gal.

(2) A total of approximately 30 single family residences (ERUs) is included in the expanded upper pressure zone. Based on the 2016 MDD flows of 656 gpm and 1,307 ERUs, (0.50 gpm/ERU x 30 ERUs) yields approximately 15 gpm in the upper pressure zone.

SYSTEM DEFICIENCIES

Table 3-9 summarizes the deficiencies identified in this chapter. Improvements the City plans to implement to correct these deficiencies and a schedule for the improvements planned within the next six years is presented in Chapter 8. Preliminary cost estimates are also provided in Chapter 8.

TABLE 3-9

Summary of Deficiencies

Category	Deficiency
Source	The City's water rights and source capacity are sufficient for the 20-year planning period. However, Well No. 1 was drilled in 1940 and may need to be replaced within the 20-year planning period.
Storage	The City's storage volumes are adequate to meet 20-year needs.
Treatment	The City is in compliance with all water quality requirements.
Telemetry	The City's telemetry system is adequate to meet its 20-year needs.
Booster Pumping Station	Flow meter does not function.
Distribution	Several 4- and 6-in lines (Table 3-7) do not meet fire flow requirements.
	The 3/4-inch line on 1st Ave SE between Daisy Street and Elder Street is undersized.

WORKSHEET 6-1: ERU Determinations

SOAP LAKE Water System Physical capacity Documentation based on MDD

Note: *Capacity determinations are only for existing facilities that are operational for the water system.*

Specific Single-Family Residential Connection Criteria (measured or estimated demands) (see Chapter 2):

Average Day Demand (ADD): 257 gpd/ERU (Chapter 2)
Max. Day Demand (MDD): 720 gpd/ERU (MDD = ADD × MDD/ADD)

Water System Service Connections Correlated to ERUs			
Service Classification	**Total MDD for the Classification, gpd [1]**	**Total # Connections in the Classification [1]**	**ERUs [1]**
Residential			
Single-family	446,000	619	619
Multi-family	131,700	42	183
Nonresidential			
Industrial	---	---	---
Commercial	98,300	71	136
Governmental	---	---	---
Agricultural	---	---	---
Recreational	---	---	---
Other	---	---	---
Other	---	---	---
Other	---	---	---
DSL	266,000	N/A	369
Other (identify)	---	---	---
Total ERUs			**1,307**

Physical Capacity as ERUs			
Water System Component	**Calculated Capacity (ERUs)**	**2016 [3] (ERUs)**	**2016 (+/-) ERUs**
Source(s) [2]	3,073	1,307	+1,765
Treatment	N/A	---	---
Equalizing Storage [3]	5,145	1,307	+3,838
Standby Storage [4]	2,795	1,307	+1,488
Distribution [5]	N/A	---	---
Transmission	N/A	---	---
Water Rights, Qi	4,097	1,307	+2,790
Water Rights, Qa	3,108	1,307	+1,801
Booster Pump Station [6]	250	30	+220
Water System Physical Capacity (ERUs) = (based on the limiting water system component shown above)		**2,795**	

Note: *If multiple-day storage is needed to meet MDD, another approach to estimate the ERU capacity is necessary.*

(1) Based on 2016 value.

(2) Based on meeting MDD with 18 hours of pumping. Sources are limited to the instantaneous water rights value.

(3) Equation 6-6 of WSDM.

(4) Equation 6-7 of WSDM.

(5) Distribution system physical capacity varies within the distribution system.

(6) See Table 3-8. Capacity assumes one service pump is in operation.

CHAPTER 4

WATER USE EFFICIENCY

BACKGROUND

In 2003, the Washington State Legislature passed Engrossed Second Substitute House Bill 1338, which has come to be known as the 2003 Municipal Water Law. Among other things, the new law required the Washington State Department of Health (DOH) to develop a rule that defines how municipalities are to demonstrate efficient use of their water supplies. In response, DOH developed the Water Use Efficiency (WUE) Rule, which became effective on January 22, 2007. Key elements of the rule and the City of Soap Lake's progress in meeting the rule are summarized in Table 4-1.

TABLE 4-1

Summary of Water Use Efficiency Rule Requirements

Requirement	Status City of Soap Lake
Install source meters	Completed
Begin collecting production and consumption data	Completed
Include WUE program in planning documents	In this Water System Plan
Set WUE goals through a public process	Completed
Submit service meter installation schedule	All Meters Installed
Submit first annual performance report	Completed
Meet distribution leakage standard	Over the Allowable Limit
Complete installation of all service meters	Completed

PRODUCTION AND SOURCE METERS

The City's water supply is provided by two wells, Well No. 1 and Well No. 3. Well No. 1 has the capacity to pump approximately 1,000 gpm and Well No. 3 can pump approximately 1,100 gpm. Each well is equipped with an 8-inch propeller flow meter. The City plans to replace its source meters and calibrate its existing meters to be kept as backups. Further description of the City's wells is provided in Chapter 1.

Monthly water production from the City's wells for 2014 through 2016 are shown on Figure 2-2 for reference. Annual production data, including average day demands, maximum day demands, and peak hour demands are summarized in Table 2-7. Water demand forecasts for the 20-year planning period are provided in Table 2-9.

SERVICE METERS AND WATER CONSUMPTION

Table 2-4 summarizes the City's annual water consumption history by customer class. Meters are required upon hookup and all of the City's residential and commercial customers are metered. The City performs maintenance and replacement on service meters as needed.

INTERTIES

The City does not have any interties with other water systems.

WATER USE EFFICIENCY PROGRAM

In January 2017, DOH published the third edition of its Water Use Efficiency Guidebook (Guidebook). Section 5.3 of the Guidebook summarizes the items that are to be included in a WUE program. A discussion of each item is provided in this section.

CURRENT WATER USE EFFICIENCY PROGRAM

The City encourages efficient use of water through its annual consumer confidence report. It has also adopted a base rate plus uniform volume charge rate structure that encourages conservation by charging customers by volume for water used over a base amount.

WUE GOALS

The WUE rule requires a water system's elected governing body to establish WUE goals that are measurable and have a timeframe for implementation. Soap Lake's WUE goals are:

- Supply side goal. Bring distribution system leakage below 10 percent within the next six years. Improve recording accuracy for production and consumption values used in DSL calculations.
- Demand side goal. The City already has a lower consumption per ERU than many other similar communities in the region. The City proposes to reduce consumption, currently at 257 gallons per day per ERU (Chapter 2), by approximately 1 percent to a level of 254 gallons per day per ERU or less over the next ten years.

These goals were adopted by City Council in a public meeting on January 17, 2018. The meeting was held in accordance with the requirements of WAC 246-290-830. A copy of the meeting minutes is included in Appendix N.

WUE MEASURES

The WUE Rule requires all municipal water systems to implement and evaluate certain mandatory water use efficiency measures. The City is also required to identify additional demand (i.e., customer) side measures. The purpose of adopting a particular set of water use efficiency measures is to develop a strategy to meet the City's two water use efficiency goals described above. The mandatory measures the City is required to address are summarized in Table 4-2.

TABLE 4-2

Mandatory Water Use Efficiency Measures

Mandatory Measures	Requirement	Status
Install source meters	Implementation	Completed
Install service meters	Implementation	Completed
Calibrate meters per industry standards	Implementation	As needed
Water loss control action plan if DSL>10%	Implementation	Within this plan
Educate customers about WUE once per year	Implementation	On-going every year
Water conservation rates	Evaluation	Completed – evaluated seasonal & inclined block rates

In addition to these mandatory measures, WAC 246-290-810(4)(d) requires systems with 500-999 connections to adopt another four demand (i.e., customer) side water use efficiency measures. The Guidebook provides that a qualified WUE measure that is implemented for different customer classes counts as multiple WUE measures.

The City previously adopted, in addition to the mandatory measures, two demand side measures for each of its seven customer classes. These measures include handing out toilet leak testing kits and notifying customers of high meter readings. At the January 17, 2018 City council meeting, the City decided to keep its current water use efficiency measures as listed below, plus send the Department of Health *Stop Water Waste* brochure for each of its customer classes to meet this requirement.

Table 4-3 summarizes the demand-side water use efficiency measures the City plans to implement over the next six years. The City believes that the goals will be very cost effective in reducing customer demand.

TABLE 4-3

Demand-Side Water Use Efficiency Measures

Demand Side Measures	Customer Classes Affected	Number of Measures (1)	Est. Ann. Water Savings(2)	Status	Cost
Distribute toilet leak detection kits	All (1)	7	7 gpd/ ERU	On-going	$100/yr
Notify customers of high meter reads	All (1)	7	2 gpd/ ERU	On-going	Minimal
Total Measures					

(1) Per the Guidebook, if a qualified WUE measure is implemented for different customer classes, it counts as multiple WUE measures. The customer classes are Residential, Lawn Meters, Residential Outside, Standby Residential, Commercial Residential, Commercial, and Standby Commercial.

(2) Savings projected by the end of the 6-year planning period. New savings are expected to enable the City to meet its second goal, i.e., to reduce consumption from 257 gpd to 254 gpd.

It is estimated that over the last six years, the City has saved 9 gpd/ERU through its adoption of the demand side measures of distributing toilet leak detection kits and notifying customers of high meter reads. Based on 2016 ERUs (1,307 ERUs – 369 ERUs for DSL = 938 ERUs), this equates to water savings of over 3 MG each year, or 18 MG over the past six year planning period.

WUE EDUCATION

As indicated above, the City encourages water use efficiency by periodically including water conservation information with its monthly billings and in its annual consumer confidence report. The City intends to continue these efforts.

PROJECTED WATER SAVINGS

Table 4-4 shows how meeting the City's demand side water use efficiency goals would affect its projected water demands.

TABLE 4-4

Projected Water Demands with Water Savings (1)

Year	Population	ERUs	ADD (gpd)	Annual Prod. (af/yr)	MDD (gpd)	MDD (gpm)	PHD (gpm)
Without Savings (Table 2-9)							
2016	1,535	1,307	337,000	377	944,000	656	1,180
2028	1,835	1,491	383,700	430	1,074,400	746	1,343
2038	2,130	1,671	430,000	482	1,204,000	836	1,505
With Savings							
2016	1,535	1,307	337,000	377	944,000	656	1,180
2028	1,835	1,491	379,800	425	1,063,500	739	1,329
2038	2,130	1,671	425,700	477	1,192,000	828	1,490
Net Savings							
2016	1,535	1,307	-	-	-	-	-
2028	1,835	1,491	3,900	5	10,900	7	14
2038	2,130	1,671	4,300	5	12,000	8	15

(1) Savings attributable to reducing customer usage by 1 percent. DSL is assumed to remain at current rate.

EVALUATING WUE EFFECTIVENESS

The City plans to track the effectiveness of its WUE efforts by annually checking its distribution system leakage to determine whether its on-going leak detection and repair efforts are enabling it to meet its first WUE goal to bring its DSL below 10 percent. It also plans to annually check its residential water use to determine if its demand-side water use efficiency measures are helping it meet its second WUE goal to reduce consumption. The City's plan for collecting data to make these evaluations is summarized in Table 4-5.

TABLE 4-5

Water Use Data Collection Strategy

Data Type	Unit of Measure	Collection Frequency	Comments
Water Production	Gallons	Weekly	Total water produced from all sources
Revenue Water	Gallons	Monthly	Billed metered consumption plus estimated billed unmetered consumption
Unbilled Consumption	Gallons	Monthly	Estimated authorized unbilled metered and unmetered consumption
Authorized Consumption	Gallons	Monthly	The sum of Revenue Water and Unbilled Consumption

TABLE 4-5 (continued)

Water Use Data Collection Strategy

Data Type	Unit of Measure	Collection Frequency	Comments
Distribution System Leakage (DSL)	Gallons	Annually	Water Production – Authorized Consumption
	Percent	Annually	(Water Production – Authorized Consumption) / * 100*Water Production
Apparent Losses	Gallons	Annually	Estimated unauthorized consumption, water theft, meter inaccuracies, and other non-leakage losses.
Leakage Eliminated	Gallons	Per Occurrence	When leaks are discovered and repaired, the leakage rate and duration are estimated and the resultant leakage volume for the billing period is estimated and recorded.

Although the WUE Rule does not allow the last two items, Apparent Losses and Leakage Eliminated, to be subtracted in the calculation of DSL, both are useful in tracking opportunities for reducing DSL.

DISTRIBUTION SYSTEM LEAKAGE

Current DOH rules require calculation of the three-year average DSL to determine compliance with its maximum 10 percent DSL allowance. The analysis of the City's DSL presented in Chapter 2 indicates that City's three-year average DSL is approximately 17 percent (Table 2-5). As indicated above, the City's first WUE goal is to bring its DSL below 10 percent, which it believes is achievable if it continues to target system leakage as it has in the past.

WATER LOSS CONTROL ACTION PLAN

Because the City's DSL is higher than the standard, the City must submit a Water Loss Control Action Plan (WLCAP) noting the following requirements:

a. Control Methods to Achieve Compliance with DSL Standards

As shown in Table 2-5, the metered production increased from 2014 to 2016, but the metered consumption decreased sharply from 2015 to 2016. This suggests that the City's source meters or service meters may not be properly calibrated. The City will calibrate or replace their source meters and investigate their billing software and service meters, including a plan to implement an Automatic Meter Reading (AMR) System. In addition, the City may perform leak testing of its distribution system to verify whether additional leakage has occurred since the last Water System Plan Update.

b. An Implementation Schedule

The City will complete the measures noted above by the end of 2019. If leakage requiring replacement of portions of the distribution system is noted, the City will perform the most critical projects first, as funding allows.

c. Budget for Implemented Measures

Calibration and/or replacement of source meters, leak detection, and investigation and replacement of service meters can generally be covered by the City's Operation and Maintenance budget. Chapters 8 and 9 provide further discussion of the financial impacts.

d. Technical or economic concerns which may affect the system's ability to implement a program or comply with the standard including past efforts and investments to minimize leakage

The City will replace deteriorated water system infrastructure as funding allows and as determined by the need for the project. Large capital projects will require rate increases which will impact the affordability index for the City's residents.

e. If the average distribution system leakage is greater than ten and less than twenty percent of total water produced and purchased, the water loss control action plan must assess data accuracy and data collection

The data in Table 2-5 suggests that the City's source meters, service meters, and billing software may be inaccurate. The City will investigate each of these items to ensure that data collection for both production and consumption is accurate.

CONSERVATION RATE STRUCTURE

The City has a base rate plus uniform block rate structure. The City has evaluated the feasibility of adopting and implementing a more conservation-directed inclined block rate. Seasonal rates were also evaluated. The City decided to not change its uniform block rate structure. There are several reasons for this.

- The City believes that while increasing these charges might promote some conservation, decreased consumption is likely to result in a decrease in revenue.
- The City's water utility is currently in good financial health (see Chapter 9), and is expected to remain so in the future.
- The City's average consumption rate of 257 gpm/ERU was already lower than many communities in Grant County, and the City believes that any additional reductions can be achieved better with the WUE measures outlined above.

SOURCE OF SUPPLY ANALYSIS

Soap Lake's water supply characteristics are summarized as follows:

- Name and Location. The City's water supply consists of two wells known as Well No. 1 and Well No. 3. A map of the wells and the City's water system is provided on Figure 1-1. Additional description of the City's sources is provided in Chapter 1.
- Capacity and Seasonal Limitations. Well No. 1 is capable of producing 1,000 gpm and Well No. 3 is capable of producing 1,100 gpm. These wells adequately meet the City's water needs. There are no seasonal limitations on these wells.
- Water Rights. The City has sufficient water rights to serve its existing population, and has a surplus that is more than sufficient to meet 20-year demands. Additional discussion of the City's water rights is provided in Chapters 1 and 3. The City's water right self assessment form is provided in Table 4-6. Pertinent water right documentation is provided in Appendix H.
- Legal Constraints. There are currently no legal constraints that would affect the City's ability to supply water to its customers over the next 20 years.

In general, the City has adequate source capacity and water rights, and does not foresee any obstacles that would prevent it from continuing to provide a safe, reliable, and affordable water supply to its customers for the 20-year planning period.

WATER SUPPLY RELIABILITY ANALYSIS

The City has two wells in use. The City has never had an issue with the water levels in its wells, but it will begin to maintain records of water levels to monitor for trends. Well No. 1 is an artesian well with approximately 1 foot of water head. The static water level of Well No. 3 is estimated to be 25 feet below ground surface. The drawdown in this well is typically only two or three feet while it is in operation. The City plans to monitor and record the water level in its wells in order to track long-term trends in the aquifer.

WATER RECLAMATION

Soap Lake's wastewater is treated at an activated sludge wastewater treatment facility west of town. The facility produces secondary effluent that is land applied via rapid infiltration basins. Currently, the City does not face any water right shortage, any water supply shortage, any environmental risk, or any other condition that would warrant the significant additional capital and operating expense of converting its existing facility to a water reclamation facility. The City does not have any locations where reclaimed water could be used. The City already uses irrigation water from USBR to irrigate its parks. Should these conditions change, the City may reconsider its decision.

TABLE 4-6

Water Right Self-Assessment Form for Water System Plan

Water Right Permit, Certificate, or Claim # *If water right is interruptible, identify limitation in yellow section below	WFI Source # If a source has multiple water rights, list each water right on separate line	Existing Water Rights Qi= Instantaneous Flow Rate Allowed (GPM or CFS) Qa= Annual Volume Allowed (Acre-Feet/Year) This includes wholesale water sold				Current Source Production – Most Recent Calendar Year Qi = Max Instantaneous Flow Rate Withdrawn (GPM or CFS) Qa = Annual Volume Withdrawn (Acre-Feet/Year) This includes wholesale water sold				10-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold				20-Year Forecasted Source Production (determined from WSP) This includes wholesale water sold			
		Primary Qi Maximum Rate Allowed	Non-Additive Qi Maximum Rate Allowed	Primary Qa Maximum Volume Allowed	Non-Additive Qa Maximum Volume Allowed	Total Qi[2] Maximum Instantaneous Flow Rate Withdrawn	Current Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume Withdrawn	Current Excess or (Deficiency) Qa	Total Qi[2] Maximum Instantaneous Flow Rate in 10 Years	10-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 10 Years	10-Year Forecasted Excess or (Deficiency) Qa	Total Qi[2] Maximum Instantaneous Flow Rate in 20 Years	20-Year Forecasted Excess or (Deficiency) Qi	Total Qa Maximum Annual Volume in 20 Years	20-Year Forecasted Excess or (Deficiency) Qa
1 1012-D	Wells No. 1, 2, and 3	400 gpm	0	224 ac-ft/yr	0	656 gpm	1,394 gpm	377 ac-ft/yr	519 ac-ft/yr	746 gpm	1,304 gpm	430 ac-ft/yr	466 ac-ft/yr	836 gpm	1,214 gpm	482 ac-ft/yr	414 ac-ft/yr
2 1324-A	Wells No. 1, 2, and 3	1,000 gpm	0	672 ac-ft/yr	0												
3 G3-24343	Wells No. 1, 2, and 3	650gpm	0	0 ac-ft/yr	0												
4																	
5																	
6																	
	TOTALS =	2,050 gpm[1]		896 ac-ft/yr		656 gpm	1,394 gpm	377 ac-ft/yr	519 ac-ft/yr	2,050 gpm	1,304 gpm	430 ac-ft/yr	466 ac-ft/yr	836 gpm	1,214 gpm	482 ac-ft/yr	414 ac-ft/yr
Column Identifiers for Calculations:		A		B		C	=A-C	D	=B-D	E	= A-E	F	=B-F	G	=A-G	H	=B-H

PENDING WATER RIGHT APPLICATIONS: Identify any water right applications that have been submitted to Ecology.

Application Number	New or Change Application?	Date Submitted	Quantities Requested			
			Primary Qi	Non-Additive Qi	Primary Qa	Non-Additive Qa
No applications						

INTERTIES: Systems receiving wholesale water complete this section. Wholesaling systems must include water sold through intertie in the current and forecasted source production columns above.

Name of Wholesaling System Providing Water	Quantities Allowed In Contract		Expiration Date of Contract	Currently Purchased Current quantity purchased through intertie				10-Year Forecasted Purchase Forecasted quantity purchased through intertie				20-Year Forecasted Purchase Forecasted quantity purchased through intertie			
	Maximum Qi Instantaneous Flow Rate	Maximum Qa Annual Volume		Maximum Qi Instantaneous Flow Rate	Current Excess or (Deficiency) Qi	Maximum Qa Annual Volume	Current Excess or (Deficiency) Qa	Maximum Qi 10-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 10-Year Forecast	Future Excess or (Deficiency) Qa	Maximum Qi 20-Year Forecast	Future Excess or (Deficiency) Qi	Maximum Qa 20-Year Forecast	Future Excess or (Deficiency) Qa
1 No interties															
2															
3															
TOTALS =															
Column Identifiers for Calculations:	A	B		C	=A-C	D	=B-D	E	=A-E	F	=B-F	G	=A-G	H	=B-H

INTERRUPTIBLE WATER RIGHTS: Identify limitations on any water rights listed above that are interruptible.

Water Right #	Conditions of Interruption	Time Period of Interruption
1 None		
2		
3		

ADDITIONAL COMMENTS

(1) A new pump, motor, and VFD were installed in Well No. 1 in 2015, increasing its capacity from the previous 800 gpm to 1,000 gpm. The VFD can be used to throttle production and maintain 2,050 gpm per the instantaneous water rights. The flows required to meet MDD are much lower than the available well production, as shown in Table 2-9.

(2) Source production shown is based on the project MDD flows. The City has two wells which can combine to operate at the City's instantaneous water right limit of 2,050 gpm to meet MDD flow

CHAPTER 5

WELLHEAD PROTECTION PROGRAM

OBJECTIVE

The City of Soap Lake relies on Well No. 1 and Well No. 3 to meet its water supply needs. To protect groundwater supplies, the Environmental Protection Agency (EPA) and Washington Department of Health (DOH) require public water utilities to develop a wellhead protection program as a component of its water system plan. The purpose of a wellhead protection program is to provide water systems with a proactive program for preventing groundwater contamination. The minimum requirements for a wellhead protection plan are specified in WAC 246-290-135(3).

A successful wellhead protection program consists of a number of elements that must be developed before the plan can be fully implemented. These elements are described below and form the basis of the City's Wellhead Protection Program.

- A Susceptibility Assessment that determines the susceptibility of each source of contamination.
- A Delineated Wellhead Protection Area (WPA) based on all reasonable available hydrogeologic information, inclusive of the Susceptibility Assessment.
- An Inventory of potential sources of contamination within each wellhead protection area.
- A Spill Response Plan containing documentation for coordination with local first responders.
- A Contingency Plan for providing alternate sources of drinking water in the event that contamination does occur and management recommendations to reduce the likelihood those potential contamination sources will pollute the drinking water supply.

SUSCEPTIBILITY ASSESSMENTS

Separate susceptibility assessments have been completed for the City's sources and have been previously provided to DOH. It is believed that these assessments were completed in 2001. Copies of the original susceptibility assessments are provided in Appendix I. Susceptibility assessment ratings for each source are shown in Table 5-1.

TABLE 5-1

Susceptibility and Vulnerability Rating

Name of Source	Source Number	Susceptibility Rating(1)
Well No. 1	S01	Low
Well No. 3	S03	Moderate

(1) Source: Washington State Source Water Assessment Program

WELLHEAD PROTECTION AREA DELINEATIONS

The Calculated Fixed Radius Method was used to determine the wellhead protection area zones of contribution. Based on WAC 246-290-135, wellhead protection areas were estimated for 6-month, 1-year, 5-year, and 10-year periods. Delineation calculations are shown in Table 5-2. The delineation of the City's zones of contribution is shown on Figure 5-1.

TABLE 5-2

Wellhead Protection Delineations

Well Name	DOH No.	Q (1) (cf/yr)	Open Int. (2) (ft)	Porosity (3)	CFRs (ft)			
					6-mo	1-yr	5-yr	10-yr
Well No. 1	S01	16,771,457	30	0.22	636	899	2,011	2,844
Well No. 3	S03	16,771,457	246	0.22	222	314	702	993

(1) From 2018 annual production in Table 2-9. Calculations conservatively assume that each well pumps 100 percent of the water in case the other well is taken out of service.

(2) The perforated interval indicated for Well No. 1 is consistent with the susceptibility assessment provided in the City's 2002 Water System Plan. Pulling the pump and performing a video inspection of the well is recommended to determine actual intervals.

(3) Per recommendation in DOH Publication 331-018.

POTENTIAL CONTAMINANT SOURCES

Within a wellhead protection zone, there are many diverse activities that can contaminate an aquifer and potentially prevent its use as a viable drinking water source. Activities and sources may include land use practices, industrial and commercial operations, underground storage tanks, hazardous materials storage and use, septic tanks, and dry wells. A discussion of these practices and their potential affects on groundwater, and the regulatory requirements that may apply are included in the sections that follow Table 5-3, the inventory of potential contaminant sites in Soap Lake's wellhead protection zones. These sites are shown on Figure 5-1.

SOAP LAKE

24

19

25

30

WELL NO. 3

WELL NO. 1

3RD AVE NW

5TH ST

MAIN ST W

LAKE SHORE DR

1ST AVE NE

MAIN AVE

2ND AVE SE

2ND AVE SW

3RD AVE SE

4TH AVE SE

5TH AVE SE

6TH AVE SE

7TH AVE SE

8TH AVE SE

4TH AVE NE

3RD AVE NE

2ND AVE NE

1ST AVE NE

WARD ST

WOODLAND ST

SCENIC DR

LOMEMORE DR

SR 17

SR 28

MAPLE ST

JUNIPER ST

HEMLOCK ST

GINKGO ST

FIR ST

EVERGREEN ST

DOGWOOD ST

CHERRY ST

BIRCH ST

ASH ST

DIVISION ST N

DIVISION ST S

ARTHEL ST S

BUTTERCUP ST S

CANNA ST N

ELDER ST N

FERN ST N

GLADIOLA ST N

EAST LAKE AVE

CANNA ST S

ELDER ST S

FERN ST S

GLADIOLA ST S

2ND PL SE

3RD PL SE

1

2

3

1000' 500' 0 1000' 2000'

SCALE: 1"=1000'

LEGEND

- CITY LIMITS
- UGA BOUNDARY
- 6-MONTH TRAVEL TIME
- 1-YEAR TRAVEL TIME
- 5-YEAR TRAVEL TIME
- 10-YEAR TRAVEL TIME

POTENTIAL CONTAMINANT SOURCES

1. SOAP LAKE SCHOOL DISTRICT UNDERGROUND STORAGE TANK
2. SOAP LAKE ELEMENTARY SCHOOL UNDERGROUND STORAGE TANK
3. MCKAY HEALTH CARE UNDERGROUND STORAGE TANK

CITY OF SOAP LAKE

WATER SYSTEM PLAN

FIGURE 5-1

WELLHEAD PROTECTION ZONES

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\Soap Lake\16040 - Water System Plan\Figures\FIGURE 5-1.dwg, 1/17/2019 1:33 PM, TIM DEVRIES

TABLE 5-3

Inventory of Potential Contaminant Sources

No.	Site Name	Type	Status
1	Soap Lake School Dist	Underground Storage Tank (Diesel)	Active
2	Soap Lake Elementary School	Underground Storage Tank	Active
3	McKay Health Care	Underground Storage Tank	Active

The sites in Table 5-3 were identified in the available databases, including DOH's Source Water Assessment Program mapping, the State's Hazardous Sites list, Uniform Environmental Covenants Act registry, Brownfields list, and State Cleanup Sites list. Two additional underground storage tank sites were listed in the wellhead protection area for Well No. 1, but both tanks have been removed.

INDUSTRIAL AND COMMERCIAL ACTIVITY

Industrial and commercial activities pose a potential threat to groundwater quality due to the use of hazardous materials. Examples of these activities may include gasoline service stations and auto repair shops (petroleum fuels, heavy metals), dry cleaners (dry cleaning solvents), printers and publishers (solvents, inks, and dyes), and metal plating shops (cyanides and heavy metals). In Soap Lake's case, the underground storage tank owned by the Soap Lake School District is used to store diesel fuel for school buses. Industrial and commercial activities may be regulated by the State, but only for specific functions. However, there are no industrial or commercial regulations regarding potential groundwater contamination. Municipalities have the option of prohibiting or restricting industrial or commercial development within WPAs through the adoption of a local ordinance.

HAZARDOUS MATERIAL STORAGE

Hazardous material storage is a specific function of industrial and commercial businesses. At the Federal level, hazardous material storage, use, and discharge is regulated through the Resource Conservation and Recovery Act (RCRA), Code of Federal Regulations (CFR) Title 40, Parts 240 to 280. Areas where hazardous materials are handled subject to RCRA regulation are known as RCRA sites. RCRA sites are not necessarily contaminated, but since significant amounts of hazardous materials are handled there is the potential for contamination if a spill, leak, or discharge should occur. At the State level, these activities are regulated by the Ecology's Dangerous Waste Regulations (WAC 173-303). The State maintains a database of dangerous waste generators that can be searched by county. However, generators of small quantities of dangerous waste (< 220 lbs/month) are not included in Ecology's database.

UNDERGROUND STORAGE TANKS

Underground storage tanks (USTs) and leaking underground storage tanks (LUSTs) are a significant threat to groundwater quality. Most petroleum products stored in USTs are less dense than water and when released into the vadose (unsaturated) zone can migrate to the water surface of an unconfined aquifer or in groundwater. Petroleum products and impurities tend to be mobile in aquifers with increasing mobility when organic matter in soils is low. The greatest amount of petroleum contaminant movement is in the lightest hydrocarbons (e.g., gasoline) with the greatest solubility in water. EPA estimates that 35 percent of all USTs leak. The most common causes of leaks are structural failure, corrosion, improper fittings, and improper installation.

Ecology regulates USTs under WAC 173-360. The regulation requires that owners and operators of nonexempt underground storage tanks comply with the following:

- Notification, reporting, and record keeping
- Performance standards and operating closure requirements
- Registration and licensing
- Financial responsibility

The WAC allows a number of exemptions including tanks whose capacity is 110 gallons or less, farm and residential tanks with less than 1,100 gallons, heating oil tanks less than 1,100 gallons per premises, and septic tanks.

Owners and operators of all existing nonexempt USTs must have a permit from Ecology. A valid permit is a requirement for delivery of regulated substances and must be updated annually. As a condition of the permit, the owner must have completed the following requirements:

- An assessment of the tank condition by a licensed tank service provider approved by Ecology.
- Replacement of leaking tanks and site cleanup.
- Installation of leak detection devices.
- Proof of insurance to compensate a third party in the event of bodily injury or property damage stemming from a leaking tank. One million dollars insurance is required for petroleum marketing facilities.

In addition to the above requirements, all existing nonexempt USTs must provide cathodic and spill and overflow containment protection.

Installation and replacement of nonexempt USTs must meet the specifications and

performance and design standards listed in the WAC. Ecology follows the federal UST guidelines, which at this time does not require double walled tanks. The standards are performance based centered on the ability to detect a leak. Double walled tanks are generally installed where interstitial leakage detection systems are not required.

Nonexempt UST inspections are performed by Ecology primarily through the permitting process. Though routine annual inspections are not performed, Ecology inspectors do prioritize sites considered potentially hazardous. Technical assistance visits are also conducted at the request of the owner or operators.

When USTs are taken out of service, Ecology regulations refer to this as "closure". Closed USTs must be emptied, cleaned, and either removed or filled with an inert substance such as sand. If the UST is left in place and filled with an inert substance this is referred to as "closed in place."

Ecology maintains a database of all permitted nonexempt USTs in the State, as required by RCRA, Subtitle 1. The database provides the site name and address, tank identification number, date of installation, size, tank status, and the substance stored on the site. An additional database maintained by Ecology contains information about known LUSTs and corrected LUSTs. Both databases are updated twice a year.

SEPTIC SYSTEMS

Contaminants associated with septic tank effluent include pathogenic organisms, toxic substances, and various nitrogen compounds including ammonia and nitrate that are highly soluble in water. Most septic drain fields discharge effluent to the unsaturated zone above unconfined aquifers. However, the potential exists for contaminants from drain fields percolating to the saturated zone and contaminating groundwater supplies.

The City is aware of septic tanks near Aster Street S. between 7th Avenue SE and 8th Avenue SE in the southern portion of the City and near Ward Street and Woodland Street in the northeast portion of the City. Septic tanks located on Aster Street S. may be located within the 10-year travel time for Well No. 1.

ACCIDENTAL SPILLS AND LEAKS

Accidental spills or releases of contaminants can potentially impact groundwater supplies. Potential sources of spills and leaks include USTs, accidents, and poor disposal practices. Transportation routes are of concern due to the potential for hazardous materials spills from cargo vehicles. Also, industrial and commercial operations in the WPA are potential locations for accidental spills and leaks.

It is important that spills and leaks receive a quick and thorough response. A quick response can make the difference between a few cubic yards of contaminated material needing disposal and a massive groundwater cleanup effort costing millions of dollars. In order to have a quick response, the responsible party and any witnesses need to take the responsibility and realize that they can greatly reduce liability if they respond quickly. A

program to educate the public and hazardous materials handlers would help to increase the likelihood of a quick response in the event of a hazardous materials spill in the WPA.

Generally any report of a spill or leak in the WPA should be directed to the county emergency response number, 911. Staff at the 911 service will contact the appropriate response agencies. The following are possible responders to hazardous waste spills and leaks in the City's WHPA:

City Public Works Department
City Police Department
City Fire Department
County Sheriff
County Public Works Road Division
County Health Department
Washington State Patrol
Washington State Department of Ecology
Washington State Department of Transportation

IMPROPERLY SEALED OR SECURED WELLS

Improperly sealed or secured wells can act as direct conduits for contaminants to reach groundwater. It is recommended that any abandoned wells be securely capped to prevent unauthorized access. If wells remain out-of-service for an extended period of time, it is recommended that they be decommissioned and permanently abandoned to prevent aquifer cross-contamination.

The City's Well No. 2 has been placed on inactive status because it is immediately downgradient from the City's wastewater rapid infiltration basins. The City plans to continue to monitor this well for contamination.

CONFIRMED AND SUSPECTED CONTAMINATION SITES

Under the Model Toxics Control Act Cleanup Regulation, WAC 173-340, Ecology is responsible for ensuring that all hazardous waste sites are properly remediated. Hazardous waste sites include confirmed and suspected sites of contamination as well as LUSTs. A separate inventory for each, which includes the status of cleanup efforts, is maintained by Ecology. Ecology conducts an initial site investigation within 90 days of learning of a potentially contaminated site. If this investigation shows that remedial action is required, the site will appear on the Confirmed and Suspected Contaminated Sites Report. The sites are also given a Washington Ranking Code BIN number between 1 and 5, with 1 indicating the greatest assessed risk to human health and the environment and 5 indicating the least. The contaminant type and the affected media, such as groundwater, are also noted. Once the remedial action has been completed, Ecology's Toxics Cleanup Program determines if the site can be removed from the list.
The City's recent inventory of contaminant sites indicates there are no toxic remediation sites in the City's wellhead protection area.

WELLHEAD PROTECTION AREA MANAGEMENT STRATEGIES

Wellhead protection areas have been defined and potential sources of contamination were identified in Table 5-3. In order for this to result in actual protection for the City's wells, a management plan must be put into place. The goals of a management plan should include the following elements:

- Reduce the likelihood that potential groundwater contaminants will be disposed, spilled, leaked or otherwise discharged in the wellhead protection area such that they could contaminate groundwater.

- Increase the likelihood that any potential groundwater contaminants, which get disposed, spilled, leaked, or otherwise discharged in the wellhead protection area, be cleaned up before they can reach the public water supply wells.

- Detect any groundwater contamination, which may occur before public health is affected.

- Develop a plan of action based on the event that a major source of the City's water supply should become contaminated.

MINIMUM REQUIREMENTS

Minimum management requirements for wellhead protection plans are specified in WAC 246-290-135 (3)(c)(iv)-(vii). These requirements are listed as follows:

- Notification to owners and operators of potential sources of contamination of the wellhead protection areas and the findings of the wellhead protection plan.

- Notification to regulatory agencies and local governments of the wellhead protection areas and the findings of the wellhead protection plan.

- A contingency plan to assure that water system customers will have an adequate supply of potable water in the event of temporary or permanent loss of the principal source of supply.

- Documentation of coordination with local emergency incident responders including notification of wellhead protection area boundaries, results of susceptibility assessment, inventory findings and contingency plan.

RECOMMENDED ADDITIONAL ACTIONS

In addition to the minimum requirements in the regulation, there are other measures the City could consider to enhance the effectiveness of its wellhead protection program:

- Public education regarding appropriate handling and disposal of potential groundwater contaminants.
- Public assistance for appropriate disposal of potential groundwater contaminants.
- Groundwater monitoring to detect groundwater contamination before it reaches the City's sources.
- Formation of a Local Wellhead Protection Committee.
- Ordinances to empower the City to take action as necessary to protect their water supply from contamination.

NOTIFICATIONS

Minimum requirements for notification of wellhead protection areas are issued to owners and operators of potential sources of contamination, to regulatory agencies and local governments, and to local emergency incident responders. Notifications must be sent at least every two years. The most recent date that the City sent notification letters is February 12, 2019.

Notices to Owners of Potential Sources of Contamination

Several potential sources of contamination have been discussed above, including industrial and commercial activities, hazardous materials storage, underground storage tanks, septic tanks, accidental spills, and confirmed and suspected contamination sites. Operations that merit special attention in the notification process include auto shops, registered underground storage tank, and hazardous materials handlers.

A standard letter has been sent to all business owners identified on the list of potential contaminant sources in Table 5-3; an example letter is provided at the end of this chapter. The standard letter notifies the owners that their property is in the wellhead protection area, includes a map of the wellhead protection area, and states that the activities of their business may be a potential source for ground water contamination.

Notification to Regulatory Agencies and Local Governments

Under WAC 246-290-135, it is required that notification be provided to regulatory agencies and local government of the WPAs and an inventory of potential sources of contamination in the area be identified. The regulatory agencies and local government office that must receive the notification are listed as follows:

Washington State Department of Ecology
Water Resources Division
P.O. Box 47775
Olympia, WA 98504-7775
Phone: (360) 407-6000

Washington State Department of Health
Division of Drinking Water
Eastern Regional Office
Contact: Russell Mau, P.E.
16201 East Indiana Avenue, Suite 1500
Spokane Valley, WA 99216
(509) 329-2100

Washington State Department of Commerce
Division of Growth Management
1011 Plum Street SE
P.O. Box 42525
Olympia, WA 98504-2525
Phone: (360) 725-3055

Grant County Health District
1038 W. Ivy Suite 1
Moses Lake, WA 98837
Business: (509) 766-6519

As part of the notification process, a copy of this Wellhead Protection Program was sent to the agencies noted above. An example letter is provided at the end of this chapter.

Notification to Local Emergency Incident Responders:

It is required by regulation that documentation of coordination with incident responders be provided. The following incident responders have been contacted and provided with information regarding the City's WPAs:

City of Soap Lake Police Chief
Ryan Cox
Business: (509) 246-1122

Grant County Emergency Management
Emergency: 911
Business: (509) 237-2987

Grant County Sherriff's Office
Administration Office
35 C Street N.W.
P.O. Box 37
Ephrata, WA 98823
Emergency: 911
Business: (509) 754-2011, ext. 2001

Fire Protection Bureau
Washington State Patrol
General Administration Building
PO Box 42642
Olympia, WA 98504-2642
Emergency: 911
Business: (360) 596-3900

Emergency Response, Washington
State Department of Transportation
310 Maple Park Avenue SE
Olympia 98504-7300
Emergency: 911
Business: (509) 7667-3080

Spill Response Program
Washington State Department of
Ecology
PO Box 47775
Olympia, WA 98504-7775
Business: (24hrs)(509) 329-3400
(800) 258-5990
(800) 424-8802

Grant County Public Works
124 Enterprise St. S.E.
Ephrata, WA 98823
Business: (509) 754-6082

Washington State Emergency Management
20 Aviation Dr.
Building 20, MS TA-20
Camp Murray, WA 98430-5112
(800) 562-6108

SPILL/INCIDENT RESPONSE PROGRAM

The City will call the Department of Ecology in case of a spill of oil or other hazardous substances. The Department of Ecology Spill Response Team is responsible for determining the source and cause of the release, and responsible party. If the responsible party is unknown, Ecology will investigate to determine who is responsible and ensure that containment, clean up, and disposal proceedings begin. In case of a spill of a hazardous substance to water, Ecology's Spill Response Program should be notified at 1-800-424-8802 and 1-800-258-5990.

CONTINGENCY PLAN

The City has approximately 1,000,000 gallons of water storage capacity. If both of the City's wells failed or became contaminated, the City would have slightly more than three days of supply during the ADD, or just over one day during the MDD. If such an emergency occurs, the City may consider one or more of the following short-term options:

- Bottled Water. This would require transporting large quantities of bottled water from a nearby major supply source, most likely Ephrata or Wenatchee.
- Tanker Trucks. Tanker trucks could transport water from Ephrata and could supply water for the City for several days or weeks until a permanent solution could be implemented. The City has access to a tanker truck that could be used for that purpose.
- Treatment. In the case of contamination, it may be possible to provide a temporary treatment facility to maintain basic water supply service.
- Conservation. Under any scenario, strict conservation measures, including a ban on outdoor irrigation, vehicle washing, laundry and other similar non-critical activities would be implemented to limit usage to that needed to maintain human health.

Long-term options include:

- Drill New Wells. In the unlikely event that both of the City's wells have become contaminated, the City could drill new wells to replace them, assuming new wells could be drilled outside the contamination plume. This approach would require engineering analysis to identify the best

location to drill new wells, and may or may not require the City to work with Ecology to process water right change applications.

- Treatment. In the case of contamination where drilling new wells is not an option, the City would evaluate the best treatment option for its ground water sources.

Washington State Emergency Management can also provide assistance in emergency planning. The telephone number for Washington State Emergency Management is (800) 562-6108.

Dear [agency/local government]:

As part of the wellhead protection program for the City of Soap Lake, we are hereby informing you of the findings of our wellhead protection area delineation. This is in accordance with State regulations (WAC 246-290-135).

Our City has approximately 1,000 active connections and serves a population of approximately 1,600 people. Due to the groundwater nature of our water system sources, our drinking water supply is very vulnerable to contamination.

The enclosed map shows the 6-month, 1-, 5-, and 10-year time of travel boundaries for our wellhead protection areas. Any ground water contamination that occurs within these wellhead protection areas has a high potential to reach our wells. It is therefore of utmost importance to us that all reasonable steps be taken to ensure that land use activities within this area do not contaminate our customers' drinking water supplies.

Thank you for your support in protecting our drinking water.

Sincerely,

Mayor Raymond Gravelle

Dear [owner]:

In order to protect the drinking water supply for the customers of the City of Soap Lake, we have developed a wellhead protection program in accordance with State requirements. As part of our wellhead protection program, we mapped the area overlying the short term recharge zone of our drinking water wells. This is called our wellhead protection area.

Following the mapping of the wellhead protection area, we conducted an inventory of **potential** sources of groundwater contamination within the area. The nature of your business, and its location within our wellhead protection area, means that your activities have the potential to affect our customers' drinking water supply.

We are required by the Washington State Department of Health to notify you periodically of your location within our wellhead protection area. We are also required to provide similar notification to the regulatory agencies that regulate your type of business. You may wish to contact them to request technical assistance to help manage your business in a way that will best prevent ground water contamination.

We realize you area already careful to protect the environment as you conduct your business. We hope that informing you of your location in our wellhead protection area will result in an increase in precautions to ensure that your activities will not impact our drinking water quality.

Sincerely,

Mayor Raymond Gravelle

CHAPTER 6

OPERATION AND MAINTENANCE

The Department of Health identifies several elements that are important in a properly managed operation and maintenance (O&M) program. A list of these elements and where they are discussed or presented in this Plan is provided in Table 6-1.

TABLE 6-1

Operation & Maintenance Program Elements

Operation and Maintenance Component	Location in Plan
Water System Management and Personnel	Chapter 1
Operator Certification	Chapter 6
Routine Operating Procedures	Chapter 6
Coliform Monitoring Plan	Appendix B-2
Emergency Response Plan	Appendix G
Safety Procedures	Chapter 6
Cross-Connection Control	Appendix F
Customer Complaint Response Program	Chapter 6
Record keeping and Reporting	Chapter 6
O&M improvements	Chapter 6

SYSTEM PERSONNEL

The City's water system personnel are listed below. The City's daytime phone number is (509) 246-1211. A comprehensive list of emergency phone numbers is provided in Appendix G.

TABLE 6-2

Water System Personnel

Name	Title	Certification	Phone
Darrin Fronsman	Public Works Director	WDM2, CCS, WDS	(509) 760-3738 (Cell) (509) 246-1211 (City Hall)
Sean Meyers	WWTP Operator, On Call for Water System		(509) 246-1211 (City Hall) (509-246-1823 (WWTP)

OPERATION AND MAINTENANCE PROGRAM

Tables 6-3 through 6-5 provide general information on the City's operation and maintenance program. Table 6-3 summarizes the City's principal operating and preventive maintenance activities and their frequency. Photos of the City's facilities are provided at the end of this chapter.

TABLE 6-3

Operation and Maintenance Practices

Activity	Frequency
Well inspection	5 days/wk
Record well production and reservoir data	Flow meter/weekly/manually Reservoir on chart recorder
Collect water samples for coliform testing	Monthly (two samples)
Read service meters	Monthly, except when snow covered
Record static water level in each well	Monthly
Check that reservoir hatch is closed and locked.	Monthly
Check screens on reservoir vents and well vents	Monthly
Well pump electrical draw	Twice per year
Well pump run times	Annually
Flush fire hydrants and blowoffs	Annually
Exercise valves	Annually
Inspect reservoir screen and hatch	Annually
Perform preventive maintenance on control valves	As Needed
Test/Replace service meters > 2-inches	As needed
Test/Replace service meters < 2-inches	Every 10 years
Test/Replace source meters	As Needed
Inspect and clean reservoir	As Needed
Pull and inspect well pumps & motors	As Needed

Table 6-4 summarizes the normal settings, positions and readings used for the City's water reservoirs.

TABLE 6-4

Normal Reservoir Settings (East Reservoir)

Item	Elevation (ft, msl)	Elevation in Reservoir (ft)	Setting
Reservoirs	1248	40	Top
	1246	38	Overflow
	NA	NA	High Level Alarm
	1246	38	Lead Well Off
	1246	38	Lag Well Off
	1239	31	Lead Well On
	1238	30	Lag Well On

Table 6-5 provides a list of the typical water system supplies used by the City, and the current suppliers for these materials.

TABLE 6-5

Supplies and Suppliers

Supply	Supplier	Phone
PVC Pipe	H.D. Fowler, Yakima	(509) 248-8400
Gate valves		
Fire hydrants		
Service meters & setters		
Meter boxes		
Repair bands		
Dresser couplings		
Miscellaneous pipe fittings		
Electrical	K&N Electric, Moses Lake	(509)-765-3399

RECORD KEEPING

The City keeps the following water system records and data.

TABLE 6-6

Record Keeping Practices

Record Type	Comment
Source meter readings	Weekly readings kept indefinitely
Source water depth readings	Indefinitely
Maximum Day Demand	Not available
Peak Hour Demand	Not available
Service meter readings	Records kept indefinitely
Unbilled authorized consumption	Not currently tracked
Bacteriological test results	Records kept 5 years
DOH correspondence, incl. sanitary surveys	Records kept indefinitely
Legal documents	Records kept indefinitely
Backflow Device Inspection Notices	Records kept 5 years
Backflow Violation Case Files	Records kept 5 years
Water Availability Request Forms	Records kept 2 years

The City also keeps water system mapping, including the location of pipelines, hydrants, and valves up to date based on the best information available.

COMPLAINT RESPONSE

The City maintains customer complaint records to verify trends that may help the City improve service to its customers. Response to questions and complaints is typically verbal, either through a field visit or a telephone call. However, depending on the nature of the question or complaint, written response can also be given. Bimonthly City Council meetings, scheduled on the first and third Wednesdays of the month, are the main venue for public involvement in the water system.

SAFETY PROCEDURES

All appropriate Occupational Safety and Health Administration (OSHA) and Washington Industrial Safety and Health Administration (WISHA) regulations are routinely followed during operation of the system. Operation and maintenance staff is trained in safety practices including confined space, first aid, and fall restraint. The City maintains fall equipment for inspecting reservoir hatches and screens, and confined space equipment for underground vaults.

SANITARY SURVEY FINDINGS

The City's last DOH sanitary survey was conducted on March 14, 2017. No significant deficiencies were noted. DOH noted "significant findings" requesting pictures of the reservoirs' vents (including 24-mesh screens) and hatches. A copy of the DOH sanitary survey is provided in Appendix D.

CROSS CONNECTION CONTROL

The City maintains a list of cross connections and has a cross connection control specialist on staff. The City's cross connection control information is included in Appendix F.

DEFICIENCIES

The City has identified the several O&M deficiencies and plans to take action to correct them. These projects are summarized in Table 6-7 below and are discussed further in Chapter 8.

TABLE 6-7

Operation and Maintenance Improvements

Deficiency	Action
The City's bolted steel tank on the west side of town has shown minor leakage due to expansion and contraction in the past.	Monitor and repair/tighten as necessary.
Source meters need to be periodically rebuilt and calibrated.	Rebuild and calibrate as needed
2-inch meters are often inaccurate.	Replace every 5-10 years.
Valves and hydrants are aging and often inadequately sized.	Replace valves and hydrants as funding permits.
More than half the City's water mains consist of aging AC pipe, much of the remainder is also aging and in need of replacement.	Replace as funding permits.
Flow meter for booster pump station is broken.	Replace flow meter.

PHOTOS

Well No. 1

Well No. 1 – Motor and Piping

Well No. 3

Well No. 3 - Valving

500,000 gal Bolted Steel
West Reservoir

500,000 gal Welded Steel
East Reservoir

BPS, 300,000 gal Concrete Reservoir (not in use), East 500,000 Steel Reservoir

BPS Pumps and Piping

CHAPTER 7

CONSTRUCTION STANDARDS

The City is in the process of updating their Construction Standards for water, sewer, storm water, and street utilities. A draft copy of the water utility section of these documents is provided in Appendix J. The City will submit the final updated Construction Standards to DOH for approval after they have been adopted by the City Council. This approval will allow the City to construct distribution mains and distribution-related projects without the requirement to submit project reports (WAC 246-290-110) and construction documents (WAC 246-290-020) to DOH. If the construction standards change during the plan approval period, the construction standards will only be effective for the purposes of WAC 246-290-125 after Appendix J is amended and approved by DOH.

CHAPTER 8

CAPITAL IMPROVEMENT PROGRAM

Several water system deficiencies and their associated improvements are identified in Chapter 3. A brief description of each improvement is presented in the following sections. A map showing the location of each project is presented on Figure 8-1. Detailed cost estimates are provided in Appendix K. A schedule for implementing these improvements is provided in Table 8-2. Financing for improvements planned during the next ten years is discussed in Chapter 9.

SOURCE IMPROVEMENTS

The City's source capacity and water rights are adequate to meet its 10- and 20-year needs. Due to the age of Well No. 1, it may need to be replaced within the 20-year planning period. It is assumed that it would be replaced with a well that is similarly constructed and provides a similar capacity.

STORAGE

No new storage is required for the 20-year planning period. The east reservoir is on a maintenance contract which includes cleaning, inspection, and recoating. The City will inspect and coat the west reservoir as needed within its operation and maintenance budget.

The City anticipates replacing the west reservoir within the 20-year planning period to address its ongoing maintenance needs and likely contribution to leakage within the distribution system.

TREATMENT

No treatment improvements are planned for the 20-year planning period.

TELEMETRY

Although there are no major issues with the City's current telemetry system, it is anticipated that equipment upgrades will be required within the 20-year planning period. The City's software, RSView 32, is being phased out and should be replaced within the next five years. In addition, the radio telemetry and panels will exceed their design life within the 20-year planning period and should be replaced.

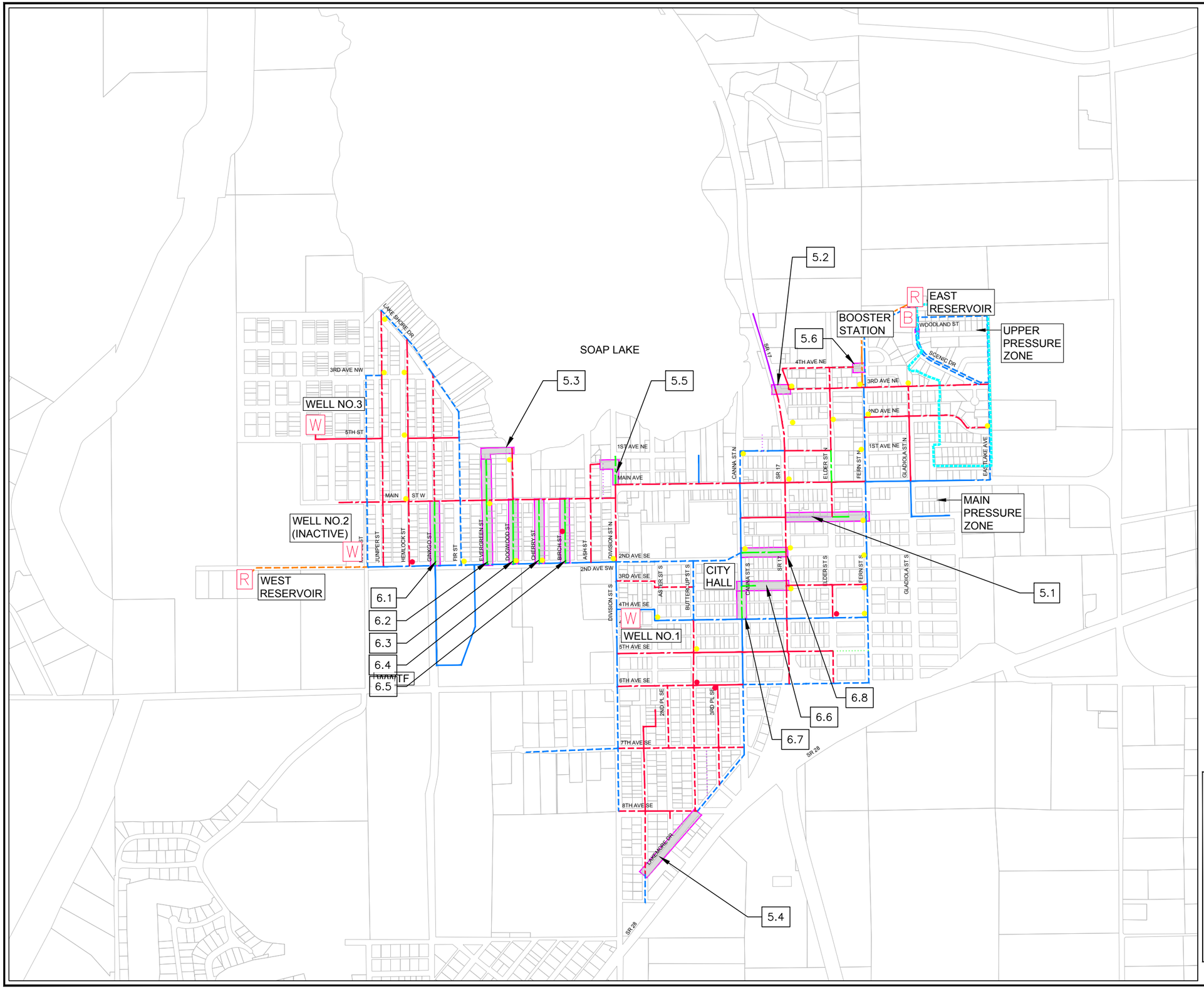
DISTRIBUTION SYSTEM

The City's distribution system contains several lines that are inadequate to support the fire flows required by the City's fire chief. These deficiencies and improvements to correct them are summarized in Table 8-1. Figure 8-2 shows the flow at each deficiency before and after the proposed improvements. The City has also identified several old 4-inch pipelines which should be replaced with new 8-inch piping, as shown in Table 8-1.

TABLE 8-1

Fire Flow and Distribution Improvements

No.	Location	Fire Flow Improvement	Length (ft)	Fire Flow (gpm)		
				Req'd	Before	After
1.	1st Ave SE- Daisy to Fern	Upsize 3/4-inch to 8-inch	850	1,000	N/A	N/A
2.	Evergreen N. of Main & Dogwood N. of Main	8-inch Loop between Evergreen & Dogwood	360	1,000	390	1,200
3.	Lakemore Drive	Install 8-inch Pipe to Loop	450	1,000	540	1,440
4.	SR 17 north of 4th Ave.	8-inch Loop 3rd Ave. NE to SR 17	480	1,000	850	2,290
5.	Intersection of 1st Ave. NE and Division St.	8-inch Loop 1st Ave. to Main St.	225	1,000	880	2,100
6.	Intersection of Fern St. and 4th Ave.	8-inch Loop to Fern St.	50	1,000	880	1,950
Total			**2,415**	**Cost = $875,000**		
No.	**Location**	**Pipeline Replacement Projects**	**Length (ft)**	**Cost**		
1.	Ginkgo St- 2nd Ave. SW to Main St. W	Upsize 4-inch to 8-inch	680	$225,500		
2.	Evergreen St.- 2nd Ave. SW to end of road	Upsize 4-inch to 8-inch	1,170	$331,500		
3.	Dogwood St.- 2nd Ave. SW to Main St. W	Upsize 4-inch to 8-inch	680	$225,500		
4.	Cherry St.- 2nd Ave. SW to Main St. W	Upsize 4-inch to 8-inch	680	$225,500		
5.	Birch St.- 2nd Ave. SW to Main St. W	Upsize 4-inch to 8-inch	680	$225,500		
6.	3rd Ave. SE- Canna St. to SR 17	Upsize 4-inch to 8-inch	480	$185,500		
7.	Canna St.- 3rd Ave SE to 4th Ave SE	Upsize 4-inch to 8-inch	400	$181,500		
8.	2nd Ave. SE- Canna St. to SR 17	Upsize 4-inch to 8-inch	450	$179,500		
Total			**5,220**	**$1,780,000**		



1000' 500' 0 1000' 2000'

SCALE: 1"=1000'

LEGEND

- R — RESERVOIR
- W — WELL
- B — BOOSTER STATION
- PRESSURE ZONE

PVC	DI	AC	STL
<3" WATER	<3" WATER	<3" WATER	<3" WATER
4" WATER	4" WATER	4" WATER	4" WATER
6" WATER	6" WATER	6" WATER	6" WATER
8" WATER	8" WATER	8" WATER	8" WATER
12" WATER	12" WATER	12" WATER	12" WATER

IMPROVEMENTS

SOURCE
1. POTENTIAL REPLACEMENT OF WELL NO. 1 (NOT SHOWN)

STORAGE
2. REPLACE WEST RESERVOIR (NOT SHOWN)

TELEMETRY
3. SOFTWARE UPGRADES (NOT SHOWN)
4. TELEMETRY EQUIPMENT UPGRADES (NOT SHOWN)

FIRE FLOW
5. FIRE FLOW IMPROVEMENTS PROJECTS
   - 5.1. 1ST AVE SE– DAISY TO FERN
   - 5.2. SR 17 NORTH OF 4TH AVE
   - 5.3. EVERGREEN & DOGWOOD LOOP
   - 5.4. LAKEMORE DR
   - 5.5. 1ST & DIVISION
   - 5.6. 4TH AVE & FERN

DISTRIBUTION (UPSIZE TO 8")
6. PIPELINE REPLACEMENT PROJECTS
   - 6.1. GINKGO ST.– 2ND AVE. SW TO MAIN ST. W
   - 6.2. EVERGREEN ST.– 2ND AVE. SW TO END OF ROAD
   - 6.3. DOGWOOD ST.– 2ND AVE. SW TO MAIN ST. W
   - 6.4. CHERRY ST.– 2ND AVE. SW TO MAIN ST. W
   - 6.5. BIRCH ST.– 2ND AVE. SW TO MAIN ST. W
   - 6.6. 3RD AVE. SE– CANNA ST. TO SR 17
   - 6.7. CANNA ST.– 3RD AVE SE TO 4TH AVE SE
   - 6.8. 2ND AVE. SE– CANNA ST TO SR 17

7. FIRE HYDRANT REPLACEMENT (SEE INDIVIDUAL POINTS)
8. AUTOMATIC METER READING SYSTEM (NOT SHOWN)

O&M IMPROVEMENTS NOT SHOWN

- HYDRANT (NEEDS REPLACEMENT)
- HYDRANT (POOR CONDITION)

CITY OF SOAP LAKE

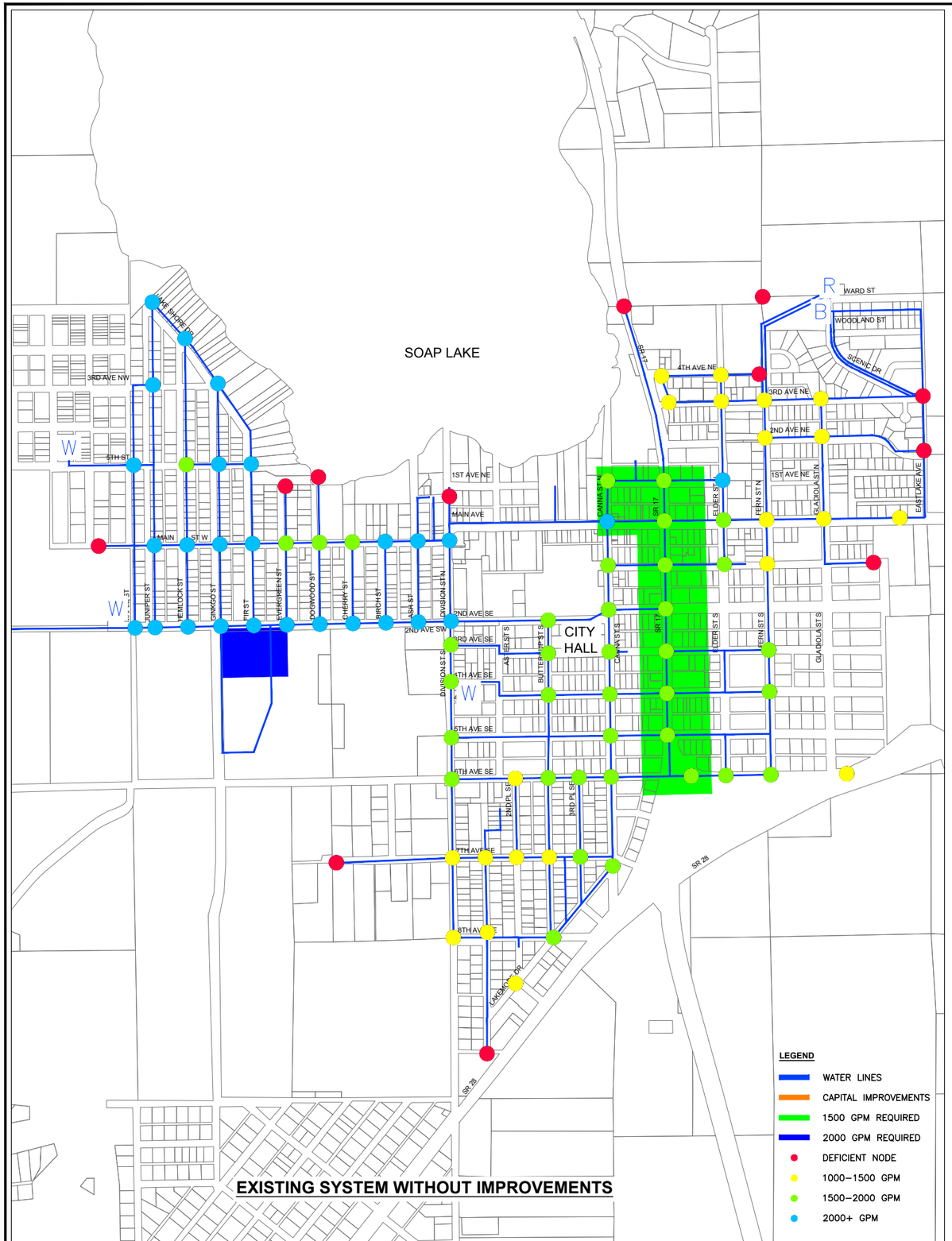
WATER SYSTEM PLAN

FIGURE 8-1

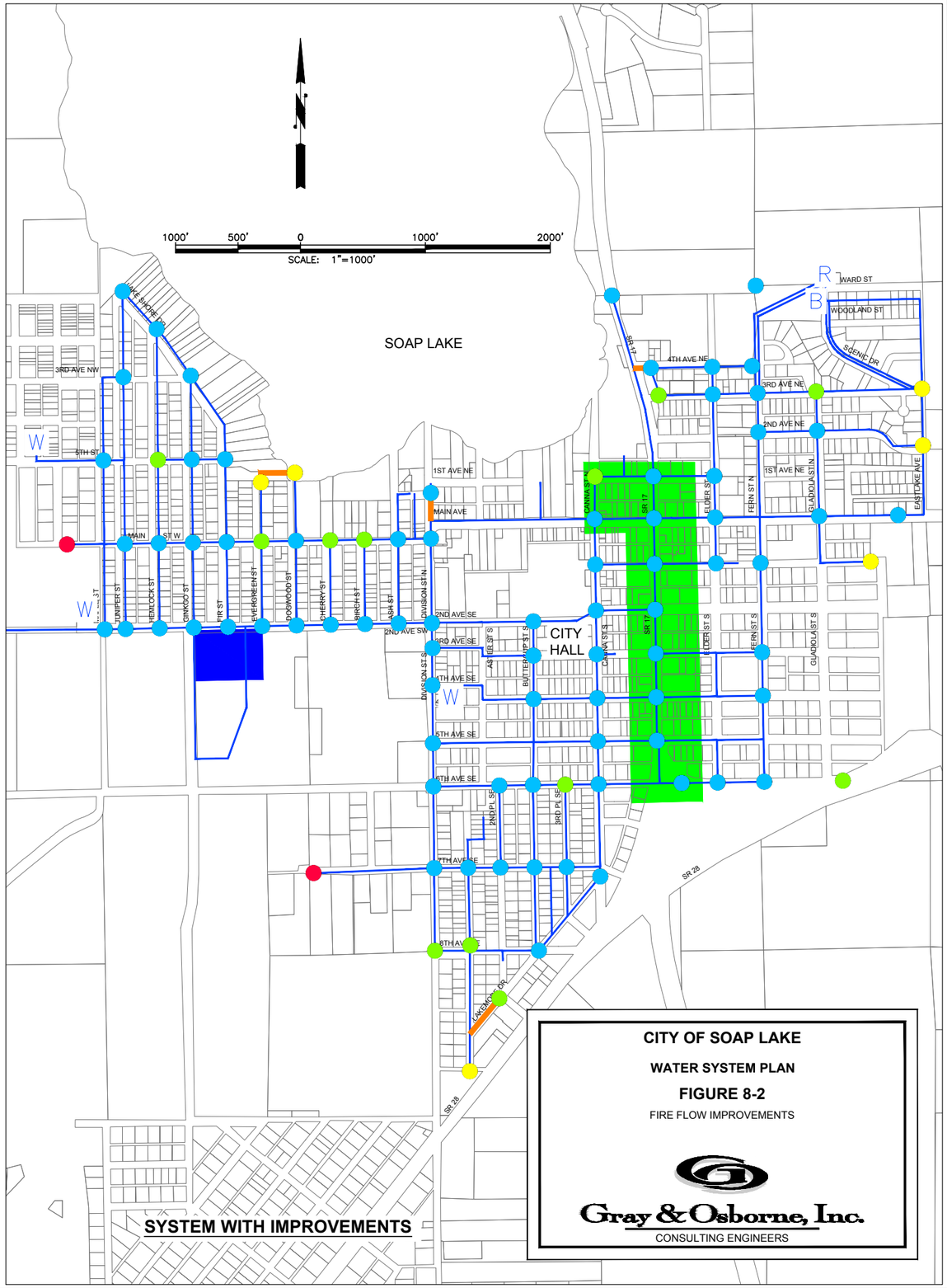
CAPITAL IMPROVEMENTS

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\Soap Lake\16040 – Water System Plan\Figures\FIGURE 8-1.dwg, 1/17/2019 1:34 PM, TIM DEVRIES



EXISTING SYSTEM WITHOUT IMPROVEMENTS



SYSTEM WITH IMPROVEMENTS

CITY OF SOAP LAKE

WATER SYSTEM PLAN

FIGURE 8-2

FIRE FLOW IMPROVEMENTS

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\Soap Lake\16040 – Water System Plan\Figures\FIGURE 8-2.dwg, 1/17/2019 1:34 PM, TIM DEVRIES

The fire flow improvements have been prioritized in Table 8-2 based on the benefit that they will provide to the distribution system as a whole.

In addition to the fire flow improvements identified, there are several other water lines in the City which will need replacement as they reach the end of their useful life. In particular, the 2-inch and 4-inch steel piping noted in Table 1-4 are likely near the end of their useful life and should be replaced. An annual allowance is included in the capital improvement plan to fund replacement of these water lines. This annual allowance could also be used to service debt on a larger pipeline replacement project. The City will monitor the scheduling of street improvement and sewer improvement projects and seek to replace water mains during these projects to achieve economy of scale and reduce surface restoration costs.

In addition to water line replacement, the City's fire chief has identified that approximately 19 of the City's fire hydrants require replacement. These hydrants will be replaced with any capital improvement project that occurs within the vicinity of the hydrants on a project-specific basis.

The City has estimated that a significant portion of its leakage is due to inaccurate billing data. To assist in obtaining more accurate data and to reduce staff time spent reading meters, the City will pursue an Automatic Meter Reading (AMR) system, including replacement of all of the City's consumption meters.

PRESSURE ZONE/BOOSTER PUMPING STATION

No major improvements are planned for the 20-year planning period.

OPERATION AND MAINTENANCE

The City has identified several O&M projects for the planning period. These projects are also discussed in Chapter 6.

- Maintain Bolted Steel Reservoir: The bolted steel tank on the west side of the City has leaked at joints in the past. The City will monitor and adjust the bolts to ensure that leakage remains in control. The City will also need to inspect and recoat the reservoir as part of its operation and maintenance budget. The maintenance contract for the East Reservoir is included within the City's operation and maintenance budget.
- Source Meter Replacement/Calibration: The City has plans to implement a program to biennially calibrate one of its two source meters. The City plans to purchase two new source meters and to recalibrate its existing meters to be kept as spares. The spare meters will allow the City to send its meters in for service and calibration without interruption in flow measurement.

- 2-inch Service Meter Calibration: The City has found that its 2-inch meters have a shorter life-span than its smaller residential meters. It plans to implement a program to replace these meters on a 5-10 year rotation.
- Valves, Hydrants, and Service Meters: The City plans to add or replace valves as necessary, and to replace smaller valved hydrants with coded (5-1/4-inch port) hydrants. The City also plans to replace service meters as needed.

SCHEDULE

A schedule for the City's planned capital improvements is provided in Table 8-2. Planning level cost estimates are provided in Appendix K.

TABLE 8-2

Capital Improvement Plan [(1)]

Project		2018 Cost[(1)]	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	'29-'38
SOURCE														
1.	New 1,000 gpm well	$1,500,000												**X**
STORAGE														
2.	West Reservoir	$500,000												**X**
TREATMENT														
	No Improvements	-												
TELEMETRY														
3.	Software Upgrades	$15,000				**X**								
4.	Equipment Upgrades	$171,000												**X**
DISTRIBUTION														
5.	Fireflow Improvements	$875,000			**X**									
6.	Distribution Improvements	$1,780,000			**X**									
7.	Fire Hydrant Replacement	$234,500			**X**									
8.	Automatic Meter Reading System	$280,000		**X**										
BOOSTER STATION														
	No Improvements	-												
OPERATION & MAINTENANCE														
9.	Maintain Bolted Steel Reservoir	$5,000/yr	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**
10.	Source Meter Replacement/ Calibration	$8,000; $2,000/2yr		**X**		**X**		**X**		**X**		**X**		**X**
11.	2-in Meter Calibration	$2,000/2yr		**X**				**X**		**X**		**X**		**X**
12.	Valves, Hyd., Service Meters	$3,000/yr	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**

(1) Engineering News Record (ENR) National Construction Cost Index April 2018 = 10971.

CHAPTER 9

CAPITAL IMPROVEMENT FINANCING

EXISTING RATES AND CHARGES

Soap Lake's water rates are established by ordinance. Meters are read on a monthly basis and customers are billed according to the rate schedule summarized in Table 9-1. As indicated, the City charges a base rate that includes the first 500 cubic feet (cf) of usage. Each 100 cf of usage above 500 cf is assessed a volume charge. The City's volume charge is a uniform block rate, which means that the volume charge remains constant regardless of usage.

TABLE 9-1

Water Service Rates [(1)]

Classification	Monthly Base Rate	Volume Charge (per 100 cf)	Volume w/ Base (cf)
Residential	$27.75	$1.61	500
Commercial	$28.91	$1.68	500
Commercial Residential	$24.96	$1.34	500
Additional Unit	$16.80	$1.34	500
Lawn Meters	NA	$1.34	NA
Standby	$8.57	NA	NA
Residential Outside	$55.50	$3.20	500
Commercial Outside	$49.92	$2.88	500
Standby Outside	$16.60	NA	NA

(1) Source: City of Soap Lake, April 23, 2018.

Connection charges are also defined by ordinance. A connection to the City's distribution system requires a payment of $250 plus the cost of materials and installation. At this time, the City does not assess new customers a general facility charge (GFC) for contributing to the cost of existing and planned improvements.

HISTORICAL FINANCIAL STATUS

Revenues and expenditures between 2012 and 2016 for the City's water utility are shown in Table 9-2.

TABLE 9-2

Water Utility Historical Revenue and Expenditures

REVENUES	2012	2013	2014	2015	2016
Water Connection Fees	2,512	1,662	3,932	11,513	3,346
Water Sales	341,590	337,836	345,383	331,958	338,352
Water Turn On Fees	2,968	3,132	2,405	2,897	2,523
Utility Late Fees	10,991	23,789	23,120	25,204	22,181
Fire Hydrant Maintenance(1)	11,283	11,283	11,283	11,283	11,283
Investment Interest	10,484	7,848	11,495	12,610	11,775
Loan Payment Received(2)	9,000	11,000	12,000	11,474	-
Total Revenues	**388,828**	**396,549**	**409,618**	**406,940**	**389,461**
EXPENDITURES					
Admin Salaries & Benefits	22,963	25,178	25,991	46,022	47,651
Admin Expenses	78,736	50,261	52,143	53,187	115,042
Operation Salaries & Benefits	94,026	97,784	80,232	100,564	81,752
Operation Expenses	22,634	26,168	150,176	53,836	67,989
Total Expenditures	**218,359**	**199,391**	**308,542**	**253,610**	**312,433**
Net Operating Income	**170,469**	**197,158**	**101,077**	**153,330**	**77,028**
DEBT SERVICE					
USDA Loan Payment	73,132	73,132	73,132	79,427	73,132
CAPITAL IMPROVEMENTS					
Plant Improvements	-	-	-	87,877	-
Equipment	-	-	-	32,436	-
Total Capital Improvements	**-**	**-**	**-**	**120,313**	**-**
MINERAL WATER					
One-time Interfund Transfer(3)	-	-	-	-	126,666
SUMMARY					
Income/Loss	97,337	124,026	27,945	(46,410)	(122,770)
Beginning Cash	617,831	715,168	839,194	867,139	820,728
Ending Cash	**715,168**	**839,194**	**867,139**	**820,728**	**697,958**

(1) Fire hydrant maintenance is covered by the general fund. The City is changing its accounting methods, and this will not be shown on future projections.

(2) The City pays for its fire hydrant maintenance out of its general fund. The City transferred funds from the water fund to the general fund to pay for the replacement of 16 fire hydrants. The "loan payments received" category includes the repayment from the general fund to the water fund. It is expected to be repaid in about five years with an annual payment of $11,000.

(3) 2015 Revenue and Expenses include Mineral Water Funds. The Mineral Water Fund transfer was approved by the City Council due to inaccurate accounting of the Mineral Water Fund in prior years. A separate Mineral Water Fund has been established for 2017 and the future.

The following items are worth noting in the table.

- The Admin Salaries and Benefits category increased in 2015 due to the addition of another employee.

- The increase in admin expenses in 2016 is the result of a change in how expenses were allocated.
- Operation Expenses in 2014 are much higher than the other years due to repair and maintenance of the booster pump station.
- Plant Improvements and Equipment in 2015 paid for the installation of a small booster pump station to provide adequate pressure to the City's wastewater treatment facility.

The USDA loan payment is for the City's 1996 water system improvements. Table 9-3 provides additional information on the City's water system debts.

TABLE 9-3

Summary of Water System Debts

Loan	Term	Interest Rate	Balance	Annual Payment
USDA #91-01	2036	4.5%	$805,184.20	$62,030.00
USDA #91-03	2038	4.5%	$120,034.62	$8,664.00
USDA #91-05	2038	4.5%	$33,725.59	$2,438.00
Total			**$958,944.41**	**$73,132.00**

The City's water fund balance has stayed relatively consistent over the past five years. Excluding the one-time transfer to the mineral water fund, the fund's balance has increased, demonstrating the financial viability of the system.

TEN-YEAR FINANCING PLAN

Table 9-4 summarizes the City's projected 10-year financing plan.

TABLE 9-4
Financing Plan

REVENUES	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Water Connection Fees	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300	3,300
Water Sales[1]	406,000	479,100	565,300	585,100	605,600	626,800	648,700	671,400	694,900	719,200	744,400
Water Turn On Fees	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Utility Late Fees	22,100	22,100	22,100	22,100	22,100	22,100	22,100	22,100	22,100	22,100	22,100
Investment Interest	11,700	11,700	11,700	11,700	11,700	11,700	11,700	11,700	11,700	11,700	11,700
Loan Payment Received	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000	11,000
Capital Improvement Financing	-	3,240,000	-	-	-	-	-	-	-	-	-
Total Income	**456,600**	**3,769,700**	**3,721,400**	**635,700**	**656,200**	**677,400**	**699,300**	**722,000**	**745,500**	**769,800**	**795,000**
EXPENSES											
Admin Sal. & Benefits [2]	50,600	52,100	53,700	55,300	57,000	58,700	60,500	62,300	64,200	66,100	68,100
Admin Expenses [2]	61,800	63,700	65,600	67,600	69,600	71,700	73,900	76,100	78,400	80,800	83,200
Operations Sal. & Ben. [2]	86,700	89,300	92,000	94,800	97,600	100,500	103,500	106,600	109,800	113,100	116,500
Operations Expenses [2]	72,100	74,300	76,500	78,800	81,200	83,600	86,100	88,700	91,400	94,100	96,900
Total Expenses	**271,200**	**279,300**	**287,700**	**296,300**	**305,200**	**314,400**	**323,800**	**333,500**	**343,500**	**353,800**	**364,400**
Net Operating Income	**185,400**	**3,490,400**	**3,344,200**	**339,400**	**351,000**	**363,000**	**375,500**	**388,500**	**402,000**	**416,000**	**430,600**
DEBT SERVICE											
USDA – 1996 Project Loan	73,132	73,132	73,132	73,132	73,132	73,132	73,132	73,132	73,132	73,132	73,132
USDA – Capital Improvements [3]	-	-	-	129,000	129,000	129,000	129,000	129,000	129,000	129,000	129,000
Total Debt Service	**73,132**	**73,132**	**73,132**	**202,132**	**202,132**	**202,132**	**202,132**	**202,132**	**202,132**	**202,132**	**202,132**
IMPROVEMENTS											
Capital Improvements [4]	-	3,240,000	-	-	-	-	-	-	-	-	-
O&M Improvements	8,000	12,000	8,000	10,000	8,000	12,000	8,000	12,000	8,000	12,000	8,000
Total Capital Imp.	**8,000**	**3,252,000**	**3,024,000**	**10,000**	**8,000**	**12,000**	**8,000**	**12,000**	**8,000**	**12,000**	**8,000**
SUMMARY											
Income/(Loss) (Thousands of $)	104	165	247	127	141	149	165	174	192	202	220
Beginning Cash (Thousands of $)	750	854	1,020	1,267	1,394	1,535	1,684	1,849	2,024	2,216	2,418
Ending Cash (Thousands of $)	**854**	**1,020**	**1,267**	**1,394**	**1,535**	**1,684**	**1,849**	**2,024**	**2,216**	**2,418**	**2,638**

(1) Based on a zero percent annual growth rate of ERUs. Rates assumed to increase by 20% in 2018, then 18%/yr for 2 years. 3.5% each year thereafter.
(2) Expenses assumed to increase by 3% annually due to inflation.
(3) Assumes 2.75% interest, 40-year term. An additional 5% has been added due to requirement for interim financing.
(4) From RD Funding package.

It is worth noting that 2016 was a year with higher than typical operating expenditures and lower than typical revenues. The average revenue between 2012 and 2016 is approximately $398,000 and the average expenditures between 2012 and 2016 is $258,000. This corresponds to an average net operating income of $140,000, which is much higher than the $77,028 reported in 2016. In the table above, it is assumed that the net operating income projections will be close to the 2012-2016 average.

Part of the reason for the decline in net operating income in 2016 is the apparent spike in distribution system leakage (DSL). In 2016, the City produced more water than the previous two years but recorded metered consumption to be about 10 to 15 percent lower than in 2014 and 2015. This corresponds to a DSL of 28.2 percent in 2016. If this sharp increase in DSL persists, the City's apparent net income will be lower than shown herein.

In 2017, the City hired FCS Group to prepare a water and sewer rate study. That study reviewed historical operations and maintenance costs and previously-identified water and sewer capital improvement projects. That study recommended annual water rate increases of 20 percent in 2018, 18 percent in 2019 and 2020, and then 3.5 percent annually thereafter. Those recommendations are reflected in Table 9-4. The City is projected to generate considerable reserves if those recommendations are followed, and would be capable of self-financing additional projects in the future, including larger projects such as the replacement of the West Reservoir.

FUNDING SOURCES

There are several outside funding sources available to the City if the need arises for larger projects during the planning period. The funding source(s) selected for a particular project will depend on the status of the City's financial commitments, its capital and cash flow requirements, funding source availability, and the impact on the service rates and connection charges. Table 9-4 reflects a USDA Rural Development funding package for completion of a large project in 2019 to 2020. USDA Rural Development appears to be a good choice for the City for that project because the City is interested in completing sewer main replacement as part of that project, and USDA Rural Development would allow for multiple utilities to be replaced concurrently. The USDA Rural Development funding package has been secured.

Grant and loan programs available through public funding agencies are summarized in Table 9-5. Following the table are brief descriptions of each program listed in the table, as well as descriptions of other financing options including revenue bonds, developer financing, general facility charges, and utility local improvement districts (ULIDs).

TABLE 9-5

Grant and Loan Programs

Agency	Program	Maximum Amount	Type	Application Cycle
Washington State Department of Health	Drinking Water State Revolving Fund	$3,000,000	Loan	November
Wash. State Dept. of Commerce	Community Development Block Grant, General Purpose	$750,000	Grant	June
Wash. State Dept. of Commerce	Community Development Block Grant, Planning Only	$24,000	Grant	June
USDA Rural Development	Community Assistance Grant and Loan Program	Variable	Loan and grant	Year-round
Wash. State Dept. of Commerce	Community Economic Revitalization Board	$2,000,000	Loan	January

DRINKING WATER STATE REVOLVING FUND

In 1997 the Washington State Department of Health began taking applications for a new loan program called the Drinking Water State Revolving Fund (DWSRF). The program was funded by Congress as part of the 1996 reauthorization of the Safe Drinking Water Act. The program provides low-interest loans to help publicly owned as well as privately owned not-for-profit and for-profit water systems make improvements to water systems for public health protection.

The program is primarily targeted toward projects that will improve public health and safety. Infrastructure improvement projects can also be considered, but are given a lower priority in the ranking.

COMMUNITY DEVELOPMENT BLOCK GRANT

The Community Development Block Grant program, administered by the Washington State Department of Commerce, consists of two programs that can be used to fund water system improvements. The first is the General Purpose Grant program, which allows applicants to request funds for design and construction of public facilities, community facilities, housing rehabilitation, or economic development projects that principally benefit low- and moderate-income persons.

The second program is the Planning-Only Grant program. This program supports a range of planning activities that lead to implementation of priority projects that benefit low- and moderate-income communities. Funding levels are set at a maximum of $24,000.

USDA RURAL DEVELOPMENT

USDA Rural Development (RD) has a loan program that is available to communities whose rates, as a result of projected RD debt payments, are expected to exceed the rates of "similar" communities. Under certain hardship conditions, RD's funding options include a limited grant program. The loan program provides long-term 30- to 40-year loans at an

interest rate usually between 2 and 4 percent. RD-funded projects require interim financing as part of the loan, and the cost of this financing typically increases the cost of loan financing by approximately 5 percent.

COMMUNITY ECONOMIC REVITALIZATION BOARD

Community Economic Revitalization Board (CERB) funding is available for public facility projects required by private sector expansion and job creation. Projects must support job creation or significant private investment to be eligible. Projects including construction, repair, reconstruction, or rehabilitation activities for items such as bridges, roads, water systems, storm sewers, and sanitary sewers are eligible. Eligible applicants include public entities such as cities, counties, towns, port districts, and federally recognized tribes. Interest rates vary between 1-3 percent with a 20-year term.

REVENUE BONDS

Revenue bonds are tax-free bonds issued by a utility that are repaid by revenues from monthly service charges. In order to make revenue bonds marketable to investors, the bonds typically have contractual provisions for the utility to meet debt coverage requirements. The agency must show that its annual net operating income (gross income less operation and maintenance expenses) is equal to or greater than a factor, typically 1.2 to 1.4 times the annual debt service on all par debt. If a coverage factor has not been specified it will be determined at the time of any future bond issues.

DEVELOPER FINANCING

Developers typically fund the construction of extensions to the water mains to property within new plats. The developer extensions are turned over to the City for operation and maintenance upon completion. Developer extensions must be constructed to meet the requirements of the City's construction standards.

GENERAL FACILITIES CHARGE

In order to finance improvements of general benefit to the City, a general facilities charge may be adopted. General facilities charges are usually established as one-time charges assessed at hook up against new water customers as a way to recover part or all of the cost of existing and additional facilities constructed for their use.

The general facilities charge or fee is typically deposited into a construction fund for construction of water infrastructure. The intent is that all new system customers will pay an equitable share of the cost of the system improvements needed to accommodate growth. Typical types of construction financed by the general facilities charge are general improvements that benefit the entire system, such as pump stations, gravity sewer lines, force mains, and office and storage space.

UTILITY LOCAL IMPROVEMENT DISTRICTS

Another potential source of funds for improvements comes through the formation of utility local improvement districts (ULIDs) involving a special assessment made against properties benefitting by the improvements. ULID bonds are further backed by a legal claim to the revenues generated by the utility, similar to revenue bonds.

Water system expansion is a frequent application of ULID financing. Typically, ULIDs are formed at the written request (by petition) of the property owners within a specific section of the service area. Upon the receipt of a sufficient number of signatures or petitions, and acceptance by the City council, the local improvement area is formed, and a water system is designed for that particular area in accordance with the City's construction standards.

Each separate property in the ULID is assessed in accordance with the special benefits the property receives from the water system improvements. A City-wide ULID could form part of a financing package for large-scale capital projects such as water line extensions or replacements that benefit all residents in the service area. The ULID assessment places a lien on the property that must be paid in full upon sale of the property. ULID participants have the option of paying their assessment immediately upon receipt, thereby reducing the portion of the costs financed by the ULID bonds.

APPENDIX A

WATER FACILITY 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: 03/03/2016
Printed: 7/20/2017
WFI Printed For: On-Demand
Submission Reason: Source 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
81300 P	SOAP LAKE WATER DEPT	GRANT	A	Comm

6. PRIMARY CONTACT NAME & MAILING ADDRESS

DARRIN FRONSMAN [SUPERVISOR]
PO BOX 1270
SOAP LAKE, WA 98851

7. OWNER NAME & MAILING ADDRESS

SOAP LAKE, CITY OF
DARRIN FRONSMAN SUPERVISOR
PO BOX 1270
SOAP LAKE, WA 98851-1270

8. OWNER NUMBER: 005511

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS
CITY STATE ZIP

STREET ADDRESS IF DIFFERENT FROM ABOVE

ATTN
ADDRESS 239 2ND AVE SE
CITY SOAP LAKE STATE WA ZIP 98851

9. 24 HOUR PRIMARY CONTACT INFORMATION

Primary Contact Daytime Phone: (509) 246-1823
Primary Contact Mobile/Cell Phone: (509) 760-3738
Primary Contact Evening Phone:
Fax: (509) 246-1213 E-mail: xxxxxxxxxxxxxxxxxxx

10. OWNER CONTACT INFORMATION

Owner Daytime Phone: (509) 246-1823
Owner Mobile/Cell Phone: (509) 760-3738
Owner Evening Phone:
Fax: (509) 246-1213 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)

- [x] Not applicable (Skip to #12)
- [ ] Owned and Managed
- [ ] Managed Only
- [ ] Owned Only

SMA NAME: _____ SMA Number:

12. WATER SYSTEM CHARACTERISTICS (mark all that apply)

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

13. WATER SYSTEM OWNERSHIP (mark only one)

- [ ] Association
- [ ] County
- [ ] Investor
- [ ] Special District
- [x] City / Town
- [ ] Federal
- [ ] Private
- [ ] State

14. STORAGE CAPACITY (gallons)

1,000,000

15	16	17	18 SOURCE CATEGORY										19 USE			20	21 TREATMENT						22	23	24 SOURCE LOCATION			
Source Number	SOURCE NAME 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 - AEH357		X										X				X						466	750	SW SW	19	22N	27E
S02	InAct 10/26/1999 Well #2		X										X				X						435	1000	NW SE	24	22N	26E
S03	Well #3 - AEH358		X										X			Y	X						586	1100	SE NW	24	22N	26E

WATER FACILITIES INVENTORY (WFI) FORM - Continued

1. SYSTEM ID NO.	2. SYSTEM NAME	3. COUNTY	4. GROUP	5. TYPE
81300 P	SOAP LAKE WATER DEPT	GRANT	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?)		898	2385
A. Full Time Single Family Residences (Occupied 180 days or more per year)	617		
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	46		
B. Full Time Residential Units in the Apartments, Condos, Duplexes, Dorms that are occupied more than 180 days/year	281		
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.	168	168	0
28. TOTAL SERVICE CONNECTIONS		1066	2385

29. FULL-TIME RESIDENTIAL POPULATION

A. How many residents are served by this system 180 or more days per year? 1765

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?	930	784	1116	1200	1488	1560	3410	2976	2520	1643	1260	930
B. How many days per month is water accessible to the public?	31	28	31	30	31	30	31	31	30	31	30	31

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?	550	550	550	550	550	550	50	50	550	550	550	550
B. How many days per month are they present?	31	28	31	30	31	30	31	31	30	31	30	31

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

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

WATER QUALITY

APPENDIX B-1

WATER QUALITY MONITORING SCHEDULE

Water Quality Monitoring Schedule

System: SOAP LAKE WATER DEPT **PWS ID: 81300 P** **Region: EASTERN**
Contact: DARRIN FRONSMAN **Group: A - Comm** **County: GRANT**

NOTE: To receive credit for compliance samples, you must fill out laboratory and sample paperwork completely, send your samples to a laboratory accredited by Washington State to conduct the analyses, AND ensure the results are submitted to DOH Office of Drinking Water. There is often a lag time between when you collect your sample, when we credit your system with meeting the monitoring requirement, and when we generate the new monitoring requirement.

Coliform Monitoring Requirements

	Jun 2017	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018
Coliform Monitoring Population	2367	1925	1911	2399	2368	2357	2345	2345	2343	2351	2355	2363
Number of Routine Samples Required	2	2	2	2	2	2	2	2	2	2	2	2

- Collect samples from representative points throughout the distribution system.
- Collect required repeat samples following an unsatisfactory sample. In addition, collect a sample from each operating groundwater source.
- For systems that chlorinate, record chlorine residual (measured when the coliform sample is collected) on the coliform lab slip.

Chemical Monitoring Requirements

Distribution Monitoring

Test Panel/Analyte	*# Samples Required*	*Compliance Period*	*Frequency*	*Last Sample Date*	*Next Sample Due*	
Lead and Copper	10	Jan 2017 - Dec 2019	standard - 3 year	09/14/2016	Sep 2019	
Asbestos	1	Jan 2011 - Dec 2019	standard - 9 year	07/10/2013		

Notes on Distribution System Chemical Monitoring

For *Lead and Copper*:
- Collect samples from the COLD WATER side of a KITCHEN or BATHROOM faucet that is used daily.
- Before sampling, make sure the water has sat unused in the pipes for at least 6 hours, but no more than 12 hours (e.g. overnight).
- If you are sampling from a faucet that has hot water, make sure cold water is the last water to run through the faucet before it sits overnight.
- If your sampling frequency is annual or every 3 years, collect samples between June 1 and September 30.

For *Asbestos:* Collect the sample from one of your routine coliform sampling sites in an area of your distribution system that has asbestos concrete pipe.

Water Quality Monitoring Schedule

Source Monitoring

- Collect 'source' chemical monitoring samples from a tap after all treatment (if any), but before entering the distribution system.
- Washington State grants monitoring waivers for various test panels /analytes. Please note that we may require some monitoring as a condition of some waivers. We have granted complete waivers for dioxin, endothal, glyphosate, diquat, and insecticides.
- Nitrate, arsenic, iron, and other individual inorganics are included as part of a Complete Inorganic (IOC) analysis when it is collected.

Source S01 *Well #1 - AEH357* *Well* *Use - Permanent* *Susceptility - Moderate*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due
Nitrate	1	Jan 2017 - Dec 2017	standard - 1 year	05/10/2017	
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	05/13/2010	May 2019
Volatile Organics (VOC)	1	Jan 2014 - Dec 2019	waiver - 6 year	05/04/2016	
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	05/10/2017	
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	04/11/2012	Apr 2021
Soil Fumigants	1	Jan 2014 - Dec 2022	waiver - 9 year	07/08/2010	Jul 2019
Gross Alpha	1	Jan 2014 - Dec 2019	standard - 6 year	10/25/2016	
Radium 228	1	Jan 2014 - Dec 2019	standard - 6 year	10/25/2016	

Source S03 *Well #3 - AEH358* *Well* *Use - Permanent* *Susceptility - High*

Test Panel/Analyte	# Samples Required	Compliance Period	Frequency	Last Sample Date	Next Sample Due
Nitrate	1	Jan 2017 - Dec 2017	standard - 1 year	05/10/2017	
Complete Inorganic (IOC)	1	Jan 2011 - Dec 2019	waiver - 9 year	05/13/2010	May 2019
Iron	1	Jan 2017 - Dec 2019	standard - 3 year	05/13/2010	Oct 2019
Volatile Organics (VOC)	1	Jan 2017 - Dec 2019	standard - 3 year	05/04/2016	May 2019
Herbicides	1	Jan 2014 - Dec 2022	waiver - 9 year	09/09/2015	
Pesticides	1	Jan 2014 - Dec 2022	waiver - 9 year	05/09/2013	May 2022
Soil Fumigants	1	Jan 2014 - Dec 2022	waiver - 9 year	04/14/2010	Apr 2019
Gross Alpha	1	Jan 2014 - Dec 2019	standard - 6 year	10/25/2016	
Radium 228	1	Jan 2014 - Dec 2019	standard - 6 year	10/25/2016	

Water Quality Monitoring Schedule

Other Information

Other Reporting Schedules	*Due Date*
Submit Consumer Confidence Report (CCR) to customers and ODW (Community systems only):	07/01/2017
Submit CCR certification form to ODW (Community systems only):	10/01/2017
Submit Water Use Efficiency report online to ODW and to customers (Community and other municipal water systems only):	07/01/2017
Send notices of lead and copper sample results to the customers sampled:	30 days after you receive the laboratory results
Submit Certification of customer notification of lead and copper results to ODW:	90 days after you notify customers

Special Notes

None

Eastern Regional Water Quality Monitoring Contacts

For questions regarding chemical monitoring:	Stan Hoffman: (509) 329-2132: or Stan.Hoffman@doh.wa.gov
For questions regarding DBPs:	Stan Hoffman: (509) 329-2132 or Stan.Hoffman@doh.wa.gov
For questions regarding coliform bacteria and microbial issues:	Joseph Perkins: (509) 329-2134 or Joseph.Perkins@doh.wa.gov

Additional Notes

The information on this monitoring schedule is valid as of the date in the upper left corner on the first page. However, the information may change with subsequent updates in our water quality monitoring database as we receive new data or revise monitoring schedules. There is often a lag time between when you collect your sample and when we credit your system with meeting the monitoring requirement.

We have not designed this monitoring schedule to display all compliance requirements. The purpose of this schedule is to assist water systems with planning for most water quality monitoring, and to allow systems to compare their records with DOH ODW records. Please be aware that this monitoring schedule does not include constituents that require a special monitoring frequency, such as monitoring affiliated with treatment.

Any inaccuracies on this schedule will not relieve the water system owner and operator of the requirement to comply with applicable regulations.

If you have any questions about your monitoring requirements, please contact the regional office staff listed above.

APPENDIX B-2

COLIFORM MONITORING PLAN

Coliform Monitoring Plan for: _____

A. System Information

Plan Date:_____

Water System Name SOAP LAKE WATER DEPT.	**County** GRANT	**System I.D. Number** 81300 P
Name of Plan Preparer DARRIN FRONSMAN	**Position** SUPERVISOR	**Daytime Phone** 509-246-1823
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	____ S01 - S03	
Storage: List and Describe	____ 2 AT 500,000 GAL EAST-WEST	
Treatment: Source Number & Process	____ N/A	
Pressure Zones: Number and name	____ 1 UPPER PRESSURE ZONE	
Population by Pressure Zone	____ 53 HOMES	
Number of Routine Samples Required Monthly by Regulation:		____ 2
Number of Sample Sites Needed to Represent the Distribution System:		____ 4
***Request DOH Approval of Triggered Source Monitoring Plan?**		Yes ☐ No ☒

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name CASCADE ANALYTICAL INC.	**Office Phone** 509-662-1888 **After Hours Phone** - -
Address 3019 G.S. CENTER RD WENATCHEE WA.	**Cell Phone** - - **Email** _____
Hours of Operation	
Contact Name JUDY BROWN	
Emergency Laboratory Name	**Office Phone** - - **After Hours Phone** - -
Address	**Cell Phone** - - **Email** _____
Hours of Operation	
Contact Name	

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
We sell groundwater to other public water systems.	☐	☒
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		

D. Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X1. WELL #3 FAUCET 1ST AVE. NW. Between 11th ST NW. & 12th ST. NW.	1-1. #2 1-2. #4 1-3.	S___ S01 S___ S03 S___ S___ S___
X2. SOAPLAKE GRADE SCHOOL 410 S. GINKO	2-1. #1 2-2. #4 2-3.	S___ S01 S___ S03 S___ S___ S___
X3. VISITOR CENTER 515 N. DAISY	3-1. #2 3-2. #4 3-3.	S___ S01 S___ S03 S___ S___ S___

X4
City HALL
329 2nd AVE. SE

4-1 #2
4-2 #3
4-3

S S01
S S03
S
S

*NO ; to cover the distribution system, attach additional sheets as nee

** W **e every groundwater source that was in use when the** ori

Im

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January	#1 & #4	July	#1 & #4
February	#2 & #3	August	#2 & #3
March	#1 & #4	September	#1 & #4
April	#2 & #3	October	#2 & #3
May	#1 & #4	November	#1 & #4
June	#2 & #3	December	#2 & #3

G. Level 1 and Level 2 Assessment Contact Information

Name DARRIN FRONSMAN	Office Phone 509-246-1823 After Hours Phone 509 760-3738
Address 6785 RD. K. NE. MOSES LAKE WA	Email darrinF@soapLAKEWA.GOV
Name SAME	Office Phone - - After Hours Phone SAME
Address SAME	Email SAME

H. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☒	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☐	☐	☒	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☐	☐	☒	☐
Our Cross-Connection Control Program is up-to-date.	☒	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☐	☐	☒	☐
We routinely inspect all treatment facilities for proper operation.	☐	☐	☒	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☒	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☒	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☐	☒	☐	☐
We have a map of our service area boundaries.	☒	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☐	☐	☒	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☐	☒	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☒	☐	☐	☐
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☒	☐	☐	☐
We have the capacity to print and distribute the required number of notices in a short time period.	☒	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☐	☐	☐	☒
If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☐	☐	☐	☒
(Cont.)				

Distribution System *E. coli* Response Checklist				
Potential Public Notice Delivery Methods	**Yes**	**No**	**N/A**	**To Do List**
It is feasible to deliver a notice going door-to-door.	☒	☐	☐	☐
We have a list of all of our customers' addresses.	☒	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☐	☒	☐	☐
We have a list of customer email addresses.	☐	☒	☐	☐
We encourage our customers to remain in contact with us using social media.	☒	☐	☐	☐
We have an active website we can quickly update to include important messages.	☒	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☐	☒	☐	☐
We need a news release to supplement our public notification process.	☒	☐	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. PUBLIC NOTIFICATION - LETTER - I FIBER NEWS - WEBSITE ECT.
4. DISINFECT & FLUSH
5. ~~FORMTEXT~~ ASSESSMENT OF WATER SYSTEM
6. REPEAT SAMPLES
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

E. coli-Present Triggered Source Sample Response Checklist – All Sources

Background Information	Yes	No	N/A	To Do List
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☒	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☒	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and	☐	☒	☐	☐
If yes, we can eliminate them.	☐	☐	☐	☐
We routinely inspect our well site(s).	☒	☐	☐	☐
We have a good raw water sample tap installed at each source.	☒	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☒	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☒	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☒	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☒	☐	☐	☒

E. coli-Present Triggered Source Sample Response Checklist – Source S__*				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☒	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☒	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☒	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☒	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☒	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☒	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☒	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☒	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

If we have *E. coli* in Source ___ water we will immediately:

1. Call DOH.
2. ISOLATE SOURCE ____
3. PUBLIC NOTIFICATION ____
4. DISINFECT & FLUSH ____
5. REPEAT SAMPLES ____

I. System Map

City of Soap Lake
Water System Plan
Coliform Monitoring Plan
GIO

COLIFORM MONITORING PLAN KEY				
		SAMPLING SITE ●	REPEAT SAMPLING SITE ▲	GWR SAMPLING SITE ◆
A	WELL #3 FAUCET	X1	X2 X4	GWR1
B	SOAP LAKE GRADE SCHOOL	X2	X1 X4	
C	VISITOR CENTER	X3	X2 X4	
D	CITY HALL	X4	X2 X3	
E	WELL #1			GWR2

N
W E
S

0 1000

Scale in Feet

LEGEND

- Reservoir
- Booster Station
- City Limits
- UGA Boundary
- Pressure Zone
- Water Main

SOAP LAKE

VISITOR CENTER

C

R EAST RESERVOIR

B BOOSTER STATION

UPPER PRESSURE ZONE

MAIN PRESSURE ZONE

WELL NO.3

W A

WELL NO.2 (INACTIVE)

W

R WEST RESERVOIR

B SOAP LAKE GRADE SCHOOL

WWTF

D CITY HALL

E W WELL NO.1

LAKE SHORE DR

3RD AVE NW

MAIN ST W

1ST AVE NE

MAIN AVE

2ND AVE NE

3RD AVE NE

4TH AVE NE

WOODLAND ST

SCENIC DR

EAST LAKE AVE

JUNIPER ST

HEMLOCK ST

GINKGO ST

FIR ST

EVERGREEN ST

DOGWOOD ST

CHERRY ST

BIRCH ST

ASH ST

DIVISION ST N

CANNA ST N

SR 17

ELDER ST N

FERN ST N

GLADIOLA ST N

2ND AVE SE

3RD AVE SE

4TH AVE SE

5TH AVE SE

6TH AVE SE

7TH AVE SE

8TH AVE SE

ASTER ST S

BUTTERCUP ST S

DIVISION ST S

ELDER ST S

FERN ST S

GLADIOLA ST S

2ND PL SE

3RD PL SE

LAKEMORE DR

SR 28

CITY OF SOAP LAKE
WATER SYSTEM PLAN
COLIFORM MONITORING PLAN

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\16040 – WATER SYSTEM PLAN\FIGURES\FIG COLI MON PLAN

APPENDIX B-3

CONSUMER CONFIDENCE REPORT

2017

City of Soap Lake
PO Box 1270
239 2nd Ave SE
Soap Lake WA **98851**
Phone 246-1211
Fax 246-1213
cityofsoaplake.org

Este es un document importante sobre el Sistema municipal de agua. Por favor encuentre a alguien para traducir.

Это важный документ в системе города воды. Пожалуйста, найти кого-то, чтобы перевести.

BULK RATE
US
POSTAGE
PAID
Soap Lake
WA 98851
Permit No 8

RESIDENT OF
SOAP LAKE, WASHINGTON

City of Soap Lake Annual Drinking Water Quality Report

The City of Soap Lake is pleased to present to you this year's Annual Water Quality Report. This report is designed to inform you about the quality of water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of water. We want you to understand the efforts we make to continually improve and protect our water resources. We are committed to ensuring the quality of your water. Our water source comes from two deep wells that tap the Beezley Aquifer.

I'm pleased to report that our drinking water is safe and meets the federal and state requirements.

This report shows our water quality and what it means. If you have any questions about this report or concerning your water quality, please contact **Darrin Fronsman at 246-1823. Maintenance Department hours are Monday – Friday, 7:00am – 4:00pm.** We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled City Council meetings. They are held the 1st and 3rd Wednesday of each month in the Council Chambers at Soap Lake City Hall.

City of Soap Lake Water Department
routinely monitors for constituents in your drinking water according to Federal and State laws. **This report covers monitoring for the period of January 1 to December 31, 2016.** All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

Water Quality Data Table

The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA of the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Contaminants(units)	MCLG	MCL	Your Water	Range High Low	Sample Date	Violation	Typical Source
Inorganic Contaminants							
Nitrate [measured as Nitrogen] (ppm)	10	10	0..63	NA	5-5-16	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite [measured as Nitrogen] (ppm)	10	1	<0.07	NA	5-5-16	No	
Unregulated Contaminants							
1,2,4, - Trimethylbenzene	NA	NA	0	NA	" "	No	
Volatile Organic Contaminants							
1,1,1 – Trichloroethane (ppb)	200	200		NA	" "	No	Discharge from metal degreasing sites and other factories
1,1,2 – Trichloroethane	3	5	0	NA	" "	No	Discharge from industrial chemical factories
1,1 – Dichloroethylene (ppb)	7	7		NA	" "	No	Discharge from industrial chemical factories
1,2,4 – Trichlorobenzene	70	70	0	NA	" "	No	Discharge from textile-finishing factories
1,2 – Dichloroethane	0	5		NA	" "	No	Discharge from industrial chemical factories
1,2 – Dichloropropane	0	5	0	NA	" "	No	Discharge from industrial chemical factories
Benzene (ppb)	0	5		NA	" "	No	Discharge from factories; Leaching from gas storage tanks and landfills
Carbon Tetrachloride (ppb)	0	5		NA	" "	No	Discharge from chemical plants and other industrial activities
Chlorobenzene	100	100	0	NA	" "	No	Discharge from chemical and agricultural chemical factories

Important Drinking Water Definitions:

MCLG: Maximum Contaminant Level Goal: The Level of contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.

MCL: Maximum Contaminant Level: The highest level of contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

MRDL: Maximum residual disinfectant level. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

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

Consumer Confidence Report Certification Form

For calendar year 2016
Consumer Confidence Reports are due before July 1, 2017

You need to complete the following:

1. Mail or otherwise directly deliver a copy of your 2016 Consumer Confidence Report (CCR) to your water system customers **before July 1, 2017**. Keep a copy for your records.

2. Mail or email a copy of your CCR to the regional office for your county (information on back) **before July 1, 2017.**

3. Complete and send this certification form to the regional office with your CCR, or **by October 1, 2017** at the latest.

Note: We are better able to properly credit your water system when both documents are received together.

Certification for:

Water System Name City OF SOAP LAKE

Water System ID Number 81300 P Water System County GRANT

Date delivered 6-13-17

URL (if delivered electronically) _____

In compliance with the CCR requirements in WAC 246-290-72001 through -72012, I confirm that:

- The CCR has been appropriately delivered to customers who use this water system.
- All information contained in this report is correct.
- The monitoring data stated in the CCR matches information submitted to Washington State Department of Health, Office of Drinking Water.

Certified by:

Signature Darrin Fronsman

Printed Name DARRIN FRONSMAN

Phone (509) 246-1823 Date 6-13-17

APPENDIX C

OPERATING PERMIT

Washington State Department of Health

Division of Environmental Health
Office of Drinking Water

Help

Individual System View - SOAP LAKE WATER DEPT - Water System Id - 81300

Compliance Actions	Operating Permits	Operators	Reports	Water Use Efficiency
General Information	Source Information	Samples	Exceedances	Water Quality Monitoring Schedule

Last Permit Color Issued: Green Last Permit Issued Date: 6/1/2017

Last Permit Issued Definition: Green: Systems in this category are considered adequate for existing uses and adding new service connections up to the number of approved service connections.

Current Color: Green Current Color is what the calculated permit color would be based on information as of 11/30/2017

Current Color Definition: Green: Systems in this category are considered adequate for existing uses and adding new service connections up to the number of approved service connections.

Override Comments:

Current Permit Conditions:

Department of Health, Office of Drinking Water

Street Address:
243 Israel Road S.E. 2nd floor
Tumwater, WA 98501

Mail:
PO BOX 47822
Olympia, WA 98504-7822

Phone: (360) 236-3100

Send inquiries about DOH and its programs to the Health Consumer Assistance Office
Comments or questions regarding this Web site? Send email to Environmental Health Application Testing and Support or call 360-236-4593.

APPENDIX D

SANITARY SURVEY FINDINGS

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
EASTERN DRINKING WATER REGIONAL OPERATIONS
16201 E Indiana Avenue, Suite 1500, Spokane Valley, Washington 99216-2830
TDD Relay 1-800-833-6388

March 14, 2017

45 DAYS - BY APRIL 27TH

Darrin Fronsman
City of Soap Lake
PO Box 1270
Soap Lake, WA 98851

Subject: Soap Lake Water Dept, PWS ID #81300 P, Grant County
Routine Sanitary Survey – Conducted March 7, 2017

Dear Mr. Fronsman:

The Department of Health (DOH) thanks you for being available and attentive for your Routine Sanitary Survey on March 7, 2017. This letter documents discussions and observations that occurred during the survey and any required corrective actions. Supporting photographs taken during the survey are cited and attached at the end of this letter.

Prior to this survey, DOH reviewed your previous (2014) sanitary survey findings, and we have noted that you addressed any issues observed in that survey.

General Discussion
A summary of various water system discussions with the operator include:

- The owner of the mobile home trailers around Source S01 (Well #1) has moved all the mobile home trailers (see Photographs 1 and 2). DOH suggests the City should consider purchasing this property for protecting the Sanitary Control Area for this well.
- The City is planning to clean and complete any necessary rehabilitation activities for the "East" (concrete) reservoir. Additional work includes replacing the existing vent and rubber seal on the access hatch. The City needs to determine a method to maintain flow to the booster pump station serving the upper pressure zone to maintain water service to the upper pressure zone during the time period that the reservoir is off-line.
- As part of the effort to clean and rehab the "East" reservoir, DOH has requested that the City determine if the reservoir's drain discharges through the overflow discharge (that has a "duckbill" valve).
- Source S01 (Well #1) was re-built this past summer (see Photograph 3).

Significant Deficiencies
Congratulations – you have no Significant Deficiencies!

Significant Findings
Significant Findings, while not as potentially critical as Significant Deficiencies, if left unaddressed, have the potential to lead to a health risk to people consuming water from your water system. Similar to Significant Deficiencies, you must address all Significant Findings, or provide a plan for mitigating these findings, **no later than 45 days from the date of this letter**. During the survey, we observed the following Significant Findings:

1. East (Concrete) Reservoir (WELDED)

    a. Photograph the following items on the reservoir roof following replacement: vent (confirm that the vent is equipped with a 24-mesh, non-corrodible screen that is in place and fully protective, i.e., no holes or openings) and hatch (show that the hatch can be locked closed and that the hatch has a rubber seal on the inside that is intact and fully functional).

2. West (Steel) Reservoir (BOLTED)

    a. Photograph the following items on the reservoir roof following replacement: vent (confirm that the vent is equipped with a 24-mesh, non-corrodible screen that is in place and fully protective, i.e., no holes or openings) and hatch (show that the hatch can be locked closed and that the hatch has a rubber seal on the inside that is intact and fully functional). (NOT Going to Be Replaced) (Photos 3-22-17)

DOH has logged these Significant Findings and corresponding completion dates into our sanitary survey database. Assuring that your utility addresses these items is a very high priority for the State's drinking water program. Failure to correct the above Significant Findings within the specified timeframe may result in enforcement actions taken by DOH to assure protection of public health. Please contact me at your earliest convenience, if you require additional time to address these findings.

Upon completion, please submit a brief letter and supporting photographs confirming that these Significant Findings have been addressed. Please forward your letter to me (Russell Mau) or "Sanitary Survey Regional Coordinator" at the above postal address, provide to my email address (given at the end of this letter) or provide to the following email address: ero.sanitarysurveys@doh.wa.gov

Please reference the name and identification number of your water system in all communications.

Recommendations
During the survey, we also noted the following issues, and DOH strongly recommends the following:

1. Well Monitoring
   a. Consider implementing a program to check depth to groundwater in the wells to be able to track this depth over time. The depth to the static groundwater level should be measured, and recorded, a couple times each year – in early spring (most likely the highest groundwater level) and in early fall (most likely the lowest groundwater level). Over time, this information will provide the water system information on the long-term capacity of the aquifer. ERWOW or RCAC can assist in determining and installing such a system.
   b. Consider installing devices to provide run-time clocks and an electrical power draw meters on the well pumps to evaluate on, at least, a yearly basis the well pump's performance, in conjunction with how much flow has been pumped to monitor the well pumps' performance. These can then be checked a couple times a year to see if the pumps are starting to operate out of "normal" ranges.

2. West (Steel) Reservoir

   a. Please consider cleaning the connection of the steel walls to the concrete base and re-sealing this connection. Some "moss" material is growing in this gap, indicating that moisture is most likely leaking through (see Photograph 4). Repairing this gap will eliminate the leaking that can also lead to possible contamination into the reservoir (water that leaks out provides a path for microscopic organisms to migrate into the reservoir) and can preserve the structural integrity of the anchor bolts, extending the useful life of the structure.

Update Water Facilities Inventory (WFI) Form
You can update the WFI at any time by simply crossing-out the old information, writing the new information in red ink, signing, and mailing the updated form to our office.

Water Quality Monitoring
Your on-line Water Quality Monitoring System (WQMS) provides your water quality monitoring requirements.

The link for the on-line WQMS is: https://fortress.wa.gov/doh/eh/portal/odw/si/Intro.aspx

To use this link, after entering this link into your browser and activating:
- In the first screen, click on the "Start" button
- In the second screen, select "I Accept" and then click on the "Submit" button
- In the third screen, simply enter your water system ID number into the box next to "Water System ID" at the top of the screen and then click on the "Submit" button.

Revised Total Coliform Rule (RTCR)
In April 2016, the RTCR changed some monitoring and follow-up requirements for coliform monitoring. Please review the enclosed brochure for further details regarding these changes.

Lead and Copper Rule
As of October 1, 2011, DOH requires Lead and Copper Rule Short-Term Revisions (LCR-STR) for all Group A Community and nontransient noncommunity (NTNC) water systems. For guidance regarding the changes instituted through the LCR-STR, please visit the DOH website at:
http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/Contaminants/LeadandCopperRule

Closing
By having a sanitary survey completed, your water system meets the sanitary survey requirement of the Group A public water system regulation, WAC 246-290-416. We will notify you in three to five years of the next sanitary survey. Please note that satisfying the requirements of the sanitary survey should not be construed as meeting other applicable federal, state or local statutes, ordinances and regulations. Similarly, other DOH requirements should be addressed separately from the sanitary survey.

In a letter sent in February, you were notified that a fee is charged by DOH to help recover the cost of conducting a sanitary survey. In accordance with WAC 246-290-990 (3)(c), the fee charged for the March 7, 2017 sanitary survey is $331.50. An invoice is enclosed.

If you should have any questions regarding this letter, please contact me at (509) 329-2116 or russell.mau@doh.wa.gov.

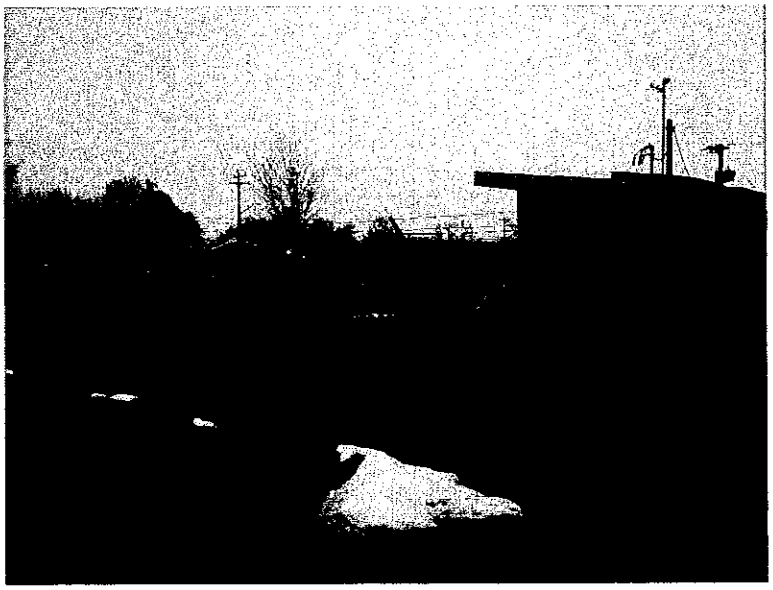
Sincerely,

Russell E. Mau, PhD, PE
Regional Engineer
Department of Health, Office of Drinking Water

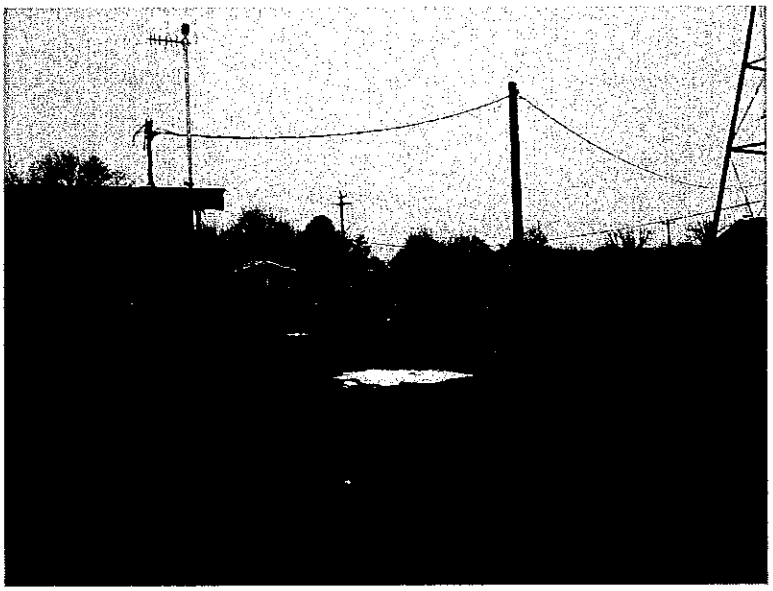
Enclosure: Revised Total Coliform Rule Brochure (DOH 331-556)

cc: Grant County Health
Mark Steward, DOH Sanitary Survey Regional Coordinator

Photograph 1



Photograph 2



Photograph 3

Photograph 4

APPENDIX E

CONSISTENCY STATEMENTS

Washington State Department of Health

Local Government Consistency Determination Form

Water System Name: City of Soap Lake PWS ID: 81300

Planning/Engineering Document Title: Water System Plan Update Plan Date: April 2018

Local Government with Jurisdiction Conducting Review: City of Soap Lake

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system: Identify the page(s) in submittal	For use by local government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Figures 1-2 and 1-3	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	p. 2-8	Yes
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	p. 1-9 Table 1-6	Yes
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	p. 1-9 Table 1-6	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	p. 1-8	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature

11/10/18
Date

Darryl Piercy, City Planner, Soap Lake
Printed Name, Title, & Jurisdiction

Washington State Department of Health

Local Government Consistency Determination Form

Water System Name: City of Soap Lake PWS ID: 81300

Planning/Engineering Document Title: Water System Plan Update Plan Date: _____

Local Government with Jurisdiction Conducting Review: Grant County

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system: Identify the page(s) in submittal	For use by local government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Figures 1-2 and 1-3	Yes
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	p. 2-8	Yes *
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	p. 1-9 Table 1-6	Yes
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	p. 1-9 Table 1-6	Yes
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	p. 1-7	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature — Date: 26 JUNE 2018

DAMIEN HOOPER, DEVELOPMENT SERVICES DIRECTOR

Printed Name, Title, & Jurisdiction GRANT COUNTY

* REVISED POPULATION PROJECTION FOR 2038 AVAILABLE IN ADOPTED 2018 COMPRENSIVE PLAN FOR GRANT COUNTY (JUNE 18, 2018)

Washington State Department of Health
Division of Environmental Health
Drinking Water

This form covers service area boundary changes within the City's Water System Plan and the Grant County Coordinated Water System Plan.

Local Government Consistency Determination Form

Water System Name: City of Soap Lake PWS ID: 81300

Planning/Engineering Document Title: Water System Plan Update Plan Date: April 2018

Local Government with Jurisdiction Conducting Review: Grant County Public Health District

Before the Department of Health (DOH) approves a planning or engineering submittal under Section 100 or Section 110, the local government must review the documentation the municipal water supplier provides to prove the submittal is consistent with **local comprehensive plans, land use plans and development regulations** (WAC 246-290-108). Submittals under Section 105 require a local consistency determination if the municipal water supplier requests a water right place-of-use expansion. The review must address the elements identified below as they relate to water service.

By signing this form, the local government reviewer confirms the document under review is consistent with applicable local plans and regulations. If the local government reviewer identifies an inconsistency, he or she should include the citation from the applicable comprehensive plan or development regulation and explain how to resolve the inconsistency, or confirm that the inconsistency is not applicable by marking N/A. See more instructions on reverse.

Local Government Consistency Statement	For use by water system: Identify the page(s) in submittal	For use by local government: Yes or Not Applicable
a) The water system service area is consistent with the adopted land use and zoning within the service area.	Figures 1-2 and 1-3	~~Yes~~ Not Reviewed
b) The growth projection used to forecast water demand is consistent with the adopted city or county's population growth projections. If a different growth projection is used, provide an explanation of the alternative growth projection and methodology.	p. 2-8	~~Yes~~ Not Reviewed
c) For cities and towns that provide water service: All water service area policies of the city or town described in the plan conform to all relevant utility service extension ordinances.	p. 1-9 Table 1-6	~~Yes~~ Not Reviewed
d) Service area policies for new service connections conform to the adopted local plans and adopted development regulations of all cities and counties with jurisdiction over the service area.	p. 1-9 Table 1-6	~~Yes~~ Not Reviewed
e) Other relevant elements related to water supply are addressed in the water system plan, if applicable. This may include Coordinated Water System Plans, Regional Wastewater Plans, Reclaimed Water Plans, Groundwater Management Area Plans, and the Capital Facilities Element of local comprehensive plans.	p. 1-8	Yes

I certify that the above statements are true to the best of my knowledge and that these specific elements are consistent with adopted local plans and development regulations.

Signature 12/21/2018
Date

Jon Ness, EH Manager, Grant Co. Health District
Printed Name, Title, & Jurisdiction

APPENDIX F

CROSS CONNECTION CONTROL

APPENDIX F

CROSS CONNECTION CONTROL

The objective of a cross connection control (CCC) plan is to protect Soap Lake's distribution system from the possibility of contamination as the result of existing or potential cross connections. Chapter 246-290-490 WAC describes ten elements of a CCC plan. Pertinent CCC documents are included following the summary in Table F-1.

TABLE F-1
Cross Connection Control Program

Element	Action Taken
1. Establish the City's authority to implement a CCC program, describe its operating policies and technical provisions, and describe the corrective actions used to ensure that consumers comply with the program.	This requirement is covered by reference in Chapter 13.22of the Soap Lake Municipal Code (SLMC).
2. Develop and implement procedures for evaluating existing and new connections to the water system for possible cross connections.	These requirements are covered by reference under Chapter 13.22 of the SLMC.
3. The City must ensure that cross connections are eliminated whenever possible. If not possible to eliminate, the hazard must be controlled by approved backflow preventers.	This requirement is covered by reference under Chapter 13.22 of the SLMC.
4. The City must provide personnel, including at least one person trained as a cross control specialist, to develop and implement the program.	The City's water system manager Darrin Fronsman, is a certified cross connection control specialist (CCS), No. 7310.
5. The City must ensure that the backflow preventers are tested annually and that documentation is provide to the City.	This requirement is covered by reference in Chapter 13.22 of the SLMC. Customers hire outside contractors for this service.
6. The City must develop a quality control program to ensure that the testing of backflow preventers is being performed in accordance with the City's standards.	This requirement is covered by reference in Chapter 13.10.22 of the SLMC.
7. The City must develop procedures for dealing with backflow incidents.	This requirement is addressed in the City's emergency response plan.
8. The City must include information on cross connection control in the existing program for consumer education.	The City makes information on its backflow prevention available to the public at with new accounts and its annual CCR.
9. The City must maintain cross connection control records. These records must include a master list of service connections with cross connection, the hazard present at each, and the required backflow preventers. Records of any backflow incidents must also be kept.	The City's cross connection control specialist has completed an investigation of high-hazard locations. Reports are attached.
10. If the City distributes and/or has facilities receive reclaimed water additional measures are required.	The City does not distribute or receive reclaimed water.

Chapter 13.22
CROSS-CONNECTION CONTROL

Sections:

13.22.010 Purpose.

The purpose of this chapter, in conjunction with WAC 246-290-490, as now adopted or hereafter amended, is to protect the public water system from contamination via cross-connections. Controlling and preventing cross-connections is accomplished by either removing the cross-connection or installing an approved backflow preventer. (Ord. 1008 § 1, 2004).

13.22.020 Responsibility.

A. Under the provisions of WAC 246-290-490, the purveyor's (city water division) responsibility for cross-connection control shall begin at the water supply source, include all the public water treatment, storage, and distribution facilities, and end at the point of delivery to the consumer's water system.

B. When, in accordance with this chapter, an approved backflow preventer is required for the safety of the city water system, the city water division shall ensure that cross-connections between the distribution system and a consumer's water system are eliminated or controlled by the installation of an approved reduced pressure backflow assembly (RPBA) or air gap that provides premises isolation.

C. The city water division shall give notice in writing to the property owner when premises isolation protection is required.

D. Plans shall be submitted to the city water division for review and approval prior to the installation of any reduced pressure backflow assembly or air gap that provides premises isolation.

E. All approved backflow assembly and air gap installations required by the city water division shall be inspected by a state certified cross-connection control specialist from the city water division or employed by the city water division.

F. All reduced pressure backflow assemblies shall be tested by a Washington State certified tester on the city's approved backflow assembly tester list prior to being placed in service. (Ord. 1008 § 1, 2004).

13.22.030 High health cross-connection hazards requiring an approved reduced pressure backflow assembly or air gap.

In addition to Table 9 of WAC 246-296-490, all water tanker trucks, flush trucks, onboard tanks and all other vessels supplying water to construction equipment or activities shall require an approved reduced pressure backflow assembly or air gap. (Ord. 1008 § 1, 2004).

13.22.040 Flushing sewers.
There shall be no direct unprotected connection between a fire hydrant or other potable water connection and any sanitary or storm sewer for the purpose of flushing. (Ord. 1008 § 1, 2004).

13.22.050 Use of privately owned backflow preventers on temporary connections.
The proprietor of a privately owned backflow preventer shall submit a copy of the current (within the previous 12-month period) backflow assembly test performed by a Washington State certified tester on the city's approved backflow assembly tester list prior to it being connected to the city water system. If an acceptable report showing passing results cannot be furnished, the assembly shall be retested in accordance with state and city regulations. Test reports shall be provided to the water quality specialist who administers the cross-connection control program. (Ord. 1008 § 1, 2004).

13.22.060 Backflow preventer rental fee.
When backflow preventers are required by this chapter to protect the city's water system and provided by the city for temporary connections, the rental fee shall be billed as follows:

A. The rental fee shall be $4.00 per day for the entire time that the renter has the backflow preventer, regardless of whether it is used or not;

B. Any damage to the backflow preventer while in the possession of the renter shall be itemized and included with the rental fee. (Ord. 1008 § 1, 2004).

13.22.070 Installation and maintenance.
A. All costs associated with purchase, installation, inspections, testing (by Washington State certified tester), replacement, maintenance, parts, and repairs to backflow preventers are the financial responsibility of the property owner.

B. Backflow preventers, used for temporary connections, owned and rented out by the city will be tested and maintained by the city. These costs are included in the rental fee. (Ord. 1008 § 1, 2004).

13.22.080 Notice to cease violation.
Any person, firm, or corporation found to be violating any provision of this chapter shall be served by the administrative authority with written notice stating the nature of the violation and providing a reasonable time limit for the satisfactory correction thereof. The offender shall, within the period of time stated in such notice, permanently cease all violations. (Ord. 1008 § 1, 2004).

13.22.090 Penalty for continued violation.
Any person, firm, or corporation who continues any violation beyond the time limit provided for in SLMC 13.22.080 is deemed to have committed a civil infraction, and upon conviction thereof, shall be subject to a C-2 penalty and punishable as defined in Chapter 1.10 SLMC. Failure or refusal to comply shall also constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met. (Ord. 1008 § 1, 2004).

Telephone 509 246-1211
Fax 509 246-1213

PO Box 1270
239 2nd Ave SE
Soap Lake WA 98851

June 5, 2018

«Name_»
«Addresss»
«City_St_Zip»

«GreetingLine»

In accordance with Washington Department of Health was 246-290-490 Cross-connection control requirements, was 246-290-010, City Municipal Code 13.22, the City of Soap Lake's cross-connection control specialist has inspected and documented your backflow device. All residential and commercial sprinkler/irrigation systems are required to have an approved backflow assembly, i.e.: atmospheric vacuum breaker, pressure vacuum breaker or double check valve assembly installed, inspected and tested. **This test needs to be made and documented yearly. It is your responsibility to have it tested. Failure to comply can result in the termination of water services from the City of Soap Lake.**

If you do not have a sprinkler/irrigation system, please let us know so we can determine what correction is needed at this time.

It is very important that you work with us in this matter to maintain our safe drinking water system.

IF A COPY OF YOUR SYSTEM TEST RESULTS IS NOT SENT TO THE CITY WITHIN 30 DAYS OF THE DATE OF THIS LETTER, YOUR WATER WILL BE SHUT OFF. YOU WILL BE CHARGED A $20.00 TURN OFF FEE AND A $20.00 TURN ON FEE TO HAVE SERVICE RESTORED.

Sincerely,

Darrin Fronsman
Public Works Supervisor
Cross-connection Control Specialist
(509) 246-1823

Grant County Backflow Assembly Testers:

BAT#	Name	Phone
B3443	Bjork, Dennis	509 765-6383
B6459	Brown, Scott	509 750-1829
B6154	Byam, Christopher	509 793-4520
B6099	Gant, Jeff	509 793-8022
B6073	Hansen, Steven	509 765-5569
B5740	Harvill, Jeffery	509 771-2524
B1295	Wilson, William	509 884-6717

Name	Addresss	City St Zip	Property Address
Edward Skrinnik	PO Box 495	Bellevue WA 98009	722 1st Ave NW
Don Countryman	PO Box 932	Soap Lake WA 98851	10 7th Ave SE
Bill Beeks	1401 E Harrison St #3	Seattle WA 98112	223 Daisy St
United States Post Office	PO Box 9998	Soap Lake WA 98851	511 Division S
Soap Lake Natural Spa & Resort	PO Box 1527	Soap Lake WA 98851	226 E Main Ave
Soap Lake High School	410 Ginkgo St S	Soap Lake WA 98851	410 Ginkgo St S
Daisy Street Car Wash	PO Box 1303	Soap Lake WA 98851	423 S Daisy
Dylan Buchert	1908 Rd 20 NW	Soap Lake WA 98851	423 3rd Ave NE
United Marketing - Camas Court	PO Box 3080	Bellevue WA 98009	23 2nd Ave SW
Mark Seavey	PO Box 208	Soap Lake WA 98851	431 3rd Ave NE
Dick Garnett	PO Box 98	Soap Lake WA 98851	711 S Aster
First Baptist Church	PO Box 337	Soap Lake WA 98851	318 Division
John Trepanier	PO Box 1365	Soap Lake WA 98851	30 S Evergreen
Svitlana Agoshkova	PO Box 1513	Soap Lake WA 98851	627 S Buttercup
John's Food Store	PO Box 66	Soap Lake WA 98851	115 S Daisy
Dave & Rita Jordan	PO Box 223	Soap Lake WA 98851	611 3rd Pl SE
Stella Easton	PO Box 1347	Soap Lake WA 98851	422 5th Ave SE
Robert Blanchard	334 Thompson Ln	Monroe WA 98272	218 W Main Ave
House of Prayer	PO Box 1275	Soap Lake WA 98851	319 5th Ave SE
United Marketing - Soap Lake Gardens	PO Box 3080	Bellevue WA 98009	327 S Division
Barbara Moore	PO Box 482	Soap Lake WA 98851	54 S Evergreen
Jerry Jewell	PO Box 83	Soap Lake WA 98851	818 E Main Ave
Masquers Theater	PO Box 601	Ephrata WA 98823	322 E Main Ave
Sandy Gansauge	PO Box 664	Soap Lake WA 98851	627 Canna St S

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	27294	1"	*Pass* [X] *Fail* []

Name of Premises: Lee Brown

Service Address: 14 S. Fern Soap Lake

Location of Backflow Assembly: back yard

Use Protected: [] Premises Isolation [X] Irrigation [] Fire System [] Boiler [] Other _____

Air Gap Sufficient? Yes [] No []
An Approved Installation? Yes [X] No []

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	[] Leaked [X] Closed Tight 2.0	[] Leaked [X] Closed Tight 2.0	[] Opened at _____ PSID [] Did Not Open	Air Inlet Opened at _____ PSID [] Did Not Open
REPAIRS	[] Cleaned *Replaced:* [] Disc [] Spring [] Guide [] Pin Retainer [] Hinge Pin [] Seat [] Diaphragm [] Other, Describe	[] Cleaned *Replaced:* [] Disc [] Spring [] Guide [] Pin Retainer [] Hinge Pin [] Seat [] Diaphragm [] Other, Describe	[] Cleaned *Replaced:* *Disc:* [] Upper [] Lower [] Spring *Diaphragm:* [] Large [] Small [] Upper [] Lower *Seat:* [] Upper [] Lower *Spacer:* [] Lower [] Other, Describe	Check Valve Held at _____ PSID [] Did not Open [] Cleaned *Replaced:* [] Air Inlet [] Disc [] Check Disc [] Air Inlet [] Check Spring [] Other, Describe
Final Test	RP _____ PSID Closed Tight	[] Closed Tight	Opened at _____ PSID [] Reduced Pressure	Air _____ PSID Check Valve ____ PSID

Comments: _____

Tested by (Printed Name) DENNIS BJORK *BAT #* B 3443

Business Name MINATANI LANDSCAPING *Business Telephone #* 509 765-6383

_____ March 28, 2018

Tester's Signature *Date of Test*

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	559496	2"	*Pass* X / *Fail* ||

Name of Premises: U.S. Post Office

Service Address: 511 Division Soap Lake

Location of Backflow Assembly: behind water meter

Use Protected: || Premises Isolation X Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? *Yes* || *No* ||
An Approved Installation? *Yes* X *No* ||

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked X || Closed Tight 2.0	|| Leaked X || Closed Tight 1.6	|| Opened at ____ PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
REPAIRS	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve ____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 83453

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30,2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	639547	1"	*Pass* X
					Fail //

Name of Premises: City of Soap Lake

Service Address: East Bank Park

Location of Backflow Assembly: behind water meter

Use Protected: // Premises Isolation // Irrigation // Fire System // Boiler // Other _____

Air Gap Sufficient? *Yes //* *No //*

An Approved Installation? *Yes* X *No //*

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	// Leaked X Closed Tight 1.8	// Leaked X Closed Tight 1.4	// Opened at _____ PSID // Did Not Open	Air Inlet Opened at _____ PSID // Did Not Open

REPAIRS	// Cleaned
	Replaced:
	// Disc
	// Spring
	// Guide
	// Pin Retainer
	// Hinge Pin
	// Seat
	// Diaphragm
	// Other, Describe
		// Cleaned
		Replaced:
		// Disc
		// Spring
		// Guide
		// Pin Retainer
		// Hinge Pin
		// Seat
		// Diaphragm
		// Other, Describe
			// Cleaned
			Replaced:
			Disc:
			// Upper
			// Lower
			// Spring
			Diaphragm:
			// Large
			// Small
			// Upper
			// Lower
			Seat:
			// Upper
			// Lower
			Spacer:
			// Lower
			// Other, Describe
				Check Valve Held at _____ PSID
				// Did not Open
				// Cleaned
				Replaced:
				// Air Inlet
				// Disc
				// Check Disc
				// Air Inlet
				// Check Spring
				// Other, Describe

Final Test	RP _____ PSID Closed Tight	// Closed Tight	Opened at _____ PSID // Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 13443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30,2018

Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	350	DCVA	A0119544	1"	*Pass* X *Fail* //

Name of Premises	
City of Soap Lake	
Service Address West Bank Park	**Location of Backflow Assembly** in gravel next to reatsroom
Use Protected: // Premises Isolation X Irrigation // Fire System // Boiler // Other _____	*Air Gap Sufficient?* *Yes //* *No //* *An Approved Installation?* *Yes* X *No //*

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	// Leaked X Closed Tight 1.8	// Leaked X Closed Tight 1.8	// Opened at ____ PSID // Did Not Open	Air Inlet Opened at _____ PSID // Did Not Open

REPAIRS	// Cleaned
	Replaced:
	// Disc
	// Spring
	// Guide
	// Pin Retainer
	// Hinge Pin
	// Seat
	// Diaphragm
	// Other, Describe
		// Cleaned
		Replaced:
		// Disc
		// Spring
		// Guide
		// Pin Retainer
		// Hinge Pin
		// Seat
		// Diaphragm
		// Other, Describe
			// Cleaned
			Replaced:
			Disc:
			// Upper
			// Lower
			// Spring
			Diaphragm:
			// Large
			// Small
			// Upper
			// Lower
			Seat:
			// Upper
			// Lower
			Spacer:
			// Lower
			// Other, Describe
				Check Valve Held at _____ PSID
				// Did not Open
				// Cleaned
				Replaced:
				// Air Inlet
				// Disc
				// Check Disc
				// Air Inlet
				// Check Spring
				// Other, Describe

Final Test	RP _____ PSID Closed Tight	// Closed Tight	Opened at _____ PSID // Reduced Pressure	Air _____ PSID Check Valve ____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* B3443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30,2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	RPBA	2713695	2"	*Pass* X / *Fail* ||

Name of Premises: City of Soap Lake

Service Address: Treatment Plant Soap Lake

Location of Backflow Assembly: in building

Use Protected: X || Premises Isolation || Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? Yes X / No ||

An Approved Installation? Yes X / No ||

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked X Closed Tight 7.2	|| Leaked X Closed Tight	X Opened at 2.5 PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
REPAIRS	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* B3443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30, 2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	350	DCVA	A005115	1"	*Pass* X *Fail* ||

Name of Premises: Don Countryman

Service Address: 10 7th Ave S.E. Soap Lake

Location of Backflow Assembly: next to garage

Use Protected: || Premises Isolation X Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? *Yes* || *No* ||
An Approved Installation? *Yes* X *No* ||

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked X Closed Tight 2.2	|| Leaked X Closed Tight 2.2	|| Opened at _____ PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
REPAIRS	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 83443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

May 15, 2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	3859218	1"	*Pass* X / *Fail* [ ]

Name of Premises: Svitlana Agoshkova

Service Address: 627 Buttercup St. Soap Lake

Location of Backflow Assembly: north side of house in yard

Use Protected: [ ] Premises Isolation [X] Irrigation [ ] Fire System [ ] Boiler [ ] Other _____

Air Gap Sufficient? *Yes* [ ] *No* [ ]

An Approved Installation? *Yes* X *No* [ ]

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	[ ] Leaked X Closed Tight 2.2	[ ] Leaked X Closed Tight 2.2	[ ] Opened at ____ PSID [ ] Did Not Open	Air Inlet Opened at _____ PSID [ ] Did Not Open
REPAIRS	[ ] Cleaned *Replaced:* [ ] Disc [ ] Spring [ ] Guide [ ] Pin Retainer [ ] Hinge Pin [ ] Seat [ ] Diaphragm [ ] Other, Describe	[ ] Cleaned *Replaced:* [ ] Disc [ ] Spring [ ] Guide [ ] Pin Retainer [ ] Hinge Pin [ ] Seat [ ] Diaphragm [ ] Other, Describe	[ ] Cleaned *Replaced:* *Disc:* [ ] Upper [ ] Lower [ ] Spring *Diaphragm:* [ ] Large [ ] Small [ ] Upper [ ] Lower *Seat:* [ ] Upper [ ] Lower *Spacer:* [ ] Lower [ ] Other, Describe	Check Valve Held at _____ PSID [ ] Did not Open [ ] Cleaned *Replaced:* [ ] Air Inlet [ ] Disc [ ] Check Disc [ ] Air Inlet [ ] Check Spring [ ] Other, Describe
Final Test	RP _____ PSID Closed Tight	[ ] Closed Tight	Opened at _____ PSID [ ] Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 83443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

May 15, 2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Watts	775QT	DCVA	4074	1"	*Pass* X *Fail* //

Name of Premises: Stella Eastan

Service Address: 422 5th Ave S.E. Soap Lake

Location of Backflow Assembly: next to pool

Use Protected: || Premises Isolation X Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? *Yes* // *No* //

An Approved Installation? *Yes* X *No* //

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked X Closed Tight 2.0	|| Leaked X Closed Tight 1.6	|| Opened at _____ PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
R E P A I R S	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 13443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

May 15, 2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	2881793	1"	*Pass* X *Fail* //

Name of Premises: Sandy Gansauge

Service Address: 627 Canna St. S.E. Soap Lake

Location of Backflow Assembly: behind water meter

Use Protected: // Premises Isolation X Irrigation // Fire System // Boiler // Other _____

Air Gap Sufficient? *Yes //* *No //*
An Approved Installation? *Yes X* *No //*

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	// Leaked X Closed Tight 2.2	// Leaked X Closed Tight 2.0	// Opened at ____ PSID // Did Not Open	Air Inlet Opened at _____ PSID // Did Not Open

REPAIRS	// Cleaned
	Replaced:
	// Disc
	// Spring
	// Guide
	// Pin Retainer
	// Hinge Pin
	// Seat
	// Diaphragm
	// Other, Describe
		// Cleaned
		Replaced:
		// Disc
		// Spring
		// Guide
		// Pin Retainer
		// Hinge Pin
		// Seat
		// Diaphragm
		// Other, Describe
			// Cleaned
			Replaced:
			Disc:
			// Upper
			// Lower
			// Spring
			Diaphragm:
			// Large
			// Small
			// Upper
			// Lower
			Seat:
			// Upper
			// Lower
			Spacer:
			// Lower
			// Other, Describe
				Check Valve Held at _____ PSID
				// Did not Open
				// Cleaned
				Replaced:
				// Air Inlet
				// Disc
				// Check Disc
				// Air Inlet
				// Check Spring
				// Other, Describe

Final Test	RP _____ PSID Closed Tight	// Closed Tight	Opened at _____ PSID // Reduced Pressure	Air _____ PSID Check Valve ____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* B3443

Business Name Minatare Co. *Business Telephone #* 509-765-6383

Tester's Signature

May 15,2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Watts	007-M1-QT	DCVA	845050	1"	*Pass* ✓ *Fail* ☐

Name of Premises: Becky Buckert

Service Address: 423 3rd Ave N.E. Soap lake

Location of Backflow Assembly: behind water meter

Use Protected: ☐ Premises Isolation ✓ Irrigation ☐ Fire System ☐ Boiler ☐ Other _____

Air Gap Sufficient? *Yes* ☐ *No* ☐

An Approved Installation? *Yes* ✓ *No* ☐

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	☐ Leaked ✓ Closed Tight 1.1	☐ Leaked ✓ Closed Tight 1.1	☐ Opened at ____ PSID ☐ Did Not Open	Air Inlet Opened at _____ PSID ☐ Did Not Open
REPAIRS	☐ Cleaned *Replaced:* ☐ Disc ☐ Spring ☐ Guide ☐ Pin Retainer ☐ Hinge Pin ☐ Seat ☐ Diaphragm ☐ Other, Describe	☐ Cleaned *Replaced:* ☐ Disc ☐ Spring ☐ Guide ☐ Pin Retainer ☐ Hinge Pin ☐ Seat ☐ Diaphragm ☐ Other, Describe	☐ Cleaned *Replaced:* *Disc:* ☐ Upper ☐ Lower ☐ Spring *Diaphragm:* ☐ Large ☐ Small ☐ Upper ☐ Lower *Seat:* ☐ Upper ☐ Lower *Spacer:* ☐ Lower ☐ Other, Describe	Check Valve Held at _____ PSID ☐ Did not Open ☐ Cleaned *Replaced:* ☐ Air Inlet ☐ Disc ☐ Check Disc ☐ Air Inlet ☐ Check Spring ☐ Other, Describe
Final Test	RP _____ PSID Closed Tight	☐ Closed Tight	Opened at _____ PSID ☐ Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 13443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30, 2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	2683745	1"	*Pass* X *Fail* ||

Name of Premises: Barbra Moore

Service Address: 54 Evergreen Soap Lake

Location of Backflow Assembly: next to driveway

Use Protected: || Premises Isolation X Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? *Yes* || *No* ||

An Approved Installation? *Yes* X *No* ||

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked X Closed Tight 1.8	|| Leaked X Closed Tight 1.6	|| Opened at ____ PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
REPAIRS	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 83443

Business Name Minatami Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30,2018

Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	1812006	1"	*Pass* X *Fail* ||

Name of Premises: Janet Seavey

Service Address: 431 3rd Ave N.E. Some Lawns

Location of Backflow Assembly: behind water meter

Use Protected: || Premises Isolation X Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? *Yes* || *No* ||
An Approved Installation? *Yes* X *No* ||

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked X Closed Tight 1.8	|| Leaked X Closed Tight 1.6	|| Opened at ____ PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
REPAIRS	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve ____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 83443

Business Name Mingtan Co. *Business Telephone #* 509-765-6383

Tester's Signature

May 15, 2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	RPBA	2713695	2"	*Pass* X / *Fail* ||

Name of Premises: City of Soap Lake

Service Address: Treatment Plant Soap Lake

Location of Backflow Assembly: in building

Use Protected: X Premises Isolation || Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? *Yes* X *No* ||

An Approved Installation? *Yes* X *No* ||

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked X Closed Tight 7.2	|| Leaked X Closed Tight	X Opened at 2.5 PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
REPAIRS	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 83443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30,2018

Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	350	DCVA	A0119544	1"	*Pass* ~~X~~ *Fail* //

Name of Premises: City of Soap Lake

Service Address: West Bank Park

Location of Backflow Assembly: in gravel next to reatsroom

Use Protected: || Premises Isolation ~~X~~ Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? *Yes* // *No* //

An Approved Installation? *Yes* ~~X~~ *No* //

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked ~~X~~ Closed Tight 1.8	|| Leaked ~~X~~ Closed Tight 1.8	|| Opened at ____ PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
REPAIRS	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 83443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30,2018

Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	639547	1"	*Pass* X *Fail* //

Name of Premises: City of Soap Lake

Service Address: East Bank Park

Location of Backflow Assembly: behind water meter

Use Protected: // Premises Isolation X Irrigation // Fire System // Boiler // Other _____

Air Gap Sufficient? *Yes //* *No //*
An Approved Installation? *Yes* X *No //*

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	// Leaked X Closed Tight 1.8	// Leaked X Closed Tight 1.4	// Opened at ____ PSID // Did Not Open	Air Inlet Opened at _____ PSID // Did Not Open

REPAIRS	// Cleaned
	Replaced:
	// Disc
	// Spring
	// Guide
	// Pin Retainer
	// Hinge Pin
	// Seat
	// Diaphragm
	// Other, Describe
		// Cleaned
		Replaced:
		// Disc
		// Spring
		// Guide
		// Pin Retainer
		// Hinge Pin
		// Seat
		// Diaphragm
		// Other, Describe
			// Cleaned
			Replaced:
			Disc:
			// Upper
			// Lower
			// Spring
			Diaphragm:
			// Large
			// Small
			// Upper
			// Lower
			Seat:
			// Upper
			// Lower
			Spacer:
			// Lower
			// Other, Describe
				Check Valve Held at _____ PSID
				// Did not Open
				// Cleaned
				Replaced:
				// Air Inlet
				// Disc
				// Check Disc
				// Air Inlet
				// Check Spring
				// Other, Describe

Final Test	RP _____ PSID Closed Tight	// Closed Tight	Opened at _____ PSID // Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* B3443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30,2018
Date of Test

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	2683745	1"	*Pass* X *Fail* ||

Name of Premises: Barbra Moore

Service Address: 54 Evergreen Soap Lake

Location of Backflow Assembly: next to driveway

Use Protected: || Premises Isolation X Irrigation || Fire System || Boiler || Other _____

Air Gap Sufficient? *Yes* || *No* ||

An Approved Installation? *Yes* X *No* ||

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	|| Leaked X Closed Tight 1.8	|| Leaked X Closed Tight 1.6	|| Opened at _____ PSID || Did Not Open	Air Inlet Opened at _____ PSID || Did Not Open
REPAIRS	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* || Disc || Spring || Guide || Pin Retainer || Hinge Pin || Seat || Diaphragm || Other, Describe	|| Cleaned *Replaced:* *Disc:* || Upper || Lower || Spring *Diaphragm:* || Large || Small || Upper || Lower *Seat:* || Upper || Lower *Spacer:* || Lower || Other, Describe	Check Valve Held at _____ PSID || Did not Open || Cleaned *Replaced:* || Air Inlet || Disc || Check Disc || Air Inlet || Check Spring || Other, Describe
Final Test	RP _____ PSID Closed Tight	|| Closed Tight	Opened at _____ PSID || Reduced Pressure	Air _____ PSID Check Valve _____ PSID

Comments: _____

Tested by (Printed Name) Dennis Bjork *BAT #* 83443

Business Name Minatani Co. *Business Telephone #* 509-765-6383

Tester's Signature

April 30, 2018
Date of Test

Hand delivered 5/29/18

BACKFLOW ASSEMBLY TESTING REPORT

Manufacturer	Model	Type of Assembly	Serial #	Size	*Test Results:*
Wilkins	950XLT	DCVA	1812006	1"	*Pass* [X] *Fail* [ ]

Name of Premises
Janet Seavey

Service Address	**Location of Backflow Assembly**
431 3rd Ave N.E. Soap Lake	behind water meter
Use Protected: [ ] Premises Isolation [X] Irrigation [ ] Fire System [ ] Boiler [ ] Other ______	*Air Gap Sufficient?* *Yes* [ ] *No* [ ] *An Approved Installation?* *Yes* [X] *No* [ ]

	Check Valve #1	Check Valve #2	Differential Pressure Relief Valve	Pressure Vacuum Breaker
Initial Test	[ ] Leaked [X] Closed Tight 1.8	[ ] Leaked [X] Closed Tight 1.6	[ ] Opened at ____ PSID [ ] Did Not Open	Air Inlet Opened at ______ PSID [ ] Did Not Open
R E P A I R S	[ ] Cleaned *Replaced:* [ ] Disc [ ] Spring [ ] Guide [ ] Pin Retainer [ ] Hinge Pin [ ] Seat [ ] Diaphragm [ ] Other, Describe	[ ] Cleaned *Replaced:* [ ] Disc [ ] Spring [ ] Guide [ ] Pin Retainer [ ] Hinge Pin [ ] Seat [ ] Diaphragm [ ] Other, Describe	[ ] Cleaned *Replaced:* *Disc:* [ ] Upper [ ] Lower [ ] Spring *Diaphragm:* [ ] Large [ ] Small [ ] Upper [ ] Lower *Seat:* [ ] Upper [ ] Lower *Spacer:* [ ] Lower [ ] Other, Describe	Check Valve Held at ______ PSID [ ] Did not Open [ ] Cleaned *Replaced:* [ ] Air Inlet [ ] Disc [ ] Check Disc [ ] Air Inlet [ ] Check Spring [ ] Other, Describe
Final Test	RP ______ PSID Closed Tight	[ ] Closed Tight	Opened at ______ PSID [ ] Reduced Pressure	Air ______ PSID Check Valve ____ PSID

Comments: ______________________________

Tested by (Printed Name) Dennis Bjork *BAT #* [illegible]

Business Name Mintani Co. *Business Telephone #* [illegible]

______________________ May 15,2018

Tester's Signature *Date of Test*

ADEPT FIRE PROTECTION
PO BOX 250
CLAYTON, WA 99110
PH: 509-279-3383
gary@adeptfire.com

COPY

7-16-2018

ASSEMBLY IS: EXISTING

Name: SOAP LAKE ELEMENTARY SCHOOL
Address: 410 GINKGO ST-SOAP LAKE, WA
Device Location: FIRE SPRINKLER CONTROL ROOM – MECH ROOM
Cross Connection Control For: FIRE SPRINKLER Device Type: DCVA
Manufacturer: AMES Model: 2000SS Serial No.: 101192 **SIZE: 4.0"**

	INITIAL TEST RESULTS	TEST AFTER REPAIR OR CLEANING
RPBA	Line Pressure: NA Pressure Drop Across No 1 Valve: psid Relief Valve Opened: psid No. 1 Check: Closed Tight No. 2 Check: Closed Tight Minimum Separation: Passed Test:	Line Pressure: Pressure Drop Across No 1 Valve: psid Relief Valve Opened: psid No. 1 Check: Closed Tight ☐ No. 2 Check: Closed Tight ☐ Minimum Separation: YES☐ NO ☐ Passed Test: ☐ ☐
DCVA	Line Pressure: 40 # No. 1 Check: Closed Tight 3.6 psid No. 2 Check: Closed Tight 2.7 psid Passed Test: YES	Line Pressure: No. 1 Check: Closed Tight ☐ psid No. 2 Check: Closed Tight ☐ psid Passed Test: YES☐ NO ☐
PVB	Line Pressure: NA Air Inlet: Opened psid Failed to open ☐ Check Valve: psid Closed Tight ☐ Passed Test: YES☐ NO ☐	Line Pressure: Air Inlet: Opened psid Failed to open ☐ Check Valve: psid Closed Tight ☐ Passed Test: YES☐ NO ☐
AG	Supply Pipe Diameter: NA" Separation: "	Supply Pipe Diameter: " Separation: "

IS THIS A PROPER INSTALLATION? **YES**
REMARKS: Device Passed
Test Equipment: Make: Mid-West Model: 830 Ser # 07071436 Accuracy Verif. Date: 1-15-2018
I CERTIFY THE ABOVE REPORT TO BE TRUE:
Certified by: 7.18.18 Phone Number: 509-279-3383

Initial test By: G.SCHUNK Cert No.: BAT 6377 Test date 7-16-2018
Repaired By: Cert No. Rep Date
Repair Test By Cert No. Test Date

RETURN TO WATER DIVISION

ADEPT FIRE PROTECTION
PO BOX 250
CLAYTON, WA 99110
PH: 509-279-3383
gary@adeptfire.com

7-16-2018

COPY

ASSEMBLY IS: EXISTING

Name: SOAP LAKE HIGH/MIDDLE SCHOOL
Address: 410 GINKGO ST-SOAP LAKE, WA
Device Location: FIRE SPRINKLER CONTROL ROOM – 2ND FLOOR MECH ROOM
Cross Connection Control For: FIRE SPRINKLER Device Type: DCVA
Manufacturer: AMES Model: 2000SS Serial No.: 103755 **SIZE: 4.0"**

	INITIAL TEST RESULTS	TEST AFTER REPAIR OR CLEANING
RPBA	Line Pressure: NA Pressure Drop Across No 1 Valve: psid Relief Valve Opened: psid No. 1 Check: Closed Tight No. 2 Check: Closed Tight Minimum Separation: Passed Test:	Line Pressure: Pressure Drop Across No 1 Valve: psid Relief Valve Opened: psid No. 1 Check: Closed Tight ☐ No. 2 Check: Closed Tight ☐ Minimum Separation: YES☐ NO ☐ Passed Test: ☐ ☐
DCVA	Line Pressure: 37 # No. 1 Check: Closed Tight 3.4 psid No. 2 Check: Closed Tight 3.3 psid Passed Test: YES	Line Pressure: No. 1 Check: Closed Tight ☐ psid No. 2 Check: Closed Tight ☐ psid Passed Test: YES☐ NO ☐
PVB	Line Pressure: NA Air Inlet: Opened psid Failed to open ☐ Check Valve: psid Closed Tight ☐ Passed Test: YES☐ NO ☐	Line Pressure: Air Inlet: Opened psid Failed to open ☐ Check Valve: psid Closed Tight ☐ Passed Test: YES☐ NO ☐
AG	Supply Pipe Diameter: NA" Separation: "	Supply Pipe Diameter: " Separation: "

IS THIS A PROPER INSTALLATION? **YES**
REMARKS: Device Passed
Test Equipment: Make: Mid-West Model: 830 Ser # 07071436 Accuracy Verif. Date: 1-15-2018
I CERTIFY THE ABOVE REPORT TO BE TRUE:
Certified by: 7.18.18 Phone Number: 509-279-3383

Initial test By: G.SCHUNK Cert No.: BAT 6377 Test date 7-16-2018
Repaired By: Cert No. Rep Date
Repair Test By Cert No. Test Date

RETURN TO WATER DIVISION

Health

Cross-Connection Control Activities (Blue)
Annual Summary Report (ASR) for 2016

PWS ID: **81300P** PWS Name: **SOAP LAKE WATER DEPT** County: **GRANT**

Part 1: Designated Cross-Connection Control Specialist (CCS) Information

CCS Name	darrin n fronsman	CCS Phone	509-246-1823	CCS Cert. #	7310	BAT Cert. #	
CCS is: PWS owner or employee							

Part 2: Status of Cross-Connection Control (CCC) Program at End of 2016

Provide information about the status of your CCC Program at the end of the reporting year.

PWS has:	**A written CCC Program Plan**[1] ◉ Yes No	**Program Plan Last Updated**[3] 08/22/2016	
	CCC implementation activities[2] ○ Yes No		

[1] Enter "Yes" if PWS has **any** type of written CCC Program Plan, policies, or procedures. Written CCC Program Plan must be part of a Water System Plan (WSP) or Small Water System Management Program (SWSMP).
[2] Enter "Yes" if PWS implemented **any** CCC Program activities during the reporting year, such as establishing legal authority, conducting hazard evaluations, requiring installation of backflow assemblies to protect the PWS, requiring assembly testing, maintaining CCC records, or enforcing the PWS's or CCC Program requirements.
[3] PWS can update the CCC Program Plan at any time (independent of WSP or SWSMP update).

Provide information regarding PWS's specific CCC Program Elements

Program Element Number	Description of Element [See WAC 246-290-490(3)]	This Program Element is: Included in Written Program Plan	This Program Element is: Being Implemented or Is Completed
1	**Legal Authority Established**	◉ Yes No	◉ Yes No
2	**Hazard Evaluation Procedures and Schedules**	◉ Yes No	◉ Yes No
3	**Procedures/Schedules for Ensuring Installation of Backflow Preventers**	◉ Yes No	◉ Yes No
4	**Certified CCS Provided**	◉ Yes No	◉ Yes No
5	**Backflow Preventer Inspection and Testing**	◉ Yes No	◉ Yes No
6	**Assembly Testing Quality Assurance/Quality Control (QA/QC) Program**	◉ Yes No	◉ Yes No
7	**Backflow Incident Response Procedures**	◉ Yes No	◉ Yes No
8	**Public Education Program**	◉ Yes No	◉ Yes No
9	**CCC Records**	◉ Yes No	◉ Yes No
10	**Reclaimed Water Permit**	Yes ◉ No N/A	Yes ◉ No N/A

Part 3A: PWS Characteristics at End of 2016

Enter the number of connections (new and existing) served by the PWS by type.

Type of Service Connection	Number
Residential (As defined by PWS)	717
All Other (include dedicated fire lines, dedicated irrigation lines, and PWS-owned facilities such as water and wastewater treatment plants and pumping stations, parks, piers, and docks)	71
Total Number of Connections	788

Part 3B: Cross-Connection Control for Severe and High-Hazard Premises and High-Hazard Dedicated Lines Served by the PWS

Answer the following questions carefully. These answers control your access to pages 2 and 3 for data entry.

1. Does your PWS serve any severe or high-hazard premises or any high-hazard dedicated fire or irrigation lines? ◉ Yes ○ No

2. Does PWS serve any high-hazard medical premises? ○ Yes ◉ No

- If you answer Yes to both questions, you must enter data in at least one row on page 2 and one row on page 3.
- If you answer Yes to Question 1 and No to Question 2, you must enter data on page 2 only.
- If you answer No to both questions, pages 2 and 3 will be grayed out to prevent data entry.

- Count only premises PWS serves water to.
- Report data as accurately as possible. **DOH currently bases CCC compliance actions on this information.**

Type of Severe or High-Hazard Premises or Dedicated Lines [WAC 246-290-490(4)(b)]	Number of Connections at end of 2016			
	A. Being Served Water by PWS[1]	B. With Premises Isolation by AG/RP[2]	C. With Column B AG Inspected or RP Tested[3]	D. Granted Exception from Premises Isolation
Agricultural (farms and dairies)	0	0	0	0
Beverage bottling plants (including breweries)	0	0	0	0
Car washes	1	1	0	0
Chemical plants	0	0	0	0
Commercial laundries and dry cleaners	0	0	0	0
Both reclaimed water and potable water provided	0	0	0	0
Film processing facilities	0	0	0	0
Dedicated fire lines with chemical addition or using unapproved auxiliary supplies	3	3	3	0
Food processing plants (including canneries, slaughter houses, rendering plants)	0	0	0	0
Hospitals, medical centers, medical, dental and veterinary clinics, mortuaries, nursing homes, etc., reported on Part 3C page 3 (totals imported from page 3)	0	0	0	0
Dedicated irrigation systems using purveyor's water supply and chemical addition[4]	0	0	0	0
Laboratories	0	0	0	0
Metal plating industries	0	0	0	0
Petroleum processing or storage plants	0	0	0	0
Piers and docks	0	0	0	0
Radioactive material processing plants or nuclear reactors	0	0	0	
Survey access denied or restricted	0	0	0	0
Wastewater lift/pump stations (non-residential only)	0	0	0	0
Wastewater treatment plants	1	1	1	
Unapproved auxiliary water supply interconnected with potable water supply	0	0	0	0
Totals	5	5	4	0

[1] Count multiple connections or parallel installations to the same premises as **separate** connections.

[2] Count only connections with premises isolation AGs or RPs. Don't include connections with in-premises preventers only or connections with DCVAs or DCDAs installed for premises isolation. The number in Column B can't be larger than the number in Column A in the same row.

[3] Count only connections whose premises isolation preventers were inspected (AGs) or tested (RPs) during the reporting year.

[4] For example, dedicated irrigation lines to parks, playgrounds, golf courses, cemeteries, estates, etc.

[5] Premises with hazardous materials or processes (requiring isolation by AG or RP), such as aircraft and automotive manufacturers, pulp and paper mills, metal manufacturers, military bases, and wholesale customers that pose a high hazard to the PWS. May be grouped together in categories, for example:"Other manufacturing" or "Other commercial".

Part 3C: Cross-Connection Control for High-Hazard Medical Premises Served by the PWS

- Count only medical premises PWS serves water to.
- Don't count the same premises more than once. If you serve different medical category premises through a single connection, count the connection under the medical category you consider to pose the highest hazard to PWS.
- Report data as accurately as possible. **DOH currently bases CCC compliance actions on this information**

Type of High-Hazard Medical Premises [WAC 246-290-490(4)(b)]	Number of Connections at end of 2016			
	A. Being Served Water by PWS[1]	B. With Premises Isolation by AG/RP[2]	C. With Column B AG Inspected or RP Tested[3]	D. Granted Exception from Premises Isolation
Hospitals				
Hospitals (include psychiatric hospitals and alcohol and drug treatment centers)				
Facilities for Treatment and Care of Patients Not Located in Hospitals Counted Above				
Same day surgery centers				
Out-patient clinics and offices				
Alternative health out-patient clinics and offices				
Psychiatric out-patient clinics and offices				
Chiropractors with water-connected X-ray equipment				
Hospice care centers				
Childbirth centers				
Kidney dialysis centers				
Blood centers				
Dental clinics and offices				
Facilities for Housing Patients				
Nursing homes				
Assisted Living Facilities (formerly Boarding Homes)				
Residential treatment centers				
Other Medical-Related Facilities				
Mortuaries with embalming equipment				
Morgues and autopsy facilities (not in hospitals)				
Veterinarian offices, clinics and hospitals				
Totals	0	0	0	0

[1] Count multiple connections or parallel installations to the same premises as **separate** connections.

[2] Count only connections with premises isolation AGs or RPs. Don't include connections with in-premises preventers only or connections with DCVAs or DCDAs installed for premises isolation. The number in Column B can't be larger than the number in Column A in the same row.

[3] Count only connections with premises isolation AGs or RPs. Don't include connections with in-premises backflow preventers only or connections with premises isolation DCVAs or DCDAs isolation.

Part 4A: Backflow Preventer Inventory and Testing Information for 2016

- Complete all fields. Enter **zero (0)**, if no backflow preventers in a specific category.
- Count only backflow preventers relied on to protect the PWS.
- Count AVBs on *irrigation systems only*. Select No to AVB question above Table 2 if PWS doesn't track AVBs.
- Count multiple tests (or failures) for the same backflow preventer as one test (or failure) for that backflow preventer.
- For multiple service connections or parallel installations, count each assembly separately.
- Count RPDAs and DCDAs as ***single*** assemblies. Count the tests of the mainline assembly and bypass assembly as ***one test***. Count the failure of either the mainline or bypass assembly (or the failure of both) as ***one failure***. Count an entire detector assembly taken out of service as ***one assembly removed from service***.
- Count assemblies installed on dedicated fire or irrigation lines as **Premises Isolation Assemblies** in Table 1.

	Backflow Preventer Category and Inspection/Testing Information	Air Gap	RPBA	RPDA	DCVA	DCDA	PVBA	SVBA	AVB
Table 1: Premises Isolation Preventers (include preventers isolating PWS-owned facilities)									
Existing Premises Isolation Backflow Preventers									
1	In service at beginning of 2016	0	1	0	0	0			
2	Inspected and/or tested in 2016[1]	0	0	0	0	0			
3	Failed inspection or test in 2016	0	0	0	0	0			
New Premises Isolation Backflow Preventers									
4	Installed in 2016[2]	0	0	0	0	0			
5	Inspected and/or tested in 2016[1]	0	0	0	0	0			
6	Failed inspection or test in 2016	0	0	0	0	0			
Premises Isolation Backflow Preventers (existing or new)									
7	Removed from service in 2016[3]	0	0	0	0	0			
	Total Premises Isolation Preventers at End of 2016	0	1	0	0	0	0	0	0
	Does PWS track AVBs on irrigation systems? Yes ○ No								
Table 2: In-Premises Preventers (include preventers within PWS-owned facilities)									
Existing In-Premises Backflow Preventers									
8	In service at beginning of 2016	0	4	0	3	0	0	0	unk
9	Inspected and/or tested in 2016[1]	0	0	0	0	0	0	0	unk
10	Failed inspection or test in 2016	0	0	0	0	0	0	0	unk
New In-Premises Backflow Preventers									
11	Installed in 2016[2]	0	0	0	0	0	0	0	unk
12	Inspected and/or tested in 2016[1]	0	0	0	0	0	0	0	unk
13	Failed inspection or test in 2016	0	0	0	0	0	0	0	unk
In-Premises Backflow Preventers (existing or new)									
14	Removed from service in 2016[3]	0	0	0	0	0	0	0	unk
	Total In-Premises Preventers at End of 2016[4]	0	4	0	3	0	0	0	0
	Grand Totals at End of 2016	0	5	0	3	0	0	0	0

[1] Initial and/or routine annual inspection (for proper installation and approval status) and/or test (for testable assemblies only, using DOH-approved USC field test procedures).

[2] Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at the beginning of the reporting year. Replacement preventers may be of a different type than the originals.

[3] Existing or new preventers taken out of service, whether or not they were replaced by the same or a different type of preventer.

Part 4B: Other Implementation Activities in 2016

Complete all cells. Enter zero if not applicable.

Water Use Questionnaires	
Did your PWS send any water use questionnaires to customers during 2016?	Yes ○ No

On-site Hazard Surveys				
Did your CCS conduct any on-site hazard surveys during 2016?				Yes ○ No
	Service Connection Type			
	New	**Existing**	**Total**	
1. Number of connections surveyed for cross-connection hazards to PWS.			0	
2. Number of connections requiring backflow prevention to protect PWS.[1,2]			0	

New Exceptions to Premises Isolation	
Did your CCS grant any new premises isolation exceptions in 2016 to high-hazard premises?[3]	Yes ○ No

CCC Enforcement Actions	
Did your PWS take any enforcement actions during 2016?[4]	Yes ○ No

[1] Include services where either premises isolation or in-premises preventers were required to protect the PWS.
[2] Include existing services that need new, additional or higher level backflow prevention.
[3] Submit a completed DOH Exception Form (green) for each new exception granted in the reporting year.
[4] "Enforcement actions" means actions taken by the PWS (such as water shut-off, PWS installation or testing of backflow preventer, assessment of fines, etc.) when the customer fails to comply with the PWS's CCC requirements.

Part 5: Backflow Incidents and "Off-Normal" Events in 2016

	Backflow Incidents, Risk Factors, and Indicators during 2016	Number
	Backflow Incidents during 2016	
1	Backflow incidents that contaminated the PWS[5].	0
2	Backflow incidents that contaminated the customer's drinking water system ***only***[5].	0
	Risk Factors for Backflow during 2016	
3	Distribution main breaks per 100 miles of pipe.	0.00
4	Low pressure events (<20 psi in PWS distribution system).	0
5	Water outage events.	0
	Indicators of Possible Backflow during 2016	
6	Total health-related complaints received by PWS.[6]	0
7	Received during BWA or PN events.[7]	0
8	Received during low pressure or water outage events.	0
9	Total aesthetic complaints (color, taste, odor, air in lines, etc.).	0
10	Received during BWA or PN events.[7]	0
11	Number of these complaints received during low pressure or water outage events.	0

[5] Purveyors must submit a Backflow Incident Report form for each backflow incident known to have contaminated the public water system. DOH is also interested in receiving incident report forms for backflow incidents that contaminated the customer's drinking water system only.
[6] Such as stomach ache, headache, vomiting, diarrhea, skin rashes, etc.
[7] **"BWA"** means **Boil Water Advisory** and **"PN"** means **Public Notification** for water quality reasons.

Part 6: Comments and Clarifications

- Enter comments to:
  - Explain or clarify information in this report.
  - Describe challenges faced or accomplishments made in this reporting year.
  - Share your goals and objectives for the coming reporting year.
- Delete comments that are no longer valid.

No Comments

Part 7: Report Certification and Contact Information

I, [Certified by] , certify that the information in this form is true, complete and accurate to the best of my knowledge.

Last Saved	05/05/2017	**All ASR Forms Certified/Submitted**	

Designated CCS/CCC Program Manager[1]

Name	darrin n fronsman	**Title**	superviser	**CCS Cert #**	7310
Email Address	dfronsman@smwireless.net	**Phone**	509-246-1823	**Phone Ext**	

PWS Manager[2]

Name	darrin n fronsman	**Title**	superviser	**Operator Cert #**	7310
Email Address	dfronsman@smwireless.net	**Phone**	509-246-1823	**Phone Ext**	

[1] The CCS responsible for developing and implementing the PWS's CCC program (CCC Program Manager).
[2] The person the designated CCS/CCC Program Manager reports to or other manager having direct oversight of the CCC Program.

APPENDIX G

EMERGENCY RESPONSE PLAN

APPENDIX G

EMERGENCY RESPONSE PLAN

The following section describes means and methods for the City to cope with emergency situations affecting its water utility. It includes a list of important telephone numbers for emergencies, some general considerations that should be kept in mind by City staff during an emergency, and specific emergency response plans. This Plan was created under the guidance of Department of Health Publication #331-211. In an effort to protect the citizens of Soap Lake, information from some of the sections has been omitted to protect the water system.

SECTION 1
EMERGENCY RESPONSE MISSION AND GOALS

Mission Statement	In an emergency, the mission of the Soap Lake water system is to protect the health of our customers by being prepared to respond immediately to a variety of events that may result in contamination of the water or disruption of supplying water.
Goal 1	Be able to quickly identify an emergency and initiate timely and effective response action.
Goal 2	Be able to quickly notify local, state, and federal agencies to assist in the response.
Goal 3	Protect public health by being able to quickly determine if the water is not safe to drink or use and being able to immediately notify customers effectively of the situation and advise them of appropriate protective action.
Goal 4	To be able to quickly respond and repair damages to minimize system down time.

SECTION 2
SYSTEM INFORMATION

System identification number	22850	
System name and address	City of Soap Lake 239 Second Street SE. PO Box 1270 Soap Lake, WA 98851 (509) 246-1211	
Directions to the system	See Figure 1-1 of the Water System Plan.	
Basic description and location of system facilities	The location of City facilities are shown in Figure 1-1 of the Water System Plan. • The City is located along SR 28 approximately 7 miles north of Ephrata	
Location/Town	Soap Lake, WA	
Population served and service connections from Division of Drinking Water records	1,765 people	1,243 ERUs
System owner	City of Soap Lake	
Name, title, and phone number of person responsible for maintaining and implementing the emergency plan.	Darrin Fronsman, Public Works Director	(509) 246-1211 City Hall

SECTION 3
CHAIN OF COMMAND

Name and Title	Responsibilities During Emergency
Hon. Raymond Gravelle Mayor	Responsible for guiding City Council in decision-making, should the water department require its involvement.
Darrin Fronsman Public Works Director	Responsible for overall management and decision-making for water system. Primary contact for all water system emergencies.
Karen Hand City Clerk	Responsible for administrative functions in the office, including receiving phone calls and keeping a log of events. A scripted message will be prepared by the water system staff to answer general questions.

SECTION 4
EVENTS THAT CAUSE EMERGENCIES

TYPE OF EVENT	PROBABILITY OF EVENT (HIGH-MEDIUM-LOW)	RISK OF DAMAGE FROM THE EVENT (High-Medium-Low)	ACTIONS TO BE TAKEN
Earthquake	Low	High	• Manually adjust lag/lead status of pumps if necessary • Monitor reservoir levels and determine if water main and/or intertie breaks have occurred • Check reservoirs for cracks, shifting in foundation, cracking or breaks in fittings and pipes leading to and from reservoirs • Check pipes for cracks or breaks in the line • Check the booster station equipment for damage
Floods	Low	Medium	• Manually adjust lag/lead status of pumps if necessary • Monitor reservoir levels and determine if water main and/or intertie breaks have occurred • Check pipes for areas of wash out • Check pipes for cracking or breaks • Increase monitoring for coliforms
High Winds	High	Low	• Check structures for damage

TYPE OF EVENT	PROBABILITY OF EVENT (HIGH-MEDIUM-LOW)	RISK OF DAMAGE FROM THE EVENT (High-Medium-Low)	ACTIONS TO BE TAKEN
Ice Storms	Low	Medium	• Manually adjust lag/lead status of pumps if necessary • Monitor reservoir levels and determine if water main and/or intertie breaks have occurred • Check reservoirs for cracking due to ice formation inside the tanks • Check pipe lines for breaks or frozen pipes
Droughts	High	Low	• Advise citizens to conserve water
Water Borne Illness	Low	Medium	• Manually adjust lag/lead status of pumps if necessary • Test water leaving wells to prevent illness • Check the reservoirs to ensure water is safe • Issue notices, such as boil notice, as needed • Increase monitoring for coliforms • Drain and refill reservoirs • Flush water lines • Notify DOH

TYPE OF EVENT	PROBABILITY OF EVENT (HIGH-MEDIUM-LOW)	RISK OF DAMAGE FROM THE EVENT (High-Medium-Low)	ACTIONS TO BE TAKEN
Vandalism	Low	Medium	• Check all properties on a regular basis and clean up any signs of problems • Manually adjust lag/lead status of pumps if necessary • Call police to investigate
Terrorism	Low	Medium	• Manually adjust lag/lead status of pumps if necessary • Issue notices to residents as needed • Flush lines • Drain and refill reservoirs
System Neglect	Low	Medium	• Follow the operation and maintenance plan to avoid issues.
Cross-Connections	Low	High	• Follow the guidelines in Appendix F • Prevent backflow problems • Follow backflow incident procedure
Construction Accidents	Medium	Medium	• Check pipe stability if damaged and repair immediately to prevent backflow problems
Electrical Outages	High	Low	• Issue curtail order if needed for extended outages • Start generator

TYPE OF EVENT	PROBABILITY OF EVENT (HIGH-MEDIUM-LOW)	RISK OF DAMAGE FROM THE EVENT (High-Medium-Low)	ACTIONS TO BE TAKEN
Chemical Spills	Low	Medium	• Issue a notice to all residences • Follow chemical clean up protocol set up by the EPA • Test the water system at the wells and the reservoirs • Flush pipelines in effected areas • Follow backflow incident procedures

SECTION 5
SEVERITY OF EMERGENCIES

The system personnel will determine the severity of an emergency, but the water distribution manager will make the final decision. The information for making the decision will accumulate over a period of time and results may change as more information becomes available. The following gives a break down of different severities and the approximate amount of time it will take to resolve the issue.

Level I – Normal (Routine) Emergency (Definition)

Description: The City of Soap Lake water system considers the following as level I emergencies:

- Distribution line breaks.
- Short power outages.
- Minor mechanical problems with the wells
- Other minor situations where it is not likely that public health will be jeopardized.

These situations commonly are resolved in 24 hours. If they cannot be resolved in the time frame the situation will be elevated to a level II due to a draw down on the storage level of the water, which could be below a safe operating level.

Level II – Minor Emergency (Alert Status) (Definition)

Description: The City of Soap Lake water system considers the following as level II emergencies:

- Disruption in supply such as a transmission main line break, pump failure with a potential for backflow, and loss of pressure.
- Storage is not adequate to handle disruption in supply.
- An initial positive coliform or E. coli sample.
- An initial primary chemical contaminant sample.
- A minor act of vandalism.
- Drought, with a noticeable and continuing effect on pump output.

These situations commonly are resolved in 72 hours.

Level III – Significant Emergency (Definition)

Description: The City of Soap Lake water system considers the following as level III or actual emergencies:

- A verified acute coliform MCL or E. coli/fecal positive sample requiring immediate consideration of a health advisory notice to customers.
- A confirmed sample of another primary contaminant requiring immediate consideration of a health advisory notice to customers.
- A loss or complete malfunction of the well facilities
- A major line break or other system failure resulting in a water shortage or requiring system shutdown.
- An act of vandalism or terrorist threat such as intrusion or damage to a primary facility.
- An immediate threat to public health of the customers and an advisory is required.

These situations commonly require more than 72 hours to resolve.

Level IV – Catastrophic Disaster/Major Emergency (Definition)

Description: The City of Soap Lake water system considers the following events to be level IV or major emergencies:

- Earthquake that shuts down the system or impacts sources, lines, etc.
- Act of terrorism possibly contaminating the water system with biological or chemical agents.
- Flood that infiltrates system facilities and sources.
- Chemical spill within 2000 feet of the system's sources.
- Storm that significantly damages power grid and system facilities.
- Mudslide or other earth shift that causes failure of transmission or inability to operate reservoir in system

These events often take several days or weeks to resolve before the system returns to normal operation.

SECTION 6
EMERGENCY NOTIFICATION

Person or Agency	*Phone Number*
WATER SYSTEM PERSONNEL	
Darrin Fronsman, Public Works Director	246-1211 City Hall
	760-3738 Cell
CITY PERSONNEL	
City Clerk	246-1211
LOCAL, STATE, AND FEDERAL AGENCIES	
Columbia Basin Hospital	911 or 754-4631
Police Chief	911 or 246-1211
Fire Department	911 or 246-1211
Washington State Department of Health, Spokane	(877)-481-4901 (emergency)
Russell Mau, P.E., Regional Engineer	(509) 329-2116
Washington State Dept. of Ecology, Spokane	(509) 329-3400
Grant County Public Works	(509) 754-6082
Grant County Sheriff - Ephrata	(509) 754-2011
Grant County Health District	(509) 754-6060
State Division of Emergency Management	(800) 258-5990
U.S. Environmental Protection Agency	(206) 553-1200
UTILITIES	
Public Utility District Grant County	(509) 787-3565
Telephone – Ephrata Office	(509) 764-0500
One-Call Locates	(800) 424-5555
SUPPLIERS, CONTRACTORS	
H.D. Fowler	(425)-746-8400
K&N Electric	(509) 765-3399
MEDIA	
Local Newspaper – Columbia Basin Herald	(509) 765-4561
Regional Newspaper – Columbia Basin Herald	(509) 765-4561
Local radio station – KULE	(509) 754-4661
CITY ENGINEER	
Gray & Osborne, Inc.	(509) 453-4833

NOTIFICATION PROCEDURES

Notifying water system customers

Who is Responsible:	Public Works Director
Procedures:	Contact local newspaper and radio station to keep citizens updated about status of water system during emergencies. For generic information, pamphlets are distributed with bills.

Alerting local law enforcement, state drinking water officials, and local health

Who is Responsible:	Public Works Director
Procedures:	Contact appropriate officials from Emergency Call List.

Contacting service and repair contractors

Who is Responsible:	Public Works Director
Procedures:	Contact appropriate contractors from Emergency Call List.

Contact neighboring water systems, if necessary

Who is Responsible:	Public Works Director
Procedures:	The City of Ephrata can be contacted at (509) 754-4601

Procedures for issuing a health advisory

Who is Responsible:	Public Works Director
Procedures:	Contact local newspaper and radio station to keep citizens updated about status of water system during emergencies.

SECTION 7
WATER SAMPLING

A. BACTERIOLOGICAL DETECTION

The persistent detection of coliforms in the water supply, particularly E. coli or fecal bacteria, may require issuing a public boil water notice to ensure the health and safety of the City's water customers. In addition, emergencies such as floods, earthquakes, or other disasters can affect water quality as a result of damage to water system facilities. WAC 246-290-320 requires water utilities to follow specific procedures in the event coliform bacteria are detected in the water system. The City's Coliform Monitoring Plan, located in Appendix B, summarizes increased sampling requirements in the month following coliform detection.

B. INORGANIC, VOC AND SOC CHEMICAL DETECTION

A procedure to comply with DOH requirements in the event of an inorganic, volatile organic, or synthetic organic chemical detection is discussed in Section 10.

SECTION 8
EFFECTIVE COMMUNICATION

Communication Tips:

Do:
- Be prepared.
- Designate a spokesperson.
- Provide complete, accurate, and timely information.
- Tell the truth.
- Express empathy.
- Acknowledge uncertainty and offer to get back with more information later.
- Document your communications.

Do not:
- Speculate on the cause or outcome of an incident.
- Blame or debate.
- Minimize or brush off concerns of customers.
- Treat inquiries from interested parties as an annoying distraction from the real business of emergency response.

Spokesperson	Alternate 1	Alternate 2
Mayor	Public Works Director	City Clerk

Key messages

Develop possible messages in advance, and update them as the emergency develops:

- We are taking this incident seriously and doing everything we can to resolve it.
- Our primary concern is protecting our customers' health.
- Another important concern is keeping the system operational and preventing damage.
- What we know right now is _____
- The information we have is incomplete. We will keep you informed as soon as we know more.
- We have contacted state and local officials to help us respond effectively.
- If you think you may be ill or need medical advice, contact a physician.
- We are sampling the water and doing tests to determine whether or not the water is contaminated.

SECTION 9
VULNERABILITY ASSESSMENT

Not included due to security concerns.

SECTION 10
RESPONSE TO SPECIFIC EVENTS

A. Construction Accident

ASSESSMENT	Construction crews often encounter pipes unexpectedly. Pipe rupture possible.
Immediate action	If a water distribution pipe is ruptured, identify the necessary valves to isolate the line and remove all pressure to it. Identify all connections to isolated line. Perform water quality testing in system to determine if contamination has occurred.
Notifications	Notify all affected water users of the break and expected duration of water loss. If pipe supplies are needed, contact pipe suppliers listed in Call List above.
Follow-up actions	Once line break is repaired, verify that each valve used to isolate the broken section has been returned to an open position.

B. Severe Weather

ASSESSMENT	Soap Lake experiences freezing weather consistently throughout winter months, but these conditions don't necessarily result in emergency situations.
Immediate actions	During an extended storm situation, maintain roads necessary to reach reservoirs and sources. Should the storm result in damage to system components, the ability to access them in a timely manner is important. There is also a possibility of the reservoir level sensing being affected, in which case the well pumps may require manual operation.
Notifications	Unless major system components must be taken out of service, weather conditions shouldn't require notification of customers.
Follow-up actions	Following an extended period of freezing weather, verify that the reservoirs are operating correctly. Examine water use records in the following month to determine if distribution leakage has escalated, indicating the probability of a pipe main break.

C. Earthquake

ASSESSMENT	Historically, the likelihood for an earthquake in Soap Lake is low.
Immediate actions	Verify if the City's pumps and reservoirs are operating correctly. The City has three sources, so a single failing source is not a direct emergency. Perform bacterial testing to determine if earthquake damage to system has resulted in system contamination. Contact neighboring water systems and/or local grocers to determine availability of potable water in the area.
Notifications	Notify public of any boil orders or the requirement of bottled water. In the event of major system damage, Department of Health will need to be involved.
Follow-up actions	Perform necessary system repairs and disinfection, and continue testing until water is determined to be clean and safe.

D. Vandalism

ASSESSMENT	The City has not historically had problems with vandalism on water system infrastructure due to security measures.
Immediate actions	Contact police in all cases to report criminal activity. If the nature of the vandalism indicates a direct threat to water system operation or water quality, perform water testing to determine the extent of the impact. Graffiti or other aesthetic damage should be repaired, but requires no official response beyond police notification.
Notifications	Local police department should be contacted. If water quality has been impaired, contact Department of Health. Public to be notified as necessary, based upon nature and extent of water contamination.
Follow-up actions	Perform necessary system repairs and disinfection, and continue testing until water is determined to be clean and safe.

E. Power outage

ASSESSMENT	The City has a generator that is designed to power either the Kent Street Well or the Palmer Avenue Well.
Immediate action	If possible, determine if the power outage will be extended in nature. If an extended outage is likely, contact diesel suppliers to get additional diesel
Notifications	Notify Grant County PUD of outage. Number is shown in Section 6. Notify customers of outage and request water conservation.
Follow-up actions	Once power is restored and verify proper system operation. Inspect each electrical component in the field to determine that the component is operational. Order additional diesel supply.

F. Microbial (coliform, E. coli) contamination

See Coliform Monitoring Plan.

G. Chemical contamination

See the following table.

Actions to for contamination in water system

Distribution System Contamination
• Disinfect distribution lines as dictated by the nature of the contamination
Reservoir Contamination
• Re-sample to confirm contamination
• Check distribution system for presence of contamination
• Isolate reservoir from system
• Inspect vent screens, hatches, and piping to identify source of contamination
• If reservoir water is contaminated and therefore considered unsuitable for consumption, drain and clean reservoir.
• Consider disinfecting reservoir if bacteriological standards are exceeded. Follow AWWA Standards. A 50 ppm chlorine solution in the 300,000 gallon reservoir can be obtained by adding 290 gallons of 5.25% chlorine bleach.

H. Fires

The availability of adequate water supplies and pressure is an integral part of the City's ability to fight fires within its service area. When fires occur in the City's service area, the local fire authority will contact the City so that the water system components can be managed in such a way as to maximize the flow and pressure to the affected area.

I. Nursing Homes, Elder Care Facilities, Dialysis Patients

Some water customers require immediate notification should their water service be interrupted for any reason. These customers include facilities such as nursing homes, elder care facilities, and kidney dialysis patients. The City maintains a list of all these customers so that in the event the City's water supply is to be interrupted because of an emergency situation these customers can be quickly notified.

SECTION 11
ALTERNATIVE WATER SOURCES

Intertie to adjacent water supply system

Water systems within one-quarter mile of our system	Feasibility of connecting
The closest water system is Ephrata (7 miles).	It is not feasible for Soap Lake to intertie with Ephrata for short-term emergency supply. The City does have access to a tanker truck that could be used to transport water from another system and provide basic water supply needs to Soap Lake residents during an extended outage.

Alternate source(s) of water

Alternative sources	Names	Phone	Availability	Is the water safe for drinking?
Bottled Water Suppliers	John's Foods, Soap Lake Safeway, Ephrata	(509)-246-1332 (509)-754-4441	Limited Limited	Yes
City of Ephrata	Bill Sangster, Public Works Dir.	(509)-754-4601	As available	Yes

SECTION 13
RETURNING TO NORMAL OPERATION

Action	Description and actions
Inspect, flush, and disinfect the system	Water Distribution Manager and support staff inspect all system facilities, ensure all water quality tests have been done and the system has been flushed and disinfected if necessary. City staff report to the Water Distribution Manager as to nature of work completed. The Water Distribution Manager will determine when necessary work is completed.
Verification of water quality	Water Distribution Manager verifies water quality sampling results.
Coordinate with DOH	Water Distribution Manager coordinates with DOH on system condition and water quality results.
Notify customers	Water Distribution Manager works with City staff to write notice to customers. This notice will then be distributed to the public.

APPENDIX H

WATER RIGHTS

City of Soap Lake
PO Box 1270
Soap Lake, WA 98851-1270

WASHINGTON STATE DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT

Document Title: Superseding Certificate of Water Right No. 1012-D

Agency: Department of Ecology
Eastern Regional Office
4601 North Monroe
Spokane, WA 99205-1295

Applicant: City of Soap Lake
PO Box 1270
Soap Lake, WA 98851-1270

Reference Number:

THIS CERTIFICATE SUPERSEDES 1012-D ISSUED FEBRUARY 23, 1951

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
May 1937	---	---	1012-D

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Two (2) Wells	

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
	400	224

QUANTITY/TYPE OF USE/PERIOD OF USE

400 gallons per minute, 224 acre feet per year, continuously, for municipal supply

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

¼¼	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
---	---	---	---	42	Grant

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

¼¼	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
---	---	---	---	42	Grant

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

CONTINUED LEGAL DESCRIPTION FOR LOCATION OF DIVERSION/WITHDRAWAL

Well No. 1) 100 feet east and 700 feet north from the SW corner of Sec. 19, within the SW¼SW¼ of Sec. 19, T. 22 N., R. 27 E.W.M.
Well No. 3) 2175 feet east and 200 feet north from the W¼ corner of Sec. 24, within the SE¼SE¼NW¼ of Sec. 24, T. 22 N., R. 26 E.W.M.

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Area served by the City of Soap Lake. The place of use of this water right shall be consistent with the service area map contained within the most recently approved water system plan (including amendments).

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

The combine total withdrawal of Ground Water Certificate No. 1012-D, 1324-A and G3-24343C shall not exceed 2050 gallons per minute, 896 acre feet for continuous municipal supply of Soap Lake.

This authorization to make use of public waters of the State is subject to existing rights, including any existing rights held by the United States for the benefit of Indians under treaty or otherwise.

Nothing in this authorization shall be construed as satisfying other applicable federal, state, or local statutes, ordinances, or regulation.

The amount of water granted is a maximum limit that shall not be exceeded and the water user shall be entitled only to that amount of water within the specified limit that is beneficially used.

The water quantities and uses recommended and/or the number of acres to be irrigated may be reduced at the time of issuance of a final water right commensurate with the capacity of the installed system and the uses and/or the number of acres actually irrigated."

Use of water under this authorization shall be contingent upon the water right holder's utilization of up to date water conservation practices and maintenance of efficient water delivery systems consistent with established regulation requirements and facility capabilities.

An approved measuring device shall be installed and maintained in accordance with RCW 90.03 and/or WAC 508-64 through WAC 508-64.

All water wells constructed within the State shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

Installation and maintenance of an access port as described in Ground Water Bulletin No. 1 is required. An airline and gauge may be installed in addition to the access port.

The water source and/or water transmission facilities are not wholly located upon the land owned by the applicant. Issuance of a permit by this Department for appropriation of the waters in question does not convey a right of access to, or other right to use, land which the applicant does not legally possess. Obtainment of such right is a private matter between applicant and owner of that land.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This superseding certificate of water right is specifically subject to relinquishment for non-use of water as provided in Chapter 90.14 RCW.

Given under my hand and the seal of this office at Spokane, Washington, this 7th day of December, 2004.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

Linda Hoffman, Director
Department of Ecology

By _____
Keith Stoffel, Section Manager

DATA REVIEW
OK _____
ECY 040-1-2 (Rev. 8-97)

City of Soap Lake
PO Box 1270
Soap Lake, WA 98851-1270

WASHINGTON STATE DEPARTMENT OF ECOLOGY

STATE OF WASHINGTON
SUPERSEDING CERTIFICATE OF WATER RIGHT

Document Title: Superseding Certificate of Water Right No. G3-24343C

Agency: Department of Ecology
Eastern Regional Office
4601 North Monroe
Spokane, WA 99205-1295

Applicant: City of Soap Lake
PO Box 1270
Soap Lake, WA 98851-1270

Reference Number:

THIS CERTIFICATE SUPERSEDES G3-24343C ISSUED AUGUST 3, 1976

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
November 15, 1974	G3-24343	G3-24343P	G3-24343C

This is to certify that the herein named applicant has made proof to the satisfaction of the Department of Ecology of a right to the use of the public waters of the State of Washington as herein defined, and under and specifically subject to the provisions contained in the Permit issued by the Department of Ecology, and that said right to the use of said waters has been perfected in accordance with the laws of the State of Washington, and is hereby confirmed by the Department of Ecology and entered of record as shown, but is limited to an amount actually beneficially used.

PUBLIC WATERS TO BE APPROPRIATED

SOURCE	TRIBUTARY OF (IF SURFACE WATERS)
Two (2) Wells	

MAX. CUBIC FEET PER SECOND	MAX. GALLONS PER MINUTE	MAX. ACRE-FEET PER YEAR
	650	0

QUANTITY/TYPE OF USE/PERIOD OF USE

650 gallons per minute, as additional instantaneous withdrawal only, continuously, for municipal supply

LEGAL DESCRIPTION OF LOCATION OF DIVERSION/WITHDRAWAL

¼¼	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
---	---	---	---	42	Grant

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

¼¼	SECTION	TOWNSHIP N.	RANGE (E. OR W.) W.M.	W.R.I.A.	COUNTY
---	---	---	---	42	Grant

PARCEL # N/A

ADDITIONAL LEGAL IS ON PAGE 2

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Well No. 3) 2175 feet east and 200 feet north from the W¼ corner of Sec. 24, within the SE¼SE¼NW¼ of Sec. 24, T. 22 N., R. 26 E.W.M.

CONTINUED LEGAL DESCRIPTION FOR PROPERTY ON WHICH WATER IS TO BE USED

Area served by the City of Soap Lake. The place of use of this water right shall be consistent with the service area map contained within the most recently approved water system plan (including amendments).

PROVISIONS

All conditions and requirements contained in reports of examination or permits previously issued apply to this certificate unless specifically noted below.

The combine total withdrawal of Ground Water Certificate No. 1012-D, 1324-A and G3-24343C shall not exceed 2050 gallons per minute, 896 acre feet for continuous municipal supply of Soap Lake.

This authorization to make use of public waters of the State is subject to existing rights, including any existing rights held by the United States for the benefit of Indians under treaty or otherwise.

Nothing in this authorization shall be construed as satisfying other applicable federal, state, or local statutes, ordinances, or regulation.

The amount of water granted is a maximum limit that shall not be exceeded and the water user shall be entitled only to that amount of water within the specified limit that is beneficially used.

The water quantities and uses recommended and/or the number of acres to be irrigated may be reduced at the time of issuance of a final water right commensurate with the capacity of the installed system and the uses and/or the number of acres actually irrigated."

Use of water under this authorization shall be contingent upon the water right holder's utilization of up to date water conservation practices and maintenance of efficient water delivery systems consistent with established regulation requirements and facility capabilities.

An approved measuring device shall be installed and maintained in accordance with RCW 90.03 and/or WAC 508-64 through WAC 508-64.

All water wells constructed within the State shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells).

Installation and maintenance of an access port as described in Ground Water Bulletin No. 1 is required. An airline and gauge may be installed in addition to the access port.

The right to use of the water aforesaid hereby confirmed is restricted to the lands or place of use herein described, except as provided in RCW 90.03.380, 90.03.390, and 90.44.100.

This superseding certificate of water right is specifically subject to relinquishment for non-use of water as provided in Chapter 90.14 RCW.

Given under my hand and the seal of this office at Spokane, Washington, this 7th day of December, 2004.

STATE OF WASHINGTON DEPARTMENT OF ECOLOGY

Linda Hoffman, Director
Department of Ecology

By _____
Keith Stoffel, Section Manager

DATA REVIEW
OK
ECY 040-1-2 (Rev. 8-97)

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
APPLICATION FOR CHANGE

REPORT OF EXAMINATION

FILE COPY

TO APPROPRIATE PUBLIC WATERS ~~OF~~ THE STATE OF WASHINGTON

☐ Surface Water (issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)

☒ Ground Water (issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
November 16, 1951	2225	2127	1324-A

NAME
CITY OF SOAP LAKE

ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
Post Office Box 1270	Soap Lake	Washington	98851

PUBLIC WATERS TO BE APPROPRIATED

SOURCE
Three (3) wells - WELL 3 TO BE CASED AND SEALED TO A MINIMUM DEPTH OF 450 FEET BELOW LAND SURFACE

TRIBUTARY OF (IF SURFACE WATERS)

MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE-FEET PER YEAR
	1000	672

QUANTITY, TYPE OF USE, PERIOD OF USE

1000 gallons per minute, 672 acre feet per year, continuously, for municipal supply.

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION–WITHDRAWAL

See Below*

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
	----	22	----	42	Grant

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Area served by the City of Soap Lake.

*Well Locations:

1. 600 feet north and 155 feet east from the SW corner of Sec. 19, within the SW¼SW¼ of Sec. 19, T. 22 N., R. 27 E.W.M.
2. 1400 feet north and 110 feet west from the S¼ corner of Sec. 24, within the SE¼NE¼SW¼ of Sec. 24, T. 22 N., R. 26 E.W.M.
3. 2400 feet south and 2100 feet east from the NW corner of Sec. 24, within the SE¼SE¼NW¼ of Sec. 24, T. 22 N., R. 26 E.W.M.

DESCRIPTION OF PROPOSED WORKS

Three wells, pumps, and distribution system.

DEVELOPMENT SCHEDULE

BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	July 1, 1998	July 1, 1999

REPORT

BACKGROUND

An application for change to add two points of withdrawal (existing well 1 and proposed well 3) and change the location of existing well No. 2 to the correct location under Ground Water Certificate No. 1324-A was submitted by the City of Soap Lake, Washington on June 8, 1995. This Certificate is issued in the amount of 1000 gallons per minute, 672 acre feet per year, for continuous municipal supply from a well (city well No. 2). The place of use is the area served by the City of Soap Lake, Washington.

A notice of application was duly published in accordance with RCW 90.03.280; no protests or objections were received.

This application is categorically exempt from the provisions of the State Environmental Policy Act (SEPA) of 1971, Chapter 43.21C RCW. This application for change is exempt under the Family Farm Water Act of 1977, Chapter 90.66 RCW.

INVESTIGATION

A field examination was conducted on February 7, 1997 by James M. Lyerla. The City of Soap Lake presently operates 2 wells (wells 1 and 2) and is proposing to drill a third well (well No. 3). Existing well No. 2 is being disconnected from the city water supply but will remain on line to serve water to the city sewage plant, which will include wash and process water. Well No. 2 will no longer supply potable water. Well No. 3 is presently under construction and was drilled to a depth of 470 feet below land surface on the date of the examination. The City was issued a preliminary permit for well No. 3 on August 6, 1996 which requires that this well be cased and sealed to a minimum depth of 450 feet below land surface. The required casing and sealing was completed on the date of the examination.

Existing well No. 1 was drilled under the authority of Ground Water Declaration 1012-D and is located within the SW¼SW¼ of Sec. 19, T. 22 N., R. 27 E.W.M. This well is 465 feet in depth and is completed in basalt. The static water level is 20 feet below the top of the casing. The well is presently equipped with a 75 HP pump and is capable of producing 800 gallons per minute. Well No. 1 is the City's main well at this time. The original City well No. 1 was located 50 feet north of the present well and was replaced many years ago by the present well. No information is available on abandoned well No. 1.

Existing well No. 2 is drilled to 435 feet below land surface with a static water level of 65 feet below the top of the casing. This well is equipped with a 75 HP pump and is capable of producing 1100 gallons per minute. This well was drilled under the authority of Ground Water Certificate 1324-A. This well will no longer be used for potable water by the City of Soap Lake. However, it will still be used for the sewage treatment plant for wash and process water.

Proposed well No. 3 is presently under construction and was drilled and cased to a depth of 470 feet on the date of the examination. The City is proposing to drill this well to a total depth of 900 feet. It is hoped that this well can replace well No. 2 and it is intended to equip the well with a 350 HP pump.

The City of Soap lake presently holds 3 Certificates of Water Right which authorize a total withdrawal of 2050 gallons per minute, 896 acre feet per year, for continuous municipal supply from 2 existing wells.

Ground Water Declaration 1012-D is issued in the amount of 400 gallons per minute, 224 acre feet per year, for continuous municipal supply from well No. 1 (old well No. 1 abandoned).

Ground Water Certificate 1324-A is issued in the amount of 1000 gallons per minute, 672 acre feet per year, for continuous municipal supply from existing well No. 2.

Ground Water Certificate G3-24343C is issued in the amount of 650 gallons per minute, no additional acre feet per year, for continuous municipal supply from existing well No. 1.

CONCLUSIONS

Applications for change of water right permits and certificates are governed by RCW 90.44.100, which states in part that: the holder of a valid right to withdraw public ground waters may, without losing his priority of right, construct wells at a new location in substitution for, or in addition to, those at the original location, or he may change the manner or the place of use of the water. Such amendment shall be issued by the Department only on the conditions that; (1) the additional or substitute well or wells shall tap the same

body of public ground water as the original well or wells; (2) use of the original well or wells shall be discontinued upon construction of the substitute well or wells; (3) the construction of an additional well or wells shall not enlarge the right conveyed by the original permit or certificate; and (4) other existing rights shall not be impaired. The Department may specify an approved manner of construction and shall require a showing of compliance with the terms of the amendment.

It is the conclusion of this examiner that this application for change complies with the conditions set forth under RCW 90.44.100. This application for change should be approved to add two wells (1 and 3) and change the location of well No. 2 to the correct location, subject to the following provisions:

"The total withdrawal of ground water under existing rights from these 3 wells shall not exceed 2050 gallons per minute, 896 acre feet per year, for continuous municipal supply for the City of Soap Lake."

"Proposed well No. 3 shall be cased and sealed to a minimum depth of 450 feet below land surface and shall comply with all conditions as set forth in the Preliminary Permit issued by the Department of Ecology on August 6, 1996."

"An approved measuring device shall be installed and maintained in accordance with RCW 90.03.360 and/or WAC 508-64-020 through WAC 508-64-040." (Installation, operation and maintenance requirements attached hereto).

"The amount of water granted is a maximum limit that shall not be exceeded and the water user shall be entitled only to that amount of water within the specified limit that is beneficially used and required."

The water source and/or water transmission facilities are not wholly located upon the land owned by the applicant. Issuance of a permit by this Department for appropriation of the waters in question does not convey a right of access to, or other right to use, land which the applicant does not legally possess. Obtainment of such right is a private matter between applicant and owner of that land.

"This authorization to make use of public waters of the State is subject to existing rights, including any existing rights held by the United States for the benefit of Indians under treaty or otherwise."

"A superseding certificate of water right will not be issued until a final examination is made."

"Nothing in this authorization shall be construed as satisfying other applicable federal, state, or local statutes, ordinances, or regulations."

"Installation and maintenance of an access port as described in Ground Water Bulletin No. 1 is required. An airline and gauge may be installed in addition to the access port."

"All water wells constructed within the State shall meet the minimum standards for construction and maintenance as provided under RCW 18.104 (Washington Water Well Construction Act of 1971) and Chapter 173-160 WAC (Minimum Standards for Construction and Maintenance of Water Wells)."

"A well log of the completed well shall be submitted by the driller to the Department of Ecology within thirty (30) days of completion of this well. This well log shall be complete and all information concerning the static water level in the completed well in addition to any pump test data shall be submitted as it is obtained."

"Use of water under this authorization shall be contingent upon the water right holder's utilization of up to date water conservation practices and maintenance of efficient water delivery systems consistent with established regulation requirements and facility capabilities."

Signed at Spokane, Washington
this 19th day of May, 1997

JAMES M. LYERLA
Shorelands & Water Resources Program
Department of Ecology

Carrier

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
4601 N. Monroe Street • Spokane, Washington 99205-1295 • (509) 329-3400

October 6, 2004

Mayor Wayne R. Hovde
City of Soap Lake
PO Box 1270
239 2nd Avenue SE
Soap Lake, WA 98851-1270

Dear Mayor Hovde:

Re: Application for Change Under Ground Water Certificate No. 1324-A

In accordance with your request of September 30, 2004, you are hereby granted an extension of time in which to file Proof of Appropriation under the above-numbered application for change to July 1, 2022.

As a condition of this extension approval, the following metering provision will be a requirement under your authorization:

An approved measuring device shall be installed and maintained for each of the sources identified herein in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC. Water use data shall be recorded weekly and maintained by the property owner for a minimum of five years, and shall be promptly submitted to Ecology upon request.

The rule above describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition Ecology for modifications to some of the requirements. Installation, operation and maintenance requirements are enclosed as a document entitled "Water Measurement Device Installation and Operation Requirements".

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

This decision may be appealed pursuant to RCW Chapter 43.21B. Any person wishing to appeal this decision must file an appeal with the Pollution Control Hearings Board **within thirty (30) days of receipt of this decision**. Send the appeal to: Pollution Control Hearings Board, P.O. Box 40903, Olympia, Washington 98504-0903. At the same time, a copy of the appeal **must** be sent to: Department of Ecology, Water Resources Appeals Coordinator, P.O. Box 47600, Olympia, Washington 98504-7600.

Sincerely,

Keith L. Stoffel
Section Manager
Water Resources Program

KLS:mjw
Enclosure

I certify I mailed this letter or an identical copy thereof, postage prepaid, to the above addressee(s) this 6th day of October, 2004.
Water Resources Program, Secretary Lead, Mary Jane Willey

APPENDIX I

WELL LOGS AND SUSCEPTIBILITY ASSESSMENTS

Well No. 1

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No. G3-2443

Permit No. G3-24343P

(1) OWNER: Name City of Soap Lake Address P O Box 187

(2) LOCATION OF WELL: County Grant — ¼ SW ¼ Sec. 19 T. 22 N., R. 27E W.M.

Bearing and distance from section or subdivision corner 660 feet north & 155 feet east from SW Corner Sec. 19

(3) PROPOSED USE: Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one)....
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☐ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 8 inches.
Drilled N/A ft. Depth of completed well 466 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: ..." Diam. from ... ft. to ... ft.
Threaded ☐ ..." Diam. from ... ft. to ... ft.
Welded ☒ 8" Diam. from 0 ft. to 466 ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations ... in. by ... in.
... perforations from ... ft. to ... ft.
... perforations from ... ft. to ... ft.
... perforations from ... ft. to ... ft.

Screens: Yes ☒ No ☐
Manufacturer's Name Aurora Pump
Type vertiline deep well Model No.
Diam. 6" Slot size ... from 63 ft. to 65 ft.
Diam. ... Slot size ... from ... ft. to ... ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ... ft. to ... ft.

Surface seal: Yes ☒ No ☐ To what depth? 466 ft.
Material used in seal Steel casing
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of strata
Method of sealing strata off

(7) PUMP: Manufacturer's Name Aurora Pump
Type: vertiline deep well H.P. 75

(8) WATER LEVELS: Land-surface elevation above mean sea level.... 1118 ft.
Static level +5 to 15 ft. below top of well Date varies according to time of year
Artesian pressure up to 2 lbs. per square inch Date estimated
Artesian water is controlled by Cap (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☐ No ☐ If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " " "
" " " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Based on information in file drilled in 1940		
		54
boulders, gravel & sand	1118	1064
		270
basalt fair quality water in honey comb zones	1064	848
		30
blue clay	848	818
		130
Hard basalt	818	688
		160
Porous cavernous basalt excellent water quality	688	658
		6
solid basalt	658	652

150 GPM
Mun

Work started ..., 19... Completed ..., 19...

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME G. C. Hoff & Son
(Person, firm, or corporation) (Type or print)

Address Soap Lake, Washington

[Signed] G. C. Hoff
(Well Driller)

License No. ... Date 12-13, 19 75

(USE ADDITIONAL SHEETS IF NECESSARY)

S. F. No. 7356—OS—(Rev. 4-71)
ECY-070-28

12/22/75

The Department of Ecology does NOT warranty the data and/or the information on this Well Report.

WELL NO. 2

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

WELL LOG

No. Appl. #2225
Cert. #1324-A

Date March 28, 1952

Record by Frank L. Zimmerman

Source Driller's Record

Location: State of WASHINGTON

County Grant

Area

Map

SW ¼ NW ¼ SE ¼ sec. 24 T. 22 N., R. 26 E.

DIAGRAM OF SECTION

Drilling Co. Frank L. Zimmerman

Address Box 465, Moses Lake, Wash.

Method of Drilling Drilled Date Mar. 28 1952

Owner City of Soap Lake

Address Soap Lake, Wash.

Land surface, datum 1100 ft. above / below

CORRELATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
	(Transcribe driller's terminology literally but paraphrase as necessary, in parentheses. If material water-bearing, so state and record static level if reported. Give depths in feet below land-surface datum unless otherwise indicated. Correlate with stratigraphic column, if feasible. Following log of materials, list all casings, perforations, screens, etc.)		
	Top soil	3	3
	Large gravel	19	22
	Sand & gravel	59	81
	Sandy clay	13	94
	Hard gray basalt	88	182
	Faulty blue basalt	14	196
	Hard gray basalt	106	302
	Faulty gray basalt	12	314
	Hard gray basalt	31	345
	Clay	47	392
	Fine sand	8	400
	Hard gray basalt	5	405
	Pordus blue basalt, water-bearing	30	435
	(over)		

Turn up

Sheet ____ of ____ sheets

No. Appli. #2225
Cert. #1324-A

WELL LOG.—Continued

CORRELATION	MATERIAL	THICKNESS (feet)	DEPTH (feet)
	Depth forward	———	
	Pump Test:		
	Dim.: 435' deep; 16" diam.		
	SWL: 57'		
	DD: 57'		
	Yield: 1000 g.p.m.		
	Casing: 16" diam. Standard O.D. pipe		
	from 0 to 96'		
	Perfs. None		
	Meter 47217		
	12/1/75 117	162	400
	12/1/76 1617	730	700

R.F. 7440-60

REMINGTON ... INC-60 30 740-80

WELL NO. 3

File Original and First Copy with Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

28536

WATER WELL REPORT

STATE OF WASHINGTON

Start Card No. W07380

UNIQUE WELL I.D. # AAR997

Water Right Permit No.

(1) OWNER: Name City of Soap Lake Address PO Box 1270, Soap Lake, WA 98851

(2) LOCATION OF WELL: County Grant SE 1/4 NW 1/4 Sec 24 T. 22 N., R 26E W.M.

(2a) STREET ADDRESS OF WELL (or nearest address) NYA – ½ way between 1st & 2nd Ave. NW & between 11th & 12th St. NW, Soap Lake, WA

(3) PROPOSED USE: ☐ Domestic ☐ Industrial ☐ Municipal XX ☐ Irrigation ☐ Test Well ☐ Other ☐ ☐ DeWater

(4) TYPE OF WORK: Owner's number of well (if more than one) 3
Abandoned ☐ New well XX Method: Dug ☐ Bored ☐ Deepened ☐ Cable ☐ Driven ☐ Reconditioned ☐ Rotary ☐ Jetted ☐

(5) DIMENSIONS: Diameter of well 16x12x8 inches. Drilled 901 feet. Depth of completed well 901 ft.

(6) CONSTRUCTION DETAILS:

Casing Installed: 16" Diam. from +3.5 ft. to 505 ft.
Welded XX *12" Diam. from 496 ft. to 687 ft.
* Liner installed XX Threaded ☐ * 8" Diam. from 687 ft. to 901 ft.

Perforations: Yes XX No ☐
Type of perforator used factory mill cut
SIZE of perforations 3/16 in. by 2.5 in.
6400 perforations from 586 ft. to 686 ft.
9400 perforations from 755 ft. to 901 ft.
perforations from ft. to ft.

Screens: Yes ☐ No XX
Manufacturer's Name
Type Model No.
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No XX Size of gravel
Gravel placed from ft. to ft.

Surface seal: Yes XX No ☐ To what depth? 90 ft.
Material used in seal cement grout
Did any strata contain unusable water? Yes XX No ☐
Type of water? lesser quality Depth of strata 453-484
Method of sealing strata off cement grout from surface seal to 505'

(7) PUMP: Manufacturer's Name
Type: H.P.

(8) WATER LEVELS: Land-surface elevation above mean sea level 1135 ft.
Static level 24.7 ft. below top of well Date 10/2/97
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? Yes XX No ☐ If yes, by whom? Schneider
Yield: 2007 gal./min. with 10.5 ft. drawdown after 1 hrs.
" 2007 " 11.7 " 12 "
" 2007 " 11.6 " 24 "
Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
see attached graph					

Date of test 10/2-3/97
Bailer test gal./min. with ft. drawdown after hrs.
Airtest gal./min. with stem set at ft. for hrs.
Artesian flow g.p.m. Date
Temperature of water 68°F Was a chemical analysis made? Yes XX No ☐

(10) WELL LOG or ABANDONMENT PROCEDURE DESCRIPTION

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information.

MATERIAL	FROM	TO
See attached log		
Drilled 24" nominal dia. 0-90		
Drilled 20" nominal dia. 90-505		
Drilled 16" nominal dia. 505-700		
Drilled 10" nominal dia. 700-901		
16" casing is .375 wall		
Liner is .250 wall		
* 12x8 weld reducer @ 687', top of liner is 14" J receptor (6' long incl. bell to 12")		

RECEIVED
NOV – 3 1997
DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Work Started 1/14/97 19. Completed 10/8 19 97

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

NAME Schneider Equipment, Inc. & Drilling Co.
(PERSON, FIRM, OR CORPORATION) (TYPE OR PRINT)

Address 21881 River Rd. NE St. Paul, OR 97137

(Signed) Stephen J. Schneider (WELL DRILLER) License No. 0643

Contractor's Registration No. SCHNEI*226LG Date 10/21 19 97

(USE ADDITIONAL SHEETS IF NECESSARY)

Ecology is an Equal Opportunity and Affirmative Action employer. For special accommodation needs, contact the Water Resources Program at (206) 407-6600. The TDD number is (206) 407-6006.

ECY 050-1-20 (9/93)

SEI #9723

The Department of Ecology does NOT warranty the data and/or the information on this Well report.

WELL No. 1

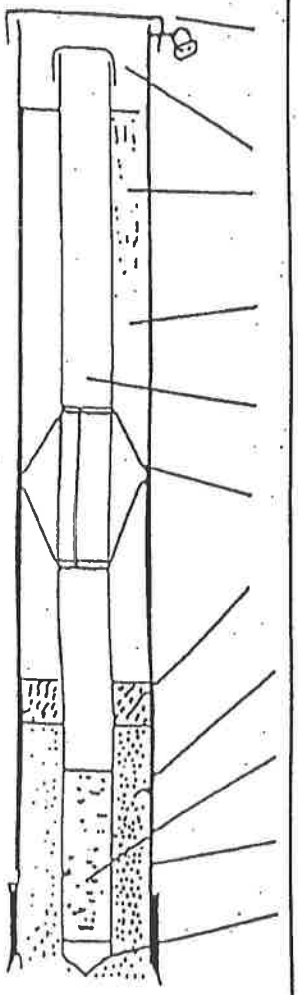
RESOURCE PROTECTION WELL REPORT

START CARD NO. R42401

PROJECT NAME: SOAP LAKE SEWER TREATMENT
WELL IDENTIFICATION NO. AHS516
DRILLING METHOD: AIR ROTARY
DRILLER: MARTY JENSEN / 1933
FIRM: FOGLE PUMP & SUPPLY, INC.
SIGNATURE: Marty Jensen By Anita Klein
CONSULTING FIRM: MOUNTAIN STATES CONSTRUCTION
REPRESENTATIVE: JERRY GARZA
413009

COUNTY: GRANT
LOCATION: SE ¼ SW ¼ Sec 24 Twn 22 R 26E
STREET ADDRESS OF WELL:
WATER LEVEL ELEVATION: 39' STATIC
GROUND SURFACE ELEVATION:
INSTALLED: 10-17-2003
DEVELOPED:

AS-BUILT



WELL DATA

Cap or Vault
Type: Above ground
Size: 6"
Lock: master
Pvc Cap locking
Cement
Depth: +6" To: 2'
Bags: 5
Grout Type Bentonite Seal
Depth: 2' To: 55'
Bags: 25
Pvc Type Campbell Monoflex
Pvc Size 2"
Depth: +2 To: 60'
Centralizers 2ea
Pellets Size 3/8"
Depth: 55' To: 57'
Bags: 1 bucket
Silica Sand 10/20
Depth: 57 To: 81'
Bags: 14
Screen Type Campbell Monoflex
Depth: 60' To: 80'
Size: 2"
Casing Size 6"
Drive Shoe Pulled
Bottom 80'
Guard Posts 3" – 3 each
Misc.

FORMATION DESCRIPTION

0' – 4' Sand/Silt-Tan
4' – 16' Sand Black/Tan
16' – 22' Sand broken Basalt
22' – 65' Clay Brown / Sand
65' – 67' Clay Tan
67' – 81' Basalt Broken/Clay Brown/Water

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)

WELL #2

RESOURCE PROTECTION WELL REPORT

413010

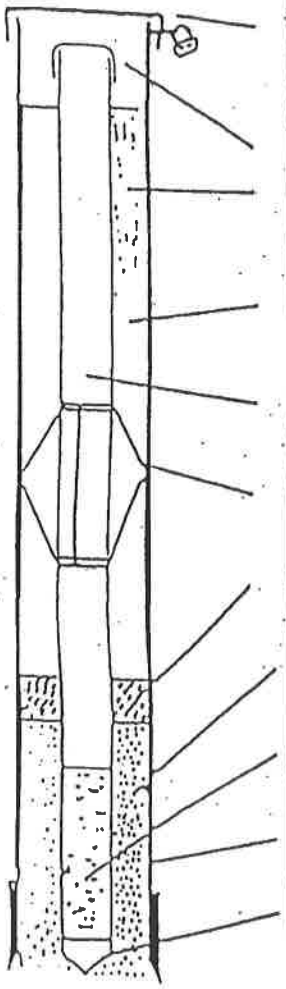
START CARD NO. R42401

PROJECT NAME: Soap Lake Sewer Treatment
WELL IDENTIFICATION NO. AHS517
DRILLING METHOD: Air Rotary
DRILLER: Marty Jensen / 1933
FIRM: Fogle Pump & Supply, Inc.
SIGNATURE: Marty Jensen By Anita Klein
CONSULTING FIRM: Mountain States Construction
REPRESENTATIVE: Jerry Garza

COUNTY: Grant
LOCATION: SE ¼ SW ¼ Sec 24 Twn 22 R 26
STREET ADDRESS OF WELL:

WATER LEVEL ELEVATION: 52' Static
GROUND SURFACE ELEVATION:
INSTALLED: 10-21-2003
DEVELOPED:

AS-BUILT



WELL DATA

Cap or Vault
Type: Above Ground
Size: 6"
Lock: Master
Pvc Cap Locking
Cement
Depth: 6" To: 2'
Bags: 5
Grout Type Bentonite Seal
Depth: 2 To: 56'
Bags: 21
Pvc Type Campbell Monoflex
Pvc Size 2"
Depth: +2 To: 60'
Centralizers 2 each
Pellets Size 3/8"
Depth: 56' To: 58'
Bags: 1 Bucket
Silica Sand 10/20
Depth: 58' To: 81'
Bags: 16
Screen Type Campbell Monoflex
Depth: 60' To: 80'
Size: 2"
Casing Size 6"
Drive Shoe Pulled
Bottom
Guard Posts 3" 3 each
Misc.

FORMATION DESCRIPTION

0 -9 Broken Basalt Sand/Silt
9 - 15' Sand Silt tan
15' - 23' Sand Black/Silt
23' - 46' Gravel Sand Broken Basalt
46' - 65' Clay Brown/Silt/Gravel/ Sand
65' - 68' Gravel/Clay/Water
68' - 81' Clay/Gravel/ Sand

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)

WELL #3

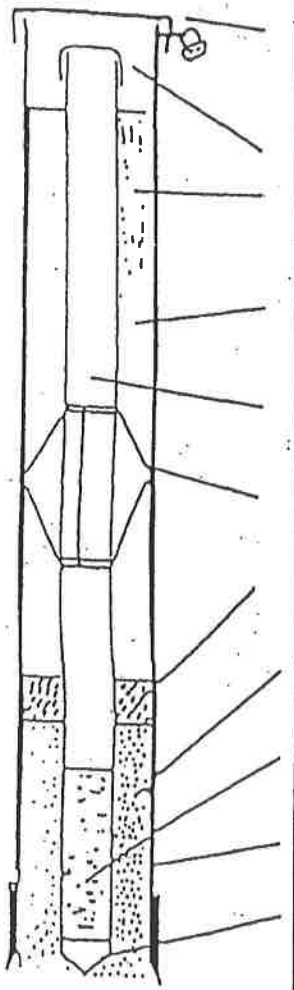
4/30/11

RESOURCE PROTECTION WELL REPORT

START CARD NO. R42401

PROJECT NAME: Soap Lake Sewer Treatment
WELL IDENTIFICATION NO. AHS518
DRILLING METHOD: Air Rotary
DRILLER: Marty Jensen 1935
FIRM: Fogle Pump & Supply, Inc.
SIGNATURE: Marty Jensen By Ariel Klein
CONSULTING FIRM: MOUNTAIN STATES CONSTRUCTION
REPRESENTATIVE: Jerry Garza

COUNTY: Grant
LOCATION: SE ¼ SW ¼ Sec 24 Twn 22 R 26
STREET ADDRESS OF WELL:
WATER LEVEL ELEVATION: 68' Static
GROUND SURFACE ELEVATION:
INSTALLED: 10-23-2003
DEVELOPED:

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	Cap or Vault Type: Above Ground Size: 6" Lock: Master Pvc Cap Locking Cement Depth: 6" To: 2' Bags: 4 Grout Type Bentonite Seal Depth: 2' To: 52' Bags: 28 Pvc Type Campbell Monoflex Pvc Size 2" Depth: +2 To: 56 Centralizers 2 each Pellets Size 3/8" Depth: 52 To: 54 Bags: 31 Silica Sand 10/20 Depth: 54' To: 82' Bags: 30 Screen Type Campbell Monoflex Depth: 56' To: 76' Size: 2" Casing Size 6" Drive Shoe Pulled Bottom 76' Guard Posts 3" 3 each Misc.	0 – 2' Silt/Sand 2 – 7' Sand/Gravel 7 – 82' Broken Basalt/ Sand/Gravel

SCALE: 1" = _____ PAGE _____ OF _____

ECY 060-12 (Rev. 11/89)

The Department of Ecology does NOT warranty the data and/or the information on this Well Report.

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system.
Photocopy as necessary.

PART I: System Information

Well owner/manager : City of Soap Lake

Water system name : Soap Lake Water Department

County: Grant

Water system number: 81300 P Source number: S01

Well depth: 466 (ft.) (From WFI form)

Source name: Well No. 1 (4th Ave. & Division St.)

WA well identification tag number: ____ ____ ____-____ ____ ____

____ well not tagged

Number of connections: 722 Population served: 1730

Township: 22 N Range: 27 E

Section: 19 1/4 1/4 Section: SW/SW

Latitude/longitude (if available): 47°23'10" / 118° 89' 21"

How was lat./long. determined?

____ global positioning device ____ survey X topographic map
____ other: ____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: -/-/40 month/day/year

last reconstruction: 12/13/75 month/day/year

____ information unavailable

2) Well driller: 1940 - Unknown

1975 - G.C. Hoff & Son

_____ well driller unknown

3) Type of well:

X Drilled: __ rotary __ bored __ cable (percussion) __ Dug

__ Other: __ spring(s) __ lateral collector (Ranney)

__ driven __ jetted __ other: _____

Additional comments: _____

4) Well report available? X YES (attach copy to form) __ NO (See Appendix E)

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 750 (gallons/min)

Source of information: Flow meter readings from City

If not documented, how was pumping rate determined? _____

_____ Pumping rate unknown

6) Is this source treated? No

If so, what type of treatment:

__ disinfection __ filtration __ carbon filter __ air stripper __ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

7) If source is chlorinated, is a chlorine residual maintained: __ YES __ NO

Residual level: _____ (At the point closest to the source.)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

__ < 20 ft __ 20—50 ft __ 50—100 ft __ 100—200 ft X >200 ft

__ information unavailable ('<' means less than; '>' means greater than)

2) Depth to ground water (static water level):

__ < 20 ft __ 20—50 ft __ 50—100 ft __ >100 ft

X flowing well/spring (artesian) (Varies +5' to -15' Seasonally)

How was water level determined?

X well log __ other: _____

__ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)

or

5 feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: __ YES X NO

5) Wellhead elevation (height above mean sea level): 1118 (ft)

How was elevation determined? X topographic map __ Drilling/Well Log __ altimeter

__ other: _____

__ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

X evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? X YES __ NO

_____ information unavailable

7) Sanitary setback:

__ < 100 ft* X 100—120 ft __ 120—200 ft __ > 200 ft

* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

X wellhead enclosed in a wellhouse

__ controlled access (describe): _____

_____

__ other uses for wellhouse (describe): _____

_____

__ no wellhead control

9) Surface seal:

__ 18 ft

__ < 18 ft (no Department of Ecology approval) ('<' means less than)

__ < 18 ft (Approved by Ecology, include documentation) ('<' means less than)

__ > 18 ft ('>' means greater than)

__ depth of seal unknown

X no surface seal

10) Annual rainfall (inches per year):

X < 10 in/yr __ 10—25 in/yr __ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 105 Million (gallons) in 2001

How was this determined?

X meter

__ estimated: __ pumping rate (_____)

__ pump capacity (_____)

__ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 986 (ft)

1 year ground water travel time : 1,395 (ft)

5 year ground water travel time: 3,119 (ft)

10 year ground water travel time: 4,411 (ft)

Information available on length of screened/open interval?

_ YES X NO

Length of screened/open interval: 29 (ft) (Based on thickness of water bearing strata)

3) Is there a river, lake, pond. stream, or other obvious surface water body within the 6 month time of travel boundary? __ YES X NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? __ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application		X		
stormwater injection wells				X
other injection wells				X
abandoned ground water well	X			
landfills, dumps, disposal areas				X
known hazardous materials clean-up site				X
water system(s) with known quality problems				X
population density > 1 house/acre	X			
residences commonly have septic tanks				X
Wastewater treatment lagoons		X		
sites used for land application of waste		X		

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment. MCLs are listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	
< 2 mg/liter nitrate	X
2—5 mg/liter nitrate	
> 5 mg/liter nitrate	
Nitrate sampling records unavailable	

B. **VOCs:** (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOC sampling records unavailable	

C. **EDB/DBCP:**	YES
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP tests required but not yet completed	
EDB/DBCP tests not required	X

D. <u>Other SOCs (Pesticides)</u>:	YES
Other SOCs detected (pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected (list test methods in comments)	X
Other SOC tests not performed	

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed. but no SOCs detected, list test methods here: _____

_____

_____

_____

E. Bacterial contamination: YES

Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records). ____

Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source. ____

Source sampling records for bacteria unavailable X

2 coliform samples/month in distribution system. No detections in past 3 years.

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES __ NO

Describe with references to map produced in Part IV:

Soap Lake is within 2000 feet to the north

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

X YES __ NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

__ YES X NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

X YES ___ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month—1 year travel time	___	X	___
1—5 year travel time	___	X	___
5—10 year travel time	X	___	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	___	X
1—5 year travel time	___	___	X
5—10 year travel time	___	___	X

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

The columbia basin irrigation project has had a significant impact on groundwater levels in the area. Well No.1 static water level has risen at a minimum of five feet and as much as 26 feet seasonally. In addition, the regional geology is not uniform. Basalt ridges to the west and alluvial deposits around the lake likely distort the actual zones of contribution.

Ground Water Contamination
Susceptibility Assessment Survey Form
Version 2.2

IMPORTANT! Please complete one form for each ground water source (well, wellfield, spring) used in your water system.
Photocopy as necessary.

PART I: System Information

Well owner/manager : City of Soap Lake

Water system name : Soap Lake Water Department

County: Grant

Water system number: 81300 P Source number: 503

Well depth: _____ (ft.) (From WFI form)

Source name: Well No. 3 (

WA well identification tag number: ____ ____ ____-____ ____ ____

_____ well not tagged

Number of connections: 722 Population served: 1730

Township: 22 N Range: 26 E

Section: 24 1/4 1/4 Section: SE/NW

Latitude/longitude (if available): N/A /

How was lat./long. determined?

_____ global positioning device _____ survey _____ topographic map
_____ other: _____

* Please refer to Assistance Packet for details and explanations of all questions in Parts II through V.

PART II: Well Construction and Source Information

1) Date well originally constructed: 4 / 10 / 97 month/day/year

last reconstruction: __/__/__ month/day/year

_____ information unavailable

2) Well driller: Schneider Equipment, Inc. - 1997

_____

_____

_____ well driller unknown

3) Type of well:

X Drilled: __ rotary __ bored __ cable (percussion) __ Dug

__ Other: __ spring(s) __ lateral collector (Ranney)

__ driven __ jetted __ other: _____

Additional comments: _____

_____

4) Well report available? __ YES (attach copy to form) X NO

If no well log is available, please attach any other records documenting well construction; e.g. boring logs, "as built" sheets, engineering reports, well reconstruction logs.

5) Average pumping rate: 1000 (gallons/min)

Source of information: Flow meter readings from City

If not documented, how was pumping rate determined? _____

_____

_____ Pumping rate unknown

6) Is this source treated? No

If so, what type of treatment:

__ disinfection __ filtration __ carbon filter __ air stripper __ other

Purpose of treatment (describe materials to be removed or controlled by treatment):

_____

_____

7) If source is chlorinated, is a chlorine residual maintained: __ YES __ NO

Residual level: _____ (At the point closest to the source.)

PART III: Hydrogeologic Information

1) Depth to top of open interval: [check one]

__ < 20 ft __ 20—50 ft __ 50—100 ft __ 100—200 ft X >200 ft

__ information unavailable ('<' means less than; '>' means greater than)

2) Depth to ground water (static water level):

__ < 20 ft __ 20—50 ft __ 50—100 ft __ >100 ft

X flowing well/spring (artesian)

How was water level determined?

__ well log __ other: Discussion with City

__ depth to ground water unknown

3) If source is a flowing well or spring, what is the confining pressure:

_____ psi (pounds per square inch)
or
_____ feet above wellhead

4) If source is a flowing well or spring, is there a surface impoundment, reservoir, or catchment associated with this source: __ YES __ NO

5) Wellhead elevation (height above mean sea level): 1150 (ft)

How was elevation determined? X topographic map __ Drilling/Well Log __ altimeter

__ other: _____

__ information unavailable

6) Confining layers: (This can be completed only for those sources with a drilling log, well log or geologic report describing subsurface conditions. Please refer to assistance package for example.)

__X__ evidence of a confining layer in well log

_____ no evidence of a confining layer in well log

If there is evidence of a confining layer, is the depth to ground water more than 20 feet above the **bottom** of the **lowest confining layer**? X YES __ NO

_____ information unavailable

7) Sanitary setback:

__ < 100 ft* X 100—120 ft __ 120—200 ft __ > 200 ft

* if less than 100 ft describe the site conditions:

_____

_____

_____

_____

8) Wellhead construction:

X wellhead enclosed in a wellhouse

__ controlled access (describe): _____

_____

__ other uses for wellhouse (describe): _____

_____

__ no wellhead control

9) Surface seal:

__ 18 ft

__ < 18 ft (no Department of Ecology approval) ('<' means less than)

__ < 18 ft (Approved by Ecology, include documentation) ('<' means less than)

X > 18 ft ('>' means greater than)

__ depth of seal unknown

__ no surface seal

10) Annual rainfall (inches per year):

X < 10 in/yr __ 10—25 in/yr __ > 25 in/yr

PART IV: Mapping Your Ground Water Resource

1) Annual volume of water pumped: 22 Million (gallons) in 2001

How was this determined?

X meter

__ estimated: __ pumping rate (_____)

__ pump capacity (_____)

__ other: _____

2) "Calculated Fixed Radius" estimate of ground water movement:
(see Instruction Packet)

6 month ground water travel time : 1,680 (ft)

1 year ground water travel time : 2,375 (ft)

5 year ground water travel time: 5,312 (ft)

10 year ground water travel time: 7,512 (ft)

Information available on length of screened/open interval?

_ YES X NO

Length of screened/open interval: 10 (ft) (assumed)

3) Is there a river, lake, pond, stream, or other obvious surface water body within the 6 month time of travel boundary? X YES__ NO (mark and identify on map).

4) Is there a stormwater and/or wastewater facility, treatment lagoon, or holding pond located within the 6 month time of travel boundary? __ YES X NO (mark and identify on map).

Comments: _____

_____

_____

_____

_____

PART V: Assessment of Water Quality

1) Regional sources of risk to ground water:

Please indicate if any of the following are present within a circular area around your water source having a radius up to and including the five year ground water travel time:

	6 month	1 year	5 year	unknown
likely pesticide application	___	X	___	___
stormwater injection wells	___	___	___	X
other injection wells	___	___	___	X
abandoned ground water well	X	___	___	___
landfills, dumps, disposal areas	___	___	___	X
known hazardous materials clean-up site	___	___	___	X
water system(s) with known quality problems	___	___	___	X
population density > 1 house/acre	X	___	___	___
residences commonly have septic tanks	___	___	___	X
Wastewater treatment lagoons	___	X	___	___
sites used for land application of waste	___	X	___	___

Mark and identify on map any of the risks listed above which are located within the 6 month time of travel boundary? (Please include a map of the wellhead and time of travel areas with this form. Please locate and mark any of the following.)

If other recorded or potential sources of ground water contamination exist within the ten year time of travel circular zone around your water supply, please describe:

2) Source specific water quality records:

Please indicate the occurrence of any test results since 1986 that meet the following conditions: (Unless listed on assessment, MCLs are listed in assistance package.)

A. **Nitrate:** (Nitrate MCL = 10 mg/l)	YES
Results greater than MCL	
< 2 mg/liter nitrate	X
2—5 mg/liter nitrate	
> 5 mg/liter nitrate	
Nitrate sampling records unavailable	

B. **VOCs:** (VOC detection level 0.5 ug/l or 0.0005 mg/l.)	YES
Results greater than MCL or SAL	
VOCs detected at least once	
VOCs never detected	X
VOC sampling records unavailable	

C. **EDB/DBCP:**	YES
(EDB MCL = 0.05 ug/l or 0.00005 mg/l. DBCP MCL = 0.2 ug/l or 0.0002 mg/l.)	
EDB/DBCP detected below MCL at least once	
EDB/DBCP detected above MCL at least once	
EDB/DBCP never detected	
EDB/DBCP tests required but not yet completed	
EDB/DBCP tests not required	X

D. Other SOCs (Pesticides):	YES
Other SOCs detected (pesticides and other synthetic organic chemicals)	
Other SOC tests performed but none detected (list test methods in comments)	X
Other SOC tests not performed	

If any SOCs in addition to EDB/DBCP were detected, please identify and date. If other SOC tests were performed, but no SOCs detected, list test methods here: _____

For herbicides, general pesticides, and insecticides test method SOC - 515.1, 525.1, and 531.1 respectively. (1 sample every 3 years).

E. Bacterial contamination:

	YES
Any bacterial detection(s) in the past 3 years in samples taken from the source (not distribution sampling records).	____
Has source (in past 3 years) had a bacteriological contamination problem found in distribution samples that was attributed to the source.	____
Source sampling records for bacteria unavailable	X

2 coliform samples/month in distribution system. No dections in past 3 years.

Part VI: Geographic or Hydrologic Factors Contributing to a Non-Circular Zone of Contribution

The following questions will help identify those ground water systems which may not be accurately represented by the calculated fixed radius (CFR) method described in Part IV. For these sources, the CFR areas should be used as a preliminary delineation of the critical time of travel zones for that source. As a system develops its Wellhead Protection Plan for theses sources, a more detailed delineation method should be considered.

1) Is there evidence of obvious hydrologic boundaries within the 10 year time of travel zone of the CFR? (Does the largest circle extend over a stream, river, lake, up a steep hillside, and/or over a mountain or ridge?)

X YES __ NO

Describe with references to map produced in Part IV:

Soap Lake is within 1000 feet to the north.

2) Aquifer Material:

A) Does the drilling log, well log or other geologic/engineering reports identify that the well is located in an area where the underground conditions are identified as fractured rock and/or basalt terrain?

X YES __ NO

B) Does the drilling log, well log or other geologic/engineering reports indicate that the well is located in an area where the underground conditions are primarily identified as coarse sand and gravel?

__ YES X NO

3) Is the source located in an aquifer with a high horizontal flow rate? (These can include sources located on flood plains of large rivers, artesian wells with high water pressure, and/or shallow flowing wells and springs.)

X YES ___ NO

4) Are there other high capacity wells (agricultural, municipal and/or industrial) located within the CFRs?

a) Presence of ground water extraction wells removing more than approximately 500 gal/min within...

	YES	NO	unknown
< 6 month travel time	___	X	___
6 month—1 year travel time	___	X	___
1—5 year travel time	X	___	___
5—10 year travel time	___	X	___

b) Presence of ground water recharge wells (dry wells) or heavy irrigation within...

	YES	NO	unknown
< 1 year travel time	___	___	X
1—5 year travel time	___	___	X
5—10 year travel time	___	___	X

Please identify or describe additional hydrologic or geographic conditions that you believe may affect the shape of the zone of contribution for this source. Where possible, reference them to locations on the map produced in Part IV.

SUMMARY

After the Fixed Radius Method calculations were performed, a Susceptibility Survey, a Potential Contamination Sources, and an Inventory Form are to be completed for each well.

The Susceptibility Surveys contain all of the pertinent information about the City's two sourced, including depth, well driller, well number, and existing water quality.

The Potential Contaminant Sources Survey will indicate potential contaminants to the water well. A possible potential contaminant is subsurface percolation via septic tanks and drainfields. Most septic tanks and drainfields will be located over 1000' from the well, with a potential for only a few tanks and drainfields to be located closer than 500' from the Wellhead. These septic tanks and drainfields are not seen as a high potential threat to the City's water supply due to the ground water depth.

Other contaminants may be associated with the farming practices on the adjoining farmland located west of the wells. Letters are to be sent to the landowner informing them of the activities that may pose a threat to the water well (See Attachment).

The completed Inventory Form will most likely indicate the number of septic tanks, drainfields, and areas of fertilizer/pesticide application sites. Should one of the wells become contaminated, one of two options will be performed. The well will either be abandoned and a new well drilled into a deeper aquifer in the basalt, or the casing in the existing well will be extended to case out the contaminated aquifer and the well will be extended into the next major aquifer. Water customers in the City will be instructed (by hand-delivered notices) to conserve water during the period of time after which the well had been found to be contaminated and a deeper, or new well is able to be brought on-line through the D.O.H. approval process.

PUBLIC INFORMATION PROGRAM

A handout will be supplied to each lot owner prior to the construction of any structures on the lot. This handout outlines activities that are prohibited within City's Water Service Area (See "Attention" Attachment).

APPENDIX J

CONSTRUCTION STANDARDS

CITY OF SOAP LAKE

CONSTRUCTION STANDARDS

2018

G&O JOB No. 18026

Gray & Osborne, Inc.
CONSULTING ENGINEERS

CHAPTER 1

GENERAL REQUIREMENTS

REQUIREMENTS FOR DEVELOPER CONSTRUCTED IMPROVEMENTS

Section A: General Provisions

1. The specifications and standard details provided herein shall be used to implement design and construction requirements of the City of Soap Lake development ordinances, codes, or titles. The use of product manufacturer names or trademarks is intended to provide examples of acceptable quality standards. Parts or products specified by name may be interchangeable with like and equal products only upon prior City approval.

2. Definitions for terms described herein shall be those provided pursuant to Title 13 of the Soap Lake Municipal Code. The definition of any word or phrase which may not be identified pursuant to Title 13 shall be defined from either one of the following sources:

   A. Revised Code of Washington.
   B. Washington Administrative Code.
   C. Commonly used dictionary such as Merriam-Webster's.

3. Within this document are numerous references to "the City". All communication with the City shall be first directed to the City of Soap Lake's Public Works Supervisor. The Public Works Supervisor may designate an alternate contact for specific items, however only the Public Works Supervisor shall have the authority to provide approval for variations from this document.

4. The standards, procedures, and requirements of these Design and Construction Standards are the minimum necessary to promote the health, safety, and welfare of the residents of the City of Soap Lake. The City may adopt more rigorous or different standards, procedures, and requirements whenever necessary. If the provisions of these Design and Construction Standards conflict with one another, or if a provision of these Design and Construction Standards conflicts with the provision of the City Code or another Ordinance of the City, the most restrictive provision or the provision imposing the highest standard shall prevail.

Section B: General Requirements of the Developer

1. The Developer shall retain the services of an engineer registered with the state of Washington to provide necessary construction design services.

2. Complete plans and specifications of any proposed improvement shall be submitted to the City for approval. Upon City review and approval, the

Developer may submit all water and sewer plans and specifications to the Departments of Health and Ecology as required.

3. Unless otherwise approved by the City, plan and design drawings shall have a minimum scale of 1 inch equal to 50 feet or 1 inch equal to 40 feet if water, sewer, and street improvements are drawn on the same sheets.

4. All utilities, whether City-owned or provided by an outside purveyor, shall be placed within the City's required right-of-way.

5. Water and sewer certification shall be on standard State forms. Copies of testing data including, but not limited to, compaction and pressure testing, shall be provided to the City. Street certification shall consist of a letter, test data, weight tickets, and other associated or City required information.

6. The Developer shall provide a performance bond or similar security instrument to ensure workmanship and materials over the full time period between project beginning and end.

7. The Developer shall require the Contractor to provide insurance which insures all contracted work and which holds the City and its agents harmless from any and all damage claims which may result due to the performance of any contracted work. The Contractor shall provide the City proof of insurance which shall be approved by the City prior to commencing contracted work.

8. The Developer shall provide the City with 2 full size paper copies and a .pdf copy of construction record drawings illustrating all revisions made during construction. At minimum, the record drawings shall show the following:

    A. The existence of all underground utilities encountered (station and depth).
    B. Precise distance to fittings, valves, services, etc, length of all spools, etc.
    C. Type of all fitting ends (MJ, FL, etc.).
    D. Type of restraint used.
    E. Location of sewer wyes.
    F. Elevation of each manhole, pipe invert (in and out) and sewer slope.

9. Where specific manufacturers are required for facilities and materials, installation of those facilities and materials shall be completed to the manufacturer's specifications, unless otherwise approved by the City.

10. No excavation work shall be done between November 15 and February 15 without permission from the City.

11. Water system improvements shall meet the requirements of the Washington State Department of Health Water System Design Manual, current edition, and the specifications as described herein.

12. Sewer system improvements shall meet the requirements of the Washington State Department of Ecology Criteria for Sewerage Works Design, current edition, and the specifications as described herein.

13. To maintain the best travel surface feasible, there shall be no excavation on newly paved or substantially repaired streets for a period of five (5) years.

14. Plan review and inspection fees are hereby established to defray the administrative expense of plan review and inspection costs incurred by the City of Soap Lake.

    The plan review and inspection fee shall be the total actual costs incurred by the City of Soap Lake, its agents, employees, and elected or appointed officials, for review and approval of the plans and specifications and for inspection of construction of the public works improvements. The fee shall include, but not be limited to, initial plan review, subsequent meetings with the Developer, explanations to the Developer's engineering consultant, reviews of revised plans, construction inspection, re-inspections, and a final inspection prior to the expiration of the maintenance period.

    The plan review fee shall be tabulated and sent to the Developer and paid by the Developer in full prior to the City releasing the approved original plans and specifications for construction or the issuance of a Building Permit.

    The construction inspection fee shall be tabulated and sent to the Developer and paid by the Developer in full prior to the City issuing a Certificate of Occupancy or final acceptance of the public works improvements.

END CHAPTER 1

CHAPTER 2

WATER

W-1 DESIGN REQUIREMENTS

1. Water system improvements shall be designed and constructed in accordance with the current editions of the Washington State Department of Health Water System Design Manual, the City's Water System Plan, and applicable AWWA standards.
2. Non-residential and irrigation water services may be required to install backflow prevention devices as determined by the City. If this is the case, backflow prevention device installations, including but not limited to, valves, piping, vaults, and drain lines shall be coordinated with City staff.
3. All water piping, valves, fittings, and appurtenances shall be certified under NSF 61 and NSF 372 for potable water use.
4. The City's plan review for water system improvements may, as determined by the City, include updating the City's water system model to include the proposed improvements and to assess the affect that the improvements will have on the existing water system.

W-2 WATER MAIN PIPE

Water mains to be installed shall be polyvinyl chloride (PVC) for all sizes, unless specifically noted otherwise.

The PVC pipe shall conform to AWWA C900 Standards. The PVC pipe shall have the same outside dimensions as ductile iron pipe.

The pipe manufacturer shall certify in writing that the inspection and all tests of the specified standards for both pipe and gaskets being supplied for this project have been made and that the results thereof comply with the requirements of the AWWA standard.

Joints shall be "made-up" in accordance with the manufacturer's recommendations. Standard joint material, including rubber ring gaskets shall be furnished with the pipe. Materials shall be suitable for the specified pipe sizes and pressures.

Except where necessary, in making connections with other lines and unless authorized by the City, pipes shall be laid with bells facing in the direction of laying and for lines on an appreciable slope, the bells shall face upwards.

All pipe shall be delivered to the job site with water tight wrapping or pipe plugs. All pipe shall be carefully checked on delivery as well as before placing in the trench. Pipe shall be carefully bedded, joined, and protected. It shall be laid to the line and grade established and at all times the interior kept free from dirt,

gravel, and all other foreign matter. The open ends shall be wrapped or plugged and secured at any time pipe laying is not in progress.

Water mains shall be laid on a uniform grade and the Developer shall anticipate those places where additional depth is required to avoid certain utilities, and adjust the pipeline profile accordingly to maintain uniform grade.

Water main shall be installed with suitable separation and protection from any other type of nonpotable underground piping. Separation and protection requirements as defined in *Pipeline Separation Design and Installation Reference Guide* by the Washington State Department of Ecology and the Department of Health shall apply to all water main installations.

Prior to making permanent connections to the existing system, the new water main including service lines shall have passed a pressure test, been adequately flushed, and finally passed the required bacteriological test.

Dirt or other foreign material shall be prevented from entering the pipe or pipe joint during handling or laying operations, and any pipe or fitting that has been installed with dirt or foreign material in it shall be removed, cleaned, and relayed. A clean whiskbroom shall be used for this purpose and for brushing to remove foreign matter prior to joining of pipe ends. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or by other means approved by the City to ensure cleanliness inside the pipe.

Bedding and backfill materials shall comply with the most current version of the Washington State Department of Transportation (WSDOT) Standard Specifications for Road, Bridge, and Municipal Construction.

Pipe shall be stacked in such a manner as to prevent damage to the pipe, to prevent dirt and debris from entering the pipe, and to prevent any movement of the pipe. The bottom tiers of the stack shall be kept off the ground on timbers, rails or other similar supports. Pipe on succeeding tiers shall be alternated by bell and plain end. Timbers 4-inches by 4-inches in size shall be placed between tiers and chocks shall be placed at each end to prevent movement. For safety each size of pipe shall be stacked separately.

W-3 WATER MAIN FITTINGS

All fittings shall be short-bodied, ductile iron complying with applicable AWWA C110 or C153 Standards. All fittings shall be cement-lined and either mechanical joint or flanged, as indicated on the Plans. Use of a comparable “equal” product requires approval of the City.

Fittings in sections shown on the Plans requiring restrained joints shall be mechanical joint fittings with a mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron, Inc. MEGALUG, Romac Industries, Inc., Grip Ring Pipe Restrainer or approved equal. Stargrip Series 3000 mechanical joint restraint devices are not accepted or approved as equal.

Fittings shall be adequately "blocked" with poured-in-place concrete, within wooden forms shaped to establish a firm minimum bearing area, against an undisturbed earth wall as shown on the Standard Details. Four-inch by four-inch minimum size timber blocking may be permitted as temporary blocking, when utilized as forms outside the poured-in-place concrete when fittings are to be pressurized prior to the 24 hour minimum "set" time. The concrete thrust blocks must be in place at least 24 hours before beginning the pressure test, to allow the concrete to "set." The strength of the concrete shall be 2,000 psi minimum.

All valves and all fittings requiring a concrete block shall first be covered with visqueen, before concrete is poured. The concrete shall not cover joints, bolt heads or nuts.

All bolts shall be coated with Armite Anti-Seize Compound No. 609, or equal, prior to installation.

Before cutting existing pipes, the Developer shall measure the pipe outside diameter to determine if pipe was manufactured to a diameter which is different than presently specified in AWWA Standards, and if required, the Developer shall furnish alternate or additional fittings more compatible with the pipe outside diameter.

All connections to other pipe shall be with Romac, Smith-Blair, Dresser, or Ford flexible couplings. The couplings shall have long middle rings and shall have a fusion-bonded epoxy coating. The bolts and nuts shall be high strength, low alloy steel or electro-galvanized mild steel.

All joints in the pipe, fittings, valves, flexible couplings, and sleeves, shall be fully seated with small clearances allowed for pipe expansion. Where flexible couplings and sleeves are called for, the space between pipe ends shall not exceed 1/4 inch.

When the space between pipe ends is excessive, a short section of pipe may be inserted as a spacer ring to limit such pipe movement within the coupling or sleeve, to obtain the 1/4-inch limitation stipulated herein.

W-4 VALVES

All valves 8-inch and smaller shall be resilient seated ductile iron gate valves except where shown on the Plans. All valves 10-inch and larger shall be ductile iron butterfly valves.

Valves shall be installed at a minimum of every 800 lineal feet of pipe installed in residential areas and a minimum of every 500 lineal feet in commercial/industrial areas.

The valve manufacturer shall certify in writing that the inspection and all tests of the specified standards for the valves being supplied for this project have been made and that the results thereof comply with the requirements of the Standard.

A. Resilient-Seated Gate Valves

The gate valves shall be resilient seated ductile iron body valves with non-rising stems (NRS) opening counterclockwise and equipped with a 2-inch square operating nut. Valves shall meet the full requirements of the AWWA C509 or C515 Standards. The valves shall have double "O" ring stem seals which shall withstand the test pressure without leakage. Valves shall be rated at 250 pounds per square inch (psi), minimum working pressure and furnished with either flanged and/or mechanical joints as shown on the Plans. All surfaces, interior and exterior, shall be epoxy-coated, acceptable for potable water.

Valves shall be Mueller, M&H, Clow, American Flow Control Series 2500, U.S. Pipe or approved equal.

B. Butterfly Valves

The butterfly valves shall be either mechanical joint or flanged ductile iron body valves equipped with a 2-inch square operating nut and shall be of the tight closing, rubber seat type. Valves shall meet the full requirements of AWWA C504-87 Standards, Class 150-B except the valve shall be able to withstand 200 psi differential pressure without leakage.

Butterfly valves shall be Mueller, M&H, Clow, Henry Pratt Company "Groundhog," or approved equal.

C. Appurtenances

All valves shall be set with the operating stems vertical. The axis of the valve box shall be common with the projected axis of the valve operating stem. The

tops of the adjustable valve boxes shall be set to the existing or established grade, whichever is applicable.

Valves shall include operator extension stems to bring the operating nut from 2′-0″ to 1'-0" from finished grade.

The extension stem of the length required to meet field conditions shall be a manufactured unit with a 1-inch-diameter mild steel rod. At the top of the extension stem there shall be a 2-inch standard operating nut complete with a centering flange.

Valve boxes shall be equal to the “Rich 940” Model or Sather Manufacturing. The flared end of the valve box shall be set at the bottom elevation of the 2-inch operating nut to allow space for rocks to be moved laterally from the operation nut. The “ears” on the valve box top shall be aligned parallel to the direction of flow through the valve.

The valve box shall be placed over the valve or valve operator in such a manner that the valve box does not transmit shock or stress loads to the valve. The casting shall not rest directly upon the body of the valve or upon the water main.

Any extension of the valve box shall utilize additional flared end valve box bottom sections or cast iron hub soil pipe. Other materials are not acceptable.

In areas where the valve box is not in concrete or asphalt a 24-inch-diameter by 6-inch cement concrete block shall be installed around the valve box at finished grade. The valve box shall be flush with the top and centered.

A fiberglass valve marker post shall be furnished and installed where directed. Valve marker posts shall be blue in color, 3.75-inches wide (flat), 60-inches long and furnished with a 3-inch- by 3-inch-high density white reflector (250 candle power) and a flexible anchor barb. Valve markers shall be Carsonite Utility Marker CUM 375.

Markers shall be placed at the edge of the right-of-way opposite the valve and set so as to leave 36 inches of the post exposed above grade. The size of the valve and the distance in feet and inches to the valve shall be noted with decals, typically designed for use on fiberglass boats, placed on the face of the post, using letters approximately 2-inches high. Each post shall include the following decal: “Caution Water Valve, Before Digging, Call 811, Utility Underground Location Center.”

W-5 TAPPING TEES AND TAPPING VALVES

The tapping sleeves shall be rated for a working pressure of 250 psi minimum and furnished complete with joint accessories. Tapping sleeves shall be constructed in two sections for ease of installation and shall be assembled around the main without interrupting service.

Fabricated steel style sleeves shall be fusion bonded coated, acceptable for potable water, and shall be manufactured by JCM, Romac, or approved equal.

Size on size tapping shall not be permitted.

Tapping valves shall be resilient-seated ductile iron body gate valves provided with a standard mechanical joint outlet for use with ductile iron pipe and shall have oversized seat rings to permit entry of the tapping machine cutters. In all other respects, the tapping valves shall conform to the resilient seat gate valves herein specified with regards to operation and materials.

The tapping sleeve and valve shall be pressure tested to 200 psi (water) prior to tapping the main.

The installation of the tapping sleeves and valves and the tapping of the main shall be performed by Speer Taps or an equal approved by the City.

W-6 AIR RELIEF VALVES

Air and vacuum release assemblies shall be installed at high points on the water system as shown on the Plans or designated in the field by the City.

The air relief assemblies shall be a combination air and vacuum valve APCO 143C or equal complete as shown on the Standard Detail.

W-7 BLOWOFF ASSEMBLIES

The blowoff assemblies shall be furnished and installed as shown on the Standard Detail.

Temporary blowoffs utilized by the Contractor for flushing the water main shall be sufficient size to obtain 2.5 feet per second velocity in the main.

Hydrant assemblies shall be installed within 4 feet of new dead-end water mains before being placed in service. Blow-off assemblies may be approved by the City in lieu of hydrant assemblies for temporary dead-end water mains that are to be placed in service. Blow-off assemblies are not approved for installation on dead-end water mains within permanent cul-de-sacs.

W-8 FIRE HYDRANTS

The fire hydrants shall be the break-away compression type, meeting AWWA C502-85 Standards, in which the valve will remain closed if the barrel is broken. The hydrant's main valve opening shall be not less than 5-1/4 inches in diameter. The fire hydrants shall be equipped with two, 2-1/2-inch National Standard Thread (NST) hose nozzles and one, 4-1/2-inch NST pumper port. A permanent anodized 5-inch Storz hydrant adapter and anodized Storz blind flange shall be installed on the 4-1/2-inch pumper port. Branch connection shall be for 6-inch pipe, as noted on the Standard Details, and shall be mechanical joint.

Fire hydrants shall be M&H Valve (MH-129), or approved equal.

Fire hydrant spacing shall not exceed 400 feet. Additional hydrants may be required to provide adequate fire protection as noted in Section C103 of the *International Fire Code*.

The Contractor shall furnish fire hydrants with the correct bury depth (trench depth), in accordance with the specified pipe depth and special conditions of the Project. The fire hydrants shall be installed to provide the mounting height above finished grade as shown on the Standard Detail. The hydrant shall be installed plumb on the vertical axis.

The hydrants shall be wire brushed, primed with one coat of Preservative All Metal Guard II and painted with two coats of Yellow to match the City's existing hydrants.

Between the time when the hydrant is installed and the completed facility is placed in operation, the hydrant shall at all times be wrapped in burlap, bagged, or covered in some other suitable manner as approved by the City, to clearly indicate that the hydrant is not in service.

The resilient seated ductile iron body gate valve shall have a flange by mechanical joint body, and be bolted to the main line tee.

The connecting pipe between the fire hydrant and gate valve shall be 6-inch CL53 DI pipe and shall not exceed 50 feet in length. The fire hydrant and gate valve shall be restrained with a mechanical joint restraint device as indicated in Water Main Fittings. In addition to this, the hydrant and tee shall be fully blocked with concrete.

W-9 SERVICE CONNECTIONS

Individual services to each structure and/or property shall be installed and connected to the new water mains.

Upon completion of the installation of the water main (before testing and disinfection) services shall be installed by connecting to the water main and extending the service line to the property line as shown on the Standard Details or approved equal. Service lines for residential property shall be 1-inch HDPE with a minimum pressure rating of 200 psi. All HDPE shall be butt welded PE 3408 or 4710 HDPE pipe conforming to ASTM D3350. Pipe dimensions and workmanship shall conform to ASTM F714. Larger service lines shall be of the type and style as designated in the Standard Details and shown on the Plans.

Two inch and smaller meters are supplied by the City. Three inch and larger meters fall into a different design criteria and shall be specifically coordinated with the City.

Corporation stops and the single meter shut-off valves shall be "Mueller" of the type and style noted on the Standard Details or approved equal. Included as a part of the service connection shall be the furnishing and installation of the meter box complete with a cast iron traffic lid, set flush with the proposed finished grade of the lot in the designated location near the property line, all as shown on the Standard Details.

Service lines between the main and the property line shall be placed at a trench depth sufficient to maintain cover over the top of the service line per the standard detail for its full length, taking into consideration the final finished grade of the proposed street and the final finished grade of any storm ditches.

W-10 LARGE METER AND TESTS

If extensions require water meters 3 inches or larger, then such entire meter installations, including but not limited to, valves, piping, vaults, drain lines and meters shall be coordinated with City staff.

W-11 HYDROSTATIC PRESSURE TEST

The water mains shall be hydrostatically tested before being placed in service. Water for testing must be obtained by the Developer by arrangement with the City. A positive displacement type pump shall be furnished by the Developer for the testing. Feed for the pump shall be from a disinfected clean container, wherein the actual amount of "makeup" water can be measured.

Upon completion of sections of the pipe installation, the water main shall be pressure tested in segments of 1,000 lineal feet or less. The test pressure shall

be either 200 pounds per square inch, or twice the system pressure, using the greater value, and shall maintain the test for a period of not less than 2 hours.

Pressure testing against existing valves shall not be permitted unless authorized by the City.

The Developer shall provide temporary plugs, caps, and blocking as required to pressure test and disinfect the new water main prior to making connections to the existing system.

Concrete thrust blocking for fittings shall be in place and the concrete “set” sufficiently to withstand the test pressure before starting the test.

All pressure tests shall be made with the hydrant auxiliary gate valves open and pressure against the hydrant valve. After this basic pipe line test has been completed, each valve shall be tested including the hydrant auxiliary valve by closing each in turn and relieving the pressure beyond. This test of the valves will be acceptable if there is no immediate loss of pressure on the gauge when the pressure comes against the valve being checked. The Developer shall verify and ensure that the pressure differential across the valve does not exceed the rated working pressure of the valve.

Prior to calling for the City to witness the pressure test, the Developer shall first perform a satisfactory pressure test. The allowable leakage rate per thousand feet of each size pipeline is as follows:

Allowable Leakage

Pipe Size	**Gallon per hour per 1,000 Ft. @ 200 psi**
6"	0.64
8"	0.85
10"	1.06
12"	1.28
16"	1.70

Any leakage caused by defective workmanship or materials shall be repaired, and the line shall again be tested to full compliance.

All visible leaks in pipelines or fittings shall be repaired even if the test results fall within the allowable leakage.

W-12 DISINFECTION OF WATER MAINS

Water mains and appurtenances shall be disinfected in accordance with AWWA C651 before being placed in service. Water for disinfection must be obtained by the Developer by arrangement with the City.

The method of placing calcium hypochlorite granules in the water main as it is being installed is acceptable if the pipe and appurtenances are kept clean and dry during construction.

The calcium hypochlorite granules contain approximately 65 percent available chlorine by weight. The minimum amount of calcium hypochlorite granules placed at the beginning and in each 500 feet of pipe is as follows:

Pipe Size	**Calcium Hypochlorite Granules**
6"	1.0 oz.
8"	2.0 oz.
12"	4.0 oz.
16" and larger	8.0 oz.

When the line is completed and ready to disinfect, water shall be allowed to flow in slowly, until it appears at the far end of the line so as not to displace the disinfecting agent. The system shall then be allowed to stand for at least 24 hours. The line shall then be flushed through the fire hydrants until a test shows the chlorine residual no longer exceeds distribution system residual.

In all instances, the Developer shall utilize a state approved double check valve type backflow prevention device to protect the potable water supply while filling, flushing, and disinfecting the particular water main.

In the process of chlorinating newly laid water pipe, all valves, fire hydrants, and other appurtenances shall be operated while the pipeline is filled with the chlorinating agent.

Other means of disinfecting will be reviewed by the Public Works Supervisor on a case by case basis.

The Developer is herein advised that prior to making any restoration or permanent connections to the existing water mains the Developer shall first demonstrate to the City that the new water main has adequately passed a pressure test, been adequately flushed, and finally passed the required bacteriological test.

In all disinfection processes, the Developer shall take particular care in flushing and wasting the chlorinated water from the mains to assure that the flushed and chlorinated water does no physical or environmental damage to property,

streams, storm sewers, or any waterways. Flushing water must be disposed of in accordance with Washington State Department of Ecology Standards. Flushing water shall require dechlorination or disposal to sewer system to prevent damage to the affected environment, particularly aquatic and fish life of receiving streams.

Before placing the lines in service, a satisfactory bacteriological report or approval shall be received from a State-approved laboratory on samples collected from representative points in the new system. The City shall collect all samples for the bacteriological tests. However, the Developer shall notify the City requesting collection of samples 2 working days in advance, and schedule on days wherein samples can be conveniently processed by a State Department of Health approved laboratory. If any of the pipeline materials are replaced thereafter, then that section shall again be disinfected, pressure tested, and tested for bacteriological count.

If disinfection of mains by the above methods prove unsatisfactory and the lab report indicates any type of bacteria count, then the Developer shall re-chlorinate using other methods in accordance with AWWA C691, and as approved by the City.

W-13 CONNECTIONS TO EXISTING SYSTEMS

All cut-in connections to the existing system shall be made after a successful pressure test of the new main has been witnessed by the City and after a purity test has been satisfactorily evidenced.

Size on size taps shall not be permitted.

Where it is necessary to shut-off the existing (or new) mains to make a connection, the Developer shall notify the City 72 hours or 3 working days in advance of such shut-off, and the City will notify customers of the shut-off, provide temporary services to critical customers and shut-off the mains. Connections shall be performed between the hours of 9:00 a.m. and 4:30 p.m. only. No cut-in connections or connections of new piping to the existing piping shall be scheduled for Fridays or Mondays. Once the water has been shut-off, the Developer shall diligently pursue the connection to completion, so that the time required for the shut-off may be held to a minimum. The City will notify customers in the area of the scheduled shut-off.

The required connections shall not be started until all of the materials, equipment and labor necessary to properly complete the work are assembled on the site. All connections shall be completed the same day they are started. The

Developer shall time its operations so that water will not be shutoff overnight or over weekends or holidays.

It shall be the responsibility of the Developer to determine the exact horizontal and vertical location of connections, ascertain the type and size of existing facilities and determine potential conflicts prior to starting work on any connection. Alternatives shall be provided as required to complete the connection detail.

Connections to existing facilities shall be made with the use of fittings, valves, flexible couplings, solid sleeves, shackling and other miscellaneous fittings, including thrust blocks as shown on the Plans and with additional pipe or fittings as approved by the City.

Where connections are made to existing facilities and it is impractical to use the methods described herein to disinfect the section between the existing water main and the point of installation of the new water main (valve or temporarily plugged line) the Developer shall clean and swab the pipe, fittings and valves with a minimum 5 percent chlorinated solution immediately before making said connection and thereby disinfect the necessary connection.

All pipe and fittings used for the connection shall be clean and disinfected. The Developer shall take extra precautions to ensure the tightness of the connections, nuts and bolts. The existing water main shall be placed back into service by the City and the connection observed for leakage by the City prior to backfilling the pipe.

END CHAPTER 2

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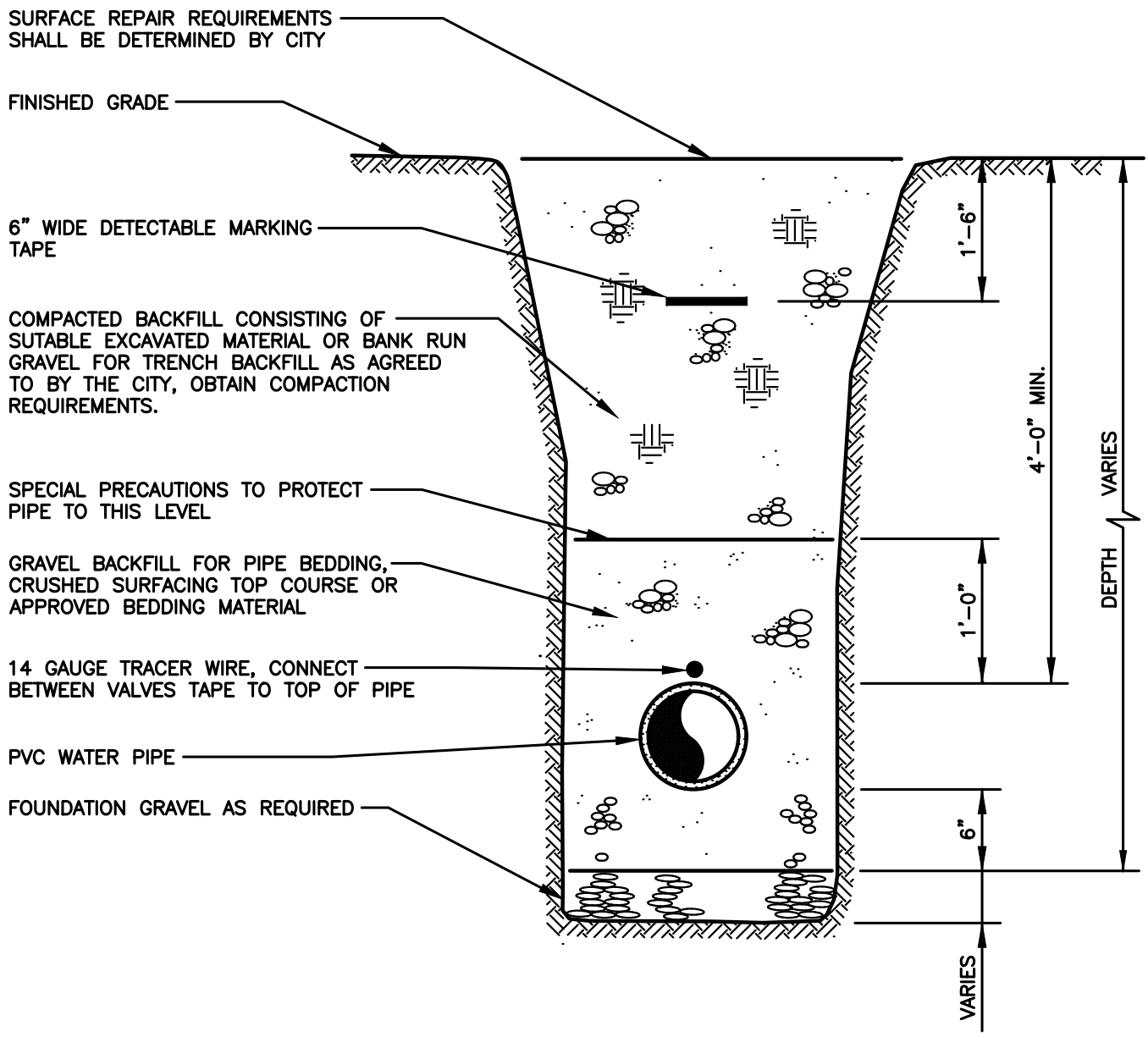
WATER DETAILS



	MINIMUM PIPE COVER "L"	MINIMUM PIPE DIAMETER "D"
WATER MAINS	48 INCHES	8 INCH
WATER SERVICES	30 INCHES	1 INCH

NOTES:

1. MINIMUM TRENCH WIDTH FOR MAINS IS PIPE SIZE PLUS 18 INCHES. ALL TRENCHES SHALL MEET WAC CHAPTER 298-155 FOR CONSTRUCTION WORK.

2. AGGREGATES SHALL BE AS SPECIFIED IN SECTION 7-08 OF THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION - LATEST EDITION.

Soap Lake
WASHINGTON

DETAIL W-1
WATER MAIN TRENCH SECTION

Gray & Osborne, Inc.
CONSULTING ENGINEERS

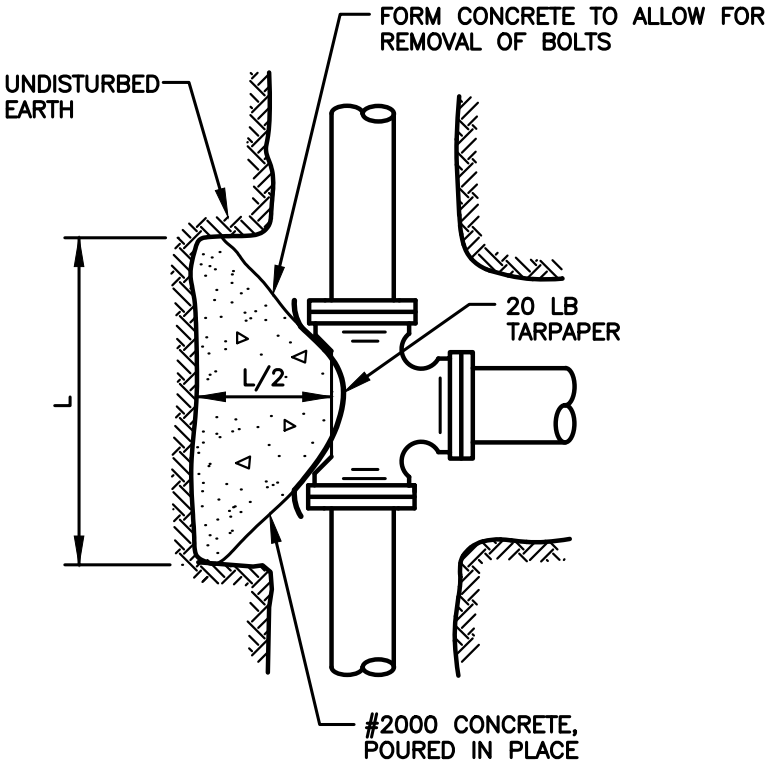
M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-1 WATER MAIN TRENCH SECTION

MINIMUM BEARING AREA TABLE					
FITTING D	TEE	90°	45°	22 1/2°	11 1/4°
6"	4 SQ FT	6 SQ FT	3 SQ FT	2 SQ FT	2 SQ FT
8"	7 SQ FT	10 SQ FT	6 SQ FT	3 SQ FT	2 SQ FT
10"	10 SQ FT	15 SQ FT	9 SQ FT	5 SQ FT	3 SQ FT
12"	14 SQ FT	22 SQ FT	12 SQ FT	6 SQ FT	4 SQ FT
16"	25 SQ FT	38 SQ FT	21 SQ FT	11 SQ FT	7 SQ FT
18"	32 SQ FT	48 SQ FT	27 SQ FT	14 SQ FT	8 SQ FT

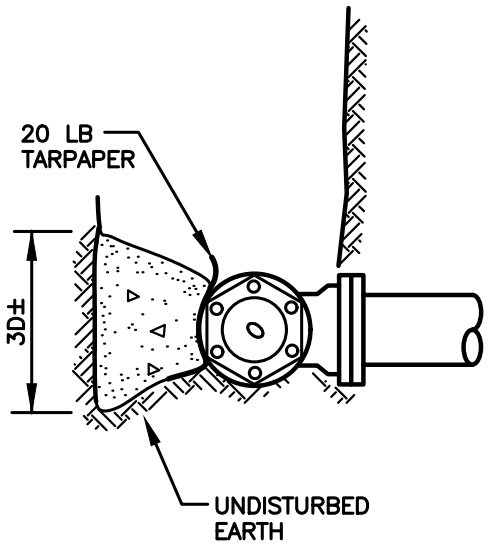
TYPICAL FOR SANDY SOIL WITH 2,000 PSF BEARING STRENGTH & 100 PSI WORKING PRESSURE. ADJUST BEARING AREA BY PRESSURE & SOIL BEARING CAPACITY. USE TEE FOR DEAD ENDS.

NOTES

1. BLOCKING SHALL BE TO SOLID BEARING SURFACE.
2. FITTING SHALL BE PROTECTED WITH VISQUEEN.
3. BEARING AREA SHALL BE PROPORTIONALLY INCREASED WITH PRESSURES IN EXCESS OF 100 PSI OR IN SOIL CONDITIONS WITH LESS THAN 2,000 PSF BEARING STRENGTH.
4. ALL BLOCKS ON TEES SHALL BE SEPARATED FOR DIRECTION OF THRUST.



PLAN



Soap Lake WASHINGTON

DETAIL W-2
THRUST BLOCKS

Gray & Osborne, Inc.
CONSULTING ENGINEERS

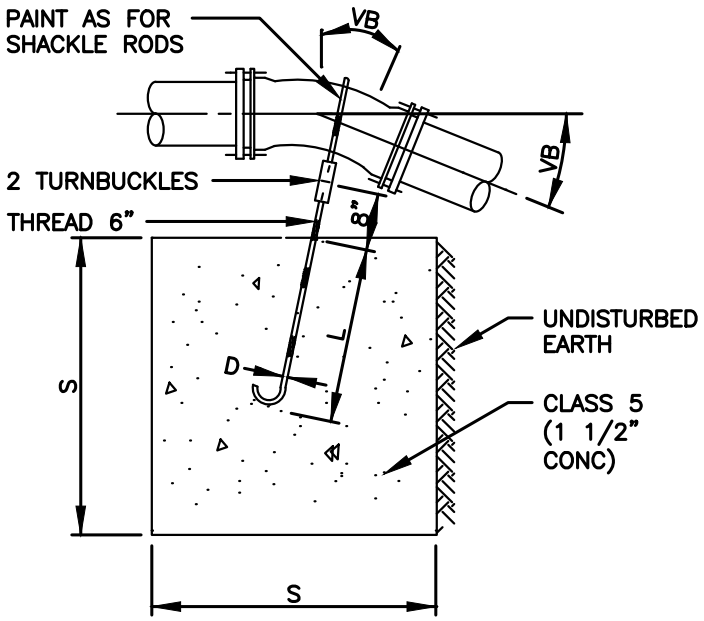
M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-2 THRUST BLOCKS FOR WATERMAINS

TYPE "A" BLOCKING
FOR 11 1/4° - 22 1/2° - 30° VERTICAL BENDS

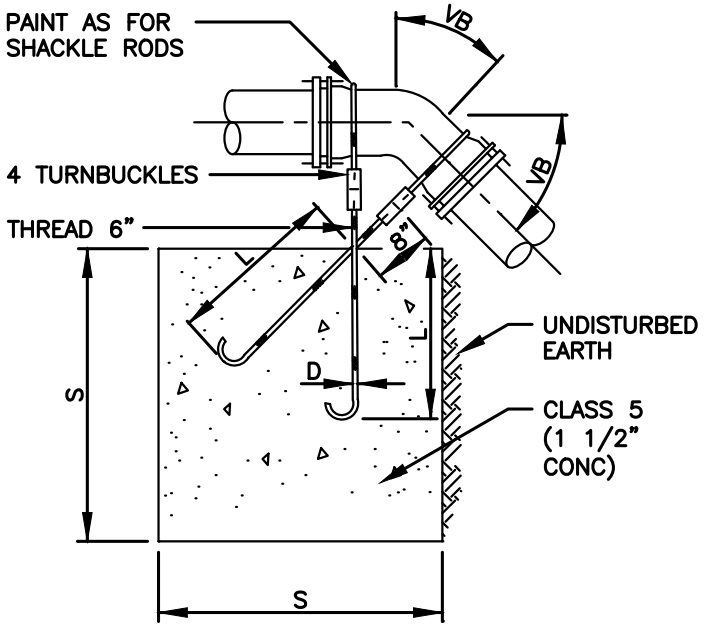
PIPE SIZE NOMINAL DIAMETER– INCHES	TEST PRESSURE PSI	VB VERTICAL BEND DEGREES	No. OF CUBIC FT OF CONC BLOCKING	S SIDE OF CUBE LINEAR FT	D DIA OF SHACKLE RODS (2) INCHES	L DEPTH OF RODS IN CONCRETE LINEAR FT
4"	300	11 1/4	8	2	5/8"	1.5
		22 1/2	11	2.2		2.0
		30	17	2.6		
6"	300	11 1/4	11	2.2	5/8"	2.0
		22 1/2	25	2.9		
		30	41	3.5		
8"	300	11 1/4	16	2.5	5/8"	2.0
		22 1/2	47	3.6		
		30	70	4.1	3/4"	2.5
12"	250	11 1/4	32	3.2	5/8"	2.0
		22 1/2	88	4.5	7/8"	3.0
		30	132	5.1		
16"	225	11 1/4	70	4.1	7/8"	3.0
		22 1/2	184	5.7	1 1/8"	4.0
		30	275	6.5	1 1/4"	
20"	200	11 1/4	91	4.5	7/8"	3.0
		22 1/2	225	6.1	1 1/4"	4.0
		30	330	6.9	1 3/8"	4.5
24"	200	11 1/4	128	5.0	1"	3.5
		22 1/2	320	6.8	1 3/8"	4.5
		30	480	7.9	1 7/8"	5.5

TYPE "B" BLOCKING
FOR 45° VERTICAL BENDS

		VB		S	D	L
4"	300	45	30	3.1	5/8"	2.0
6"			68	4.1		
8"			123	5.0		
12"	250		232	6.1	3/4"	2.5
16"	225		478	7.8	1 1/8"	4.0
20"	200		560	8.2	1 1/4"	
24"			820	9.4	1 3/8"	4.5



TYPE "A" BLOCKING



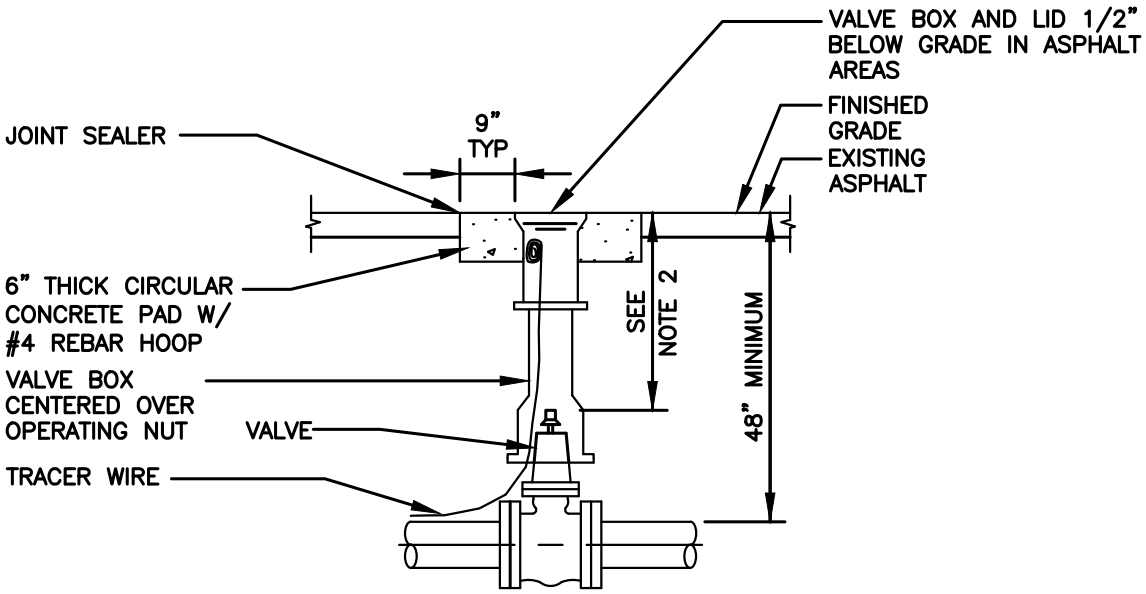
TYPE "B" BLOCKING

Soap Lake WASHINGTON

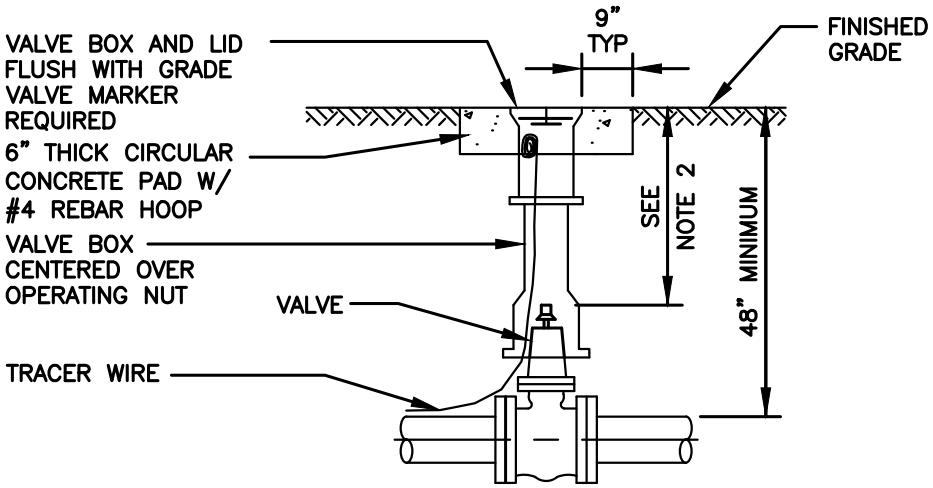
DETAIL W-3
VERTICAL ANCHOR BLOCK

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-3 VERTICAL ANCHOR BLOCK



VALVE BOX IN ASPHALT AREA



VALVE BOX IN UNIMPROVED AREA (VALVE MARKER REQUIRED)

NOTES

1. EACH VALVE SHALL BE PROVIDED WITH AN ADJUSTABLE CAST IRON VALVE BOX OF 5 INCHES (5") INSIDE DIAMETER. VALVE BOXES SHALL HAVE A TOP SECTION WITH AN EIGHTEEN INCH (18") MIN. LENGTH. THE VALVE BOX SHALL BE RICH No. 940 OR SATHER MANUFACTURING. VALVE BOX EARS SHALL BE PLACED IN LINE WITH PIPE IT SERVES.

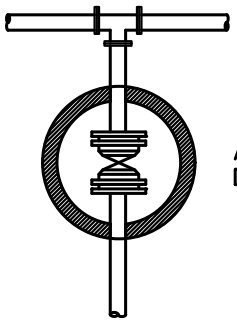
2. 18" MINIMUM, 24" MAXIMUM FOR OPERATOR NUT IF EXTENSION IS REQUIRED.

Soap Lake WASHINGTON

DETAIL W-4
TYPICAL VALVE INSTALLATION

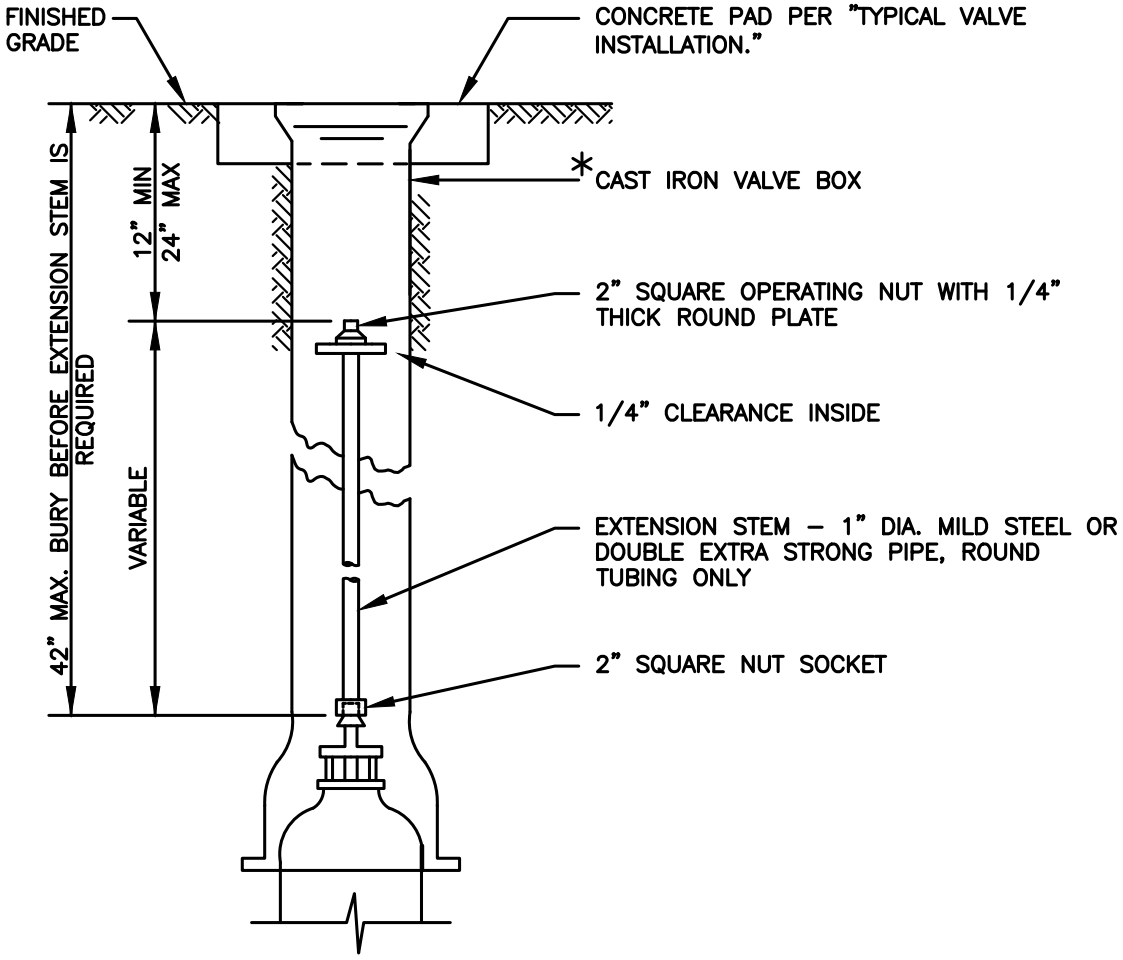
Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-4 TYPICAL VALVE INSTALLATION



ALIGN "EARS" ON VALVE BOX TOP WITH DIRECTION OF FLOW THROUGH THE VALVE.

PLAN VIEW



PROFILE VIEW

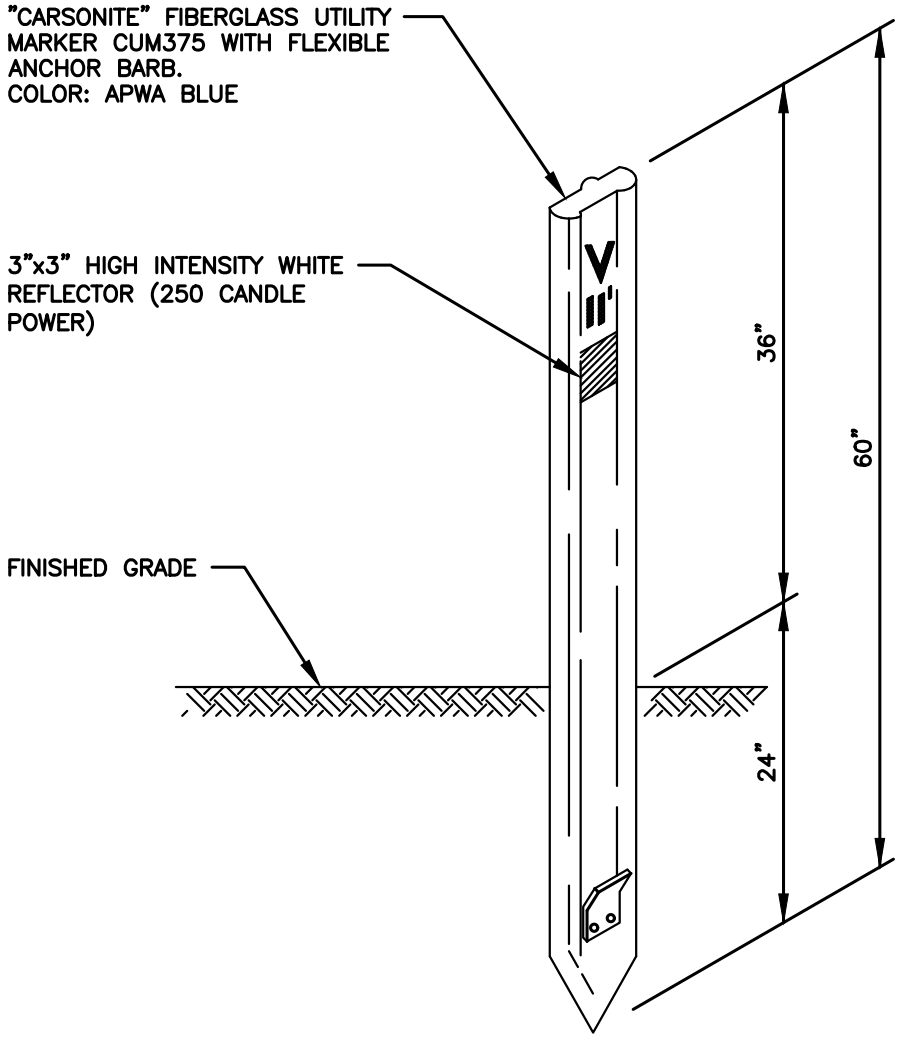
* CAST IRON VALVE BOX EXTENSION SHALL UTILIZE 5" CAST IRON "SOIL PIPE." BELL END TO BE PLACED OVER TOP OF VALVE BOX BOTTOM.

Soap Lake WASHINGTON

DETAIL W-5
VALVE STEM EXTENSION

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-5 VALVE STEM EXTENSION



NOTES

1. THE LETTER "V" AND THE DISTANCE IN FEET TO THE VALVE SHALL BE ON THE POST WITH 2" HIGH DECALS DESIGNED FOR USE ON FIBERGLASS BOATS.

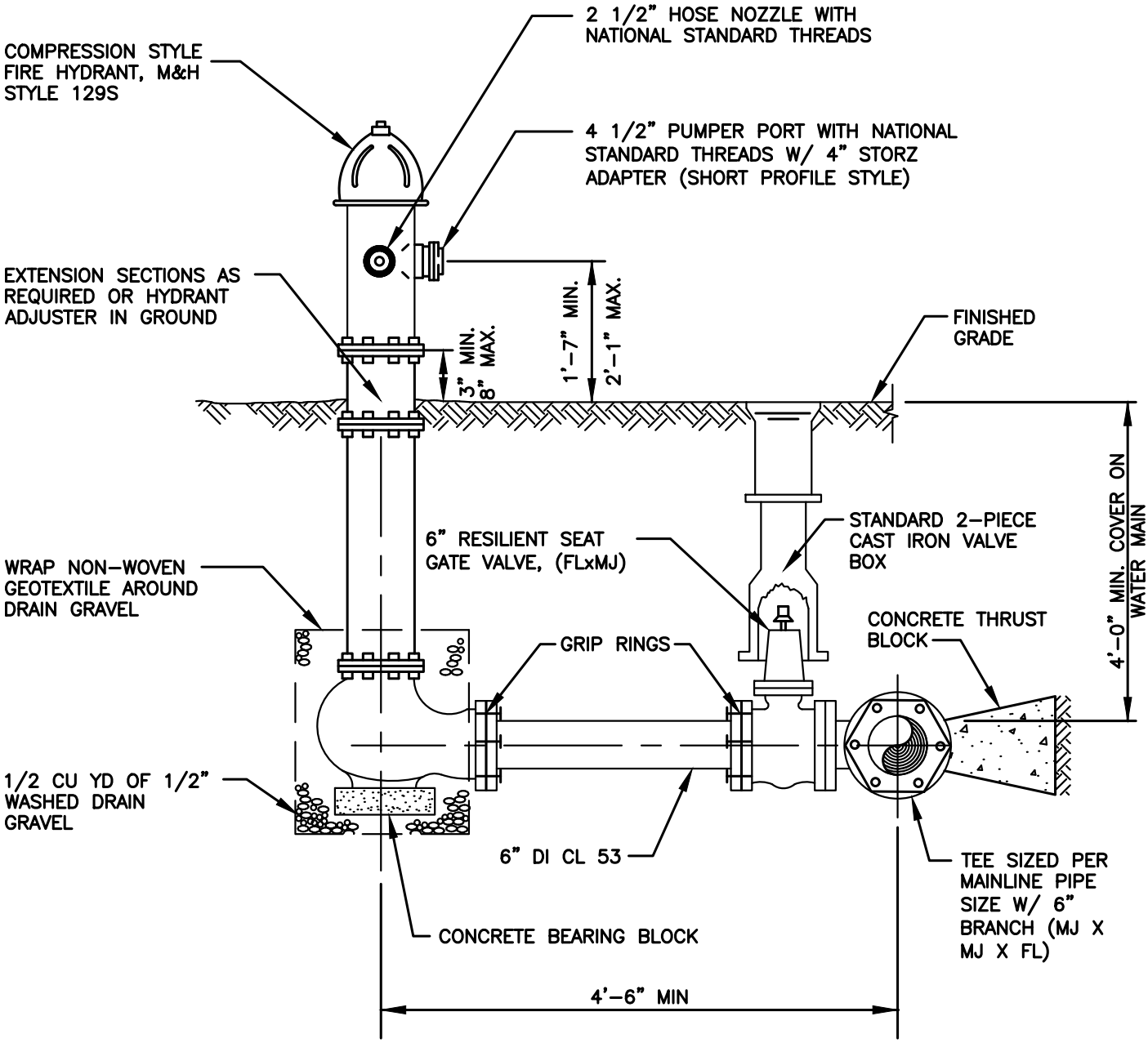
2. EACH POST SHALL INCLUDE THE FOLLOWING DECAL: "CAUTION WATER VALVE, BEFORE DIGGING, CALL 811, UTILITY UNDERGROUND LOCATION CENTER."

Soap Lake WASHINGTON

DETAIL W-6
VALVE MARKER

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-6 VALVE MARKER



NOTES

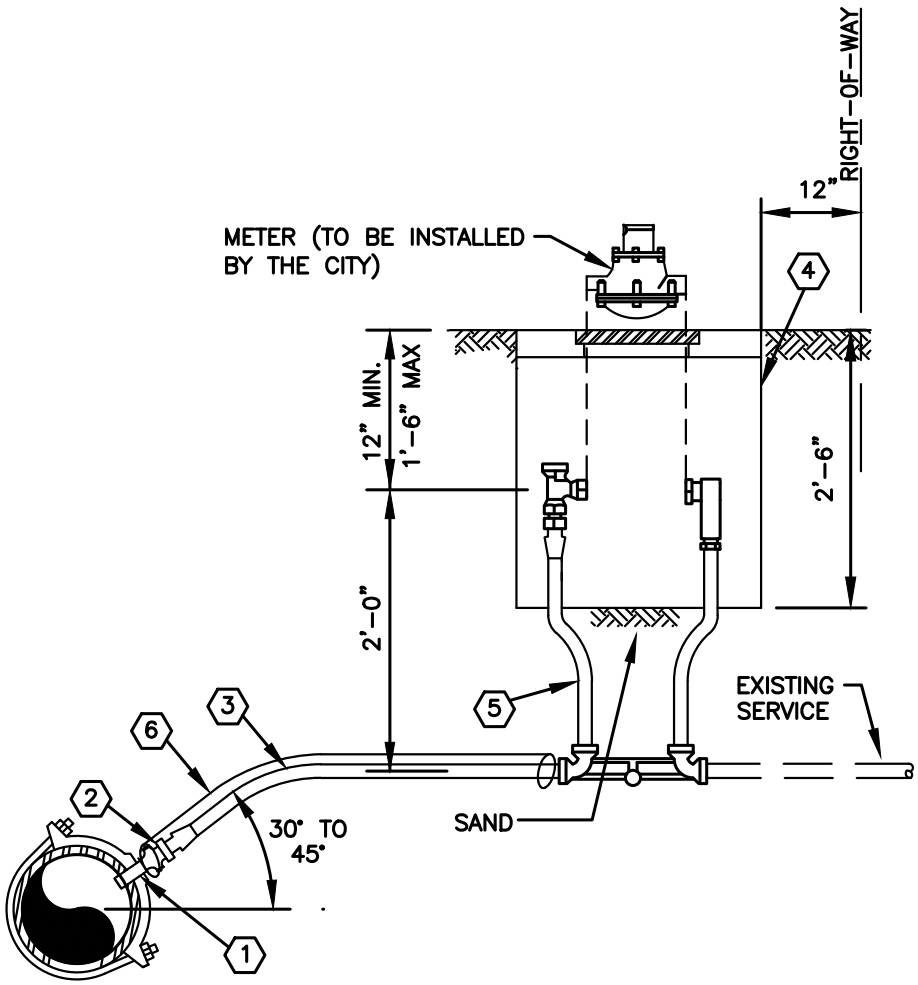
1. PROVIDE MIN. 3'-0" CLEARANCE AND LEVEL AREA AROUND HYDRANT.
2. PAINT FIRE HYDRANT WITH TWO COATS OF YELLOW RUST-RESISTANT PAINT TO MATCH CITY'S EXISTING HYDRANTS.
3. ACCEPTABLE HYDRANTS: M&H VALVE M&H-129S
4. HYDRANT TEES SHALL BE MINIMUM OF 10 FEET FROM THE NEAREST TAP IN THE WATER MAIN.

Soap Lake WASHINGTON

DETAIL W-7
FIRE HYDRANT ASSEMBLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-7 FIRE HYDRANT ASSEMBLY



1. FORD DOUBLE STRAP SERVICE SADDLE.
2. CORPORATION STOP MUELLER H-15008.
3. 1" HDPE SERVICE PIPE - LENGTH AS REQUIRED (CTS 250 PSI)
4. BROOKS 12" X 20" METER BOX WITH H-20 RATED CAST IRON COVER.
5. FORD 70 SERIES COPPERSETTER, WITH ANGLE BALL AND SINGLE CHECK VALVE OR APPROVED EQUAL.
6. 14 GAUGE TRACER WIRE.

NOTES

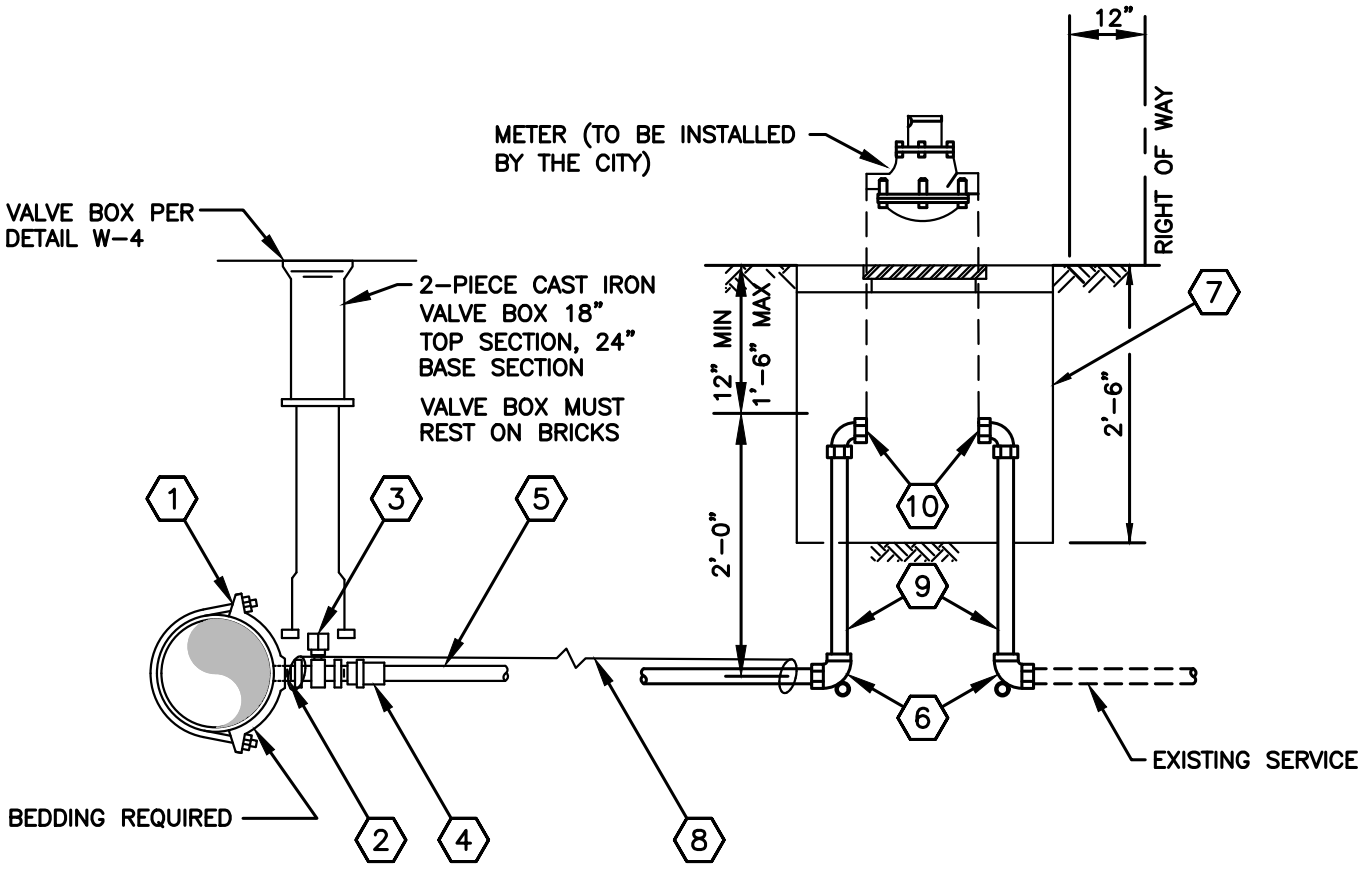
1. SERVICE FROM METER BOX TO HOUSE BY PROPERTY OWNER.
2. INDIVIDUAL SERVICES REQUIRED FOR EACH LOT.
3. METER TO BE INSTALLED BY THE CITY AT OWNER'S EXPENSE.
4. COMPARABLE "FORD" FITTINGS MAY BE BE USED IN LIEU OF "MUELLER."

Soap Lake WASHINGTON

FIGURE W-8
3/4" OR 1" WATER SERVICE

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-8 WATER SERVICE1



1. FORD DOUBLE STRAP SERVICE SADDLE
2. BRASS NIPPLE (3" MIN/6" MAX)
3. MUELLER B-20283 BALL VALVE WITH FORD OPERATING NUT ADAPTER QT-67
4. STRAIGHT COUPLING MUELLER H-15428 COMPRESSION x MIP
5. 1-½" OR 2" HDPE SERVICE PIPE – LENGTH AS REQUIRED (CTS 250 PSI)
6. 90° GALVANIZED BEND WITH HDPE COUPLING
7. BROOKS 17"x30" METER BOX WITH H-20 RATED CAST IRON COVER
8. 14 GAUGE TRACER WIRE
9. GALVANIZED PIPE
10. 90° GALVANIZED BEND WITH ADAPTER FOR 2-BOLT FLANGE METER

NOTES:

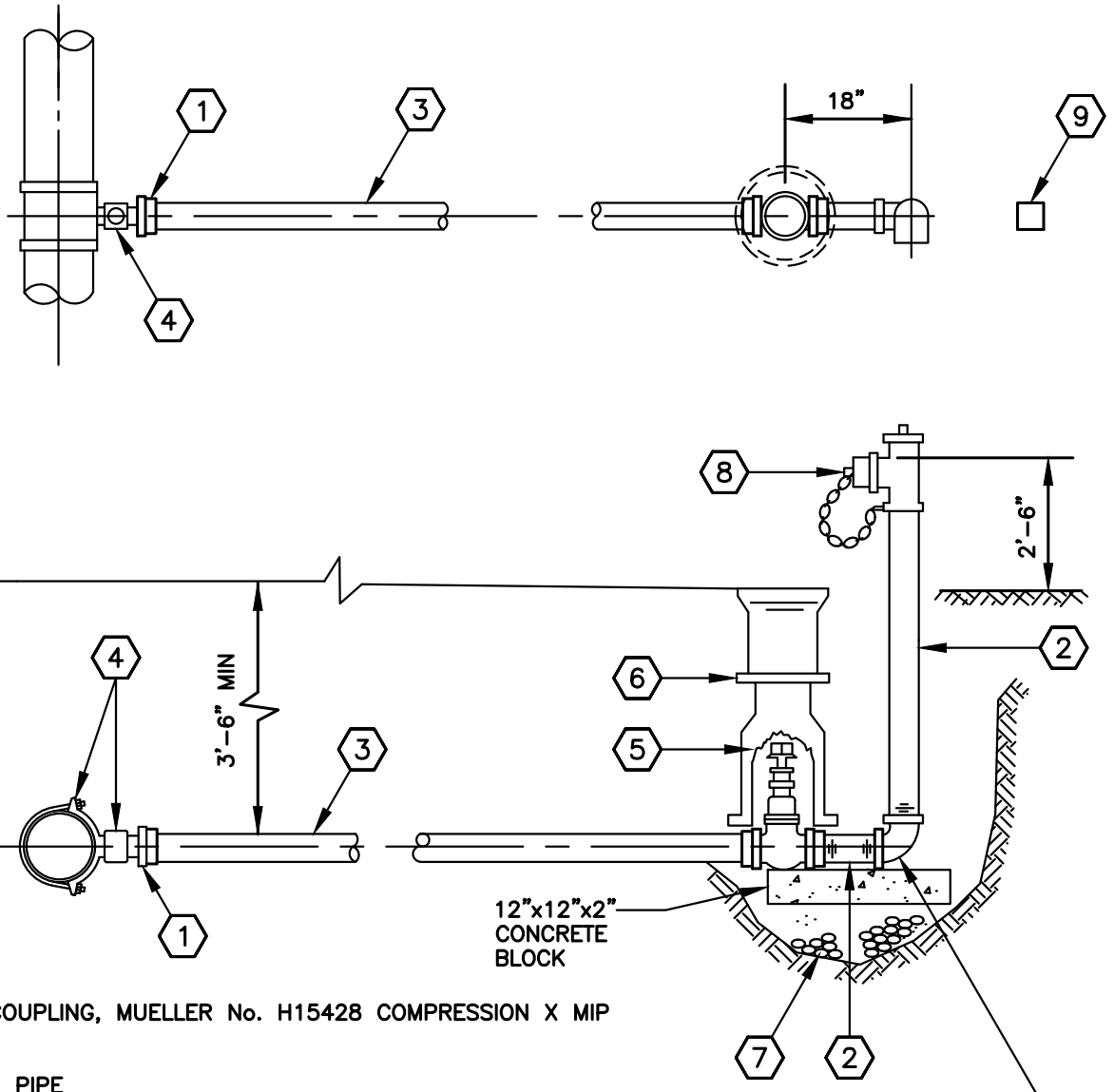
1. SERVICE FROM METER BOX TO HOUSE BY PROPERTY OWNER INDIVIDUAL SERVICES REQUIRED FOR EACH PROPERTY.
2. METER TO BE INSTALLED BY THE CITY AT THE OWNER'S EXPENSE.
3. COMPARABLE "FORD" FITTINGS MAY BE USED IN LIEU OF "MUELLER."

Soap Lake WASHINGTON

FIGURE W-9
1-1/2" OR 2" WATER SERVICE

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-9 WATER SERVICE2



1. STRAIGHT COUPLING, MUELLER No. H15428 COMPRESSION X MIP OR EQUAL
2. GALVANIZED PIPE
3. PVC PIPE
4. DOUBLE STRAP SADDLE TO FIT
5. AWWA RESILIENT SEAT GATE VALVE THD x THD, WITH OPERATING NUT.
6. CAST IRON VALVE BOX
7. 1/4 CUBIC YARD WASHED GRAVEL POCKET WRAPPED IN NON-WOVEN GEOTEXTILE
8. FREEZE RESISTANT HYDRANT TRUFLO#TF200, OR EQUAL WITH 2-$\frac{1}{2}$" HOSE THREADS
9. VALVE MARKER POST

NOTES

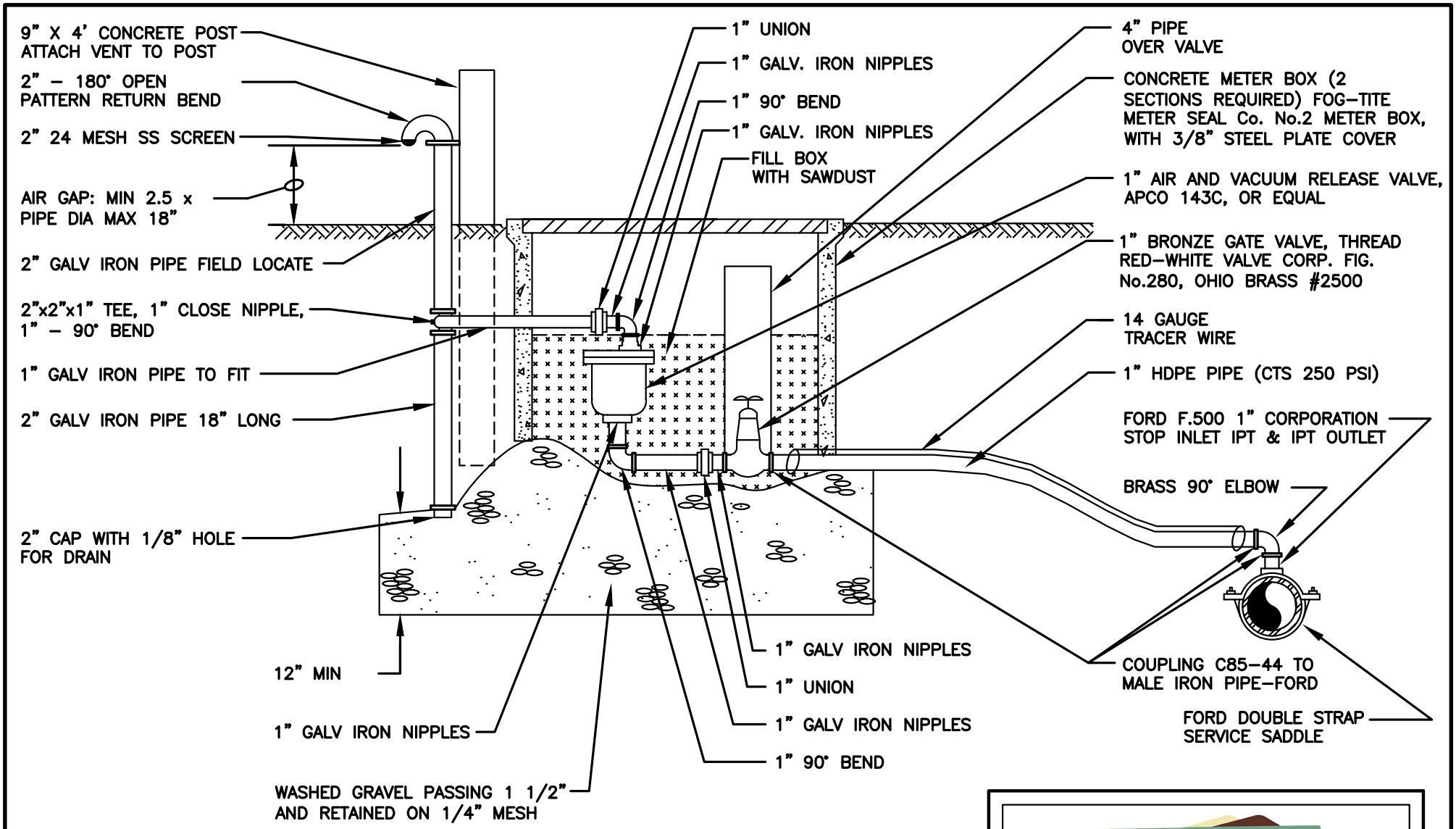
1. TURN NOZZLE TOWARDS ROADSIDE DITCH WHEN POSSIBLE.
2. INSTALL DIELECTRIC COUPLINGS AT DISSIMILAR METALS.
3. BLOWOFFS SHALL BE SIZED TO PROVIDE 3.0 fps VELOCITY IN MAIN LINE (2" MIN).

Soap Lake
WASHINGTON

FIGURE W-10
BLOW OFF ASSEMBLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-10 BLOW OFF ASSEMBLY

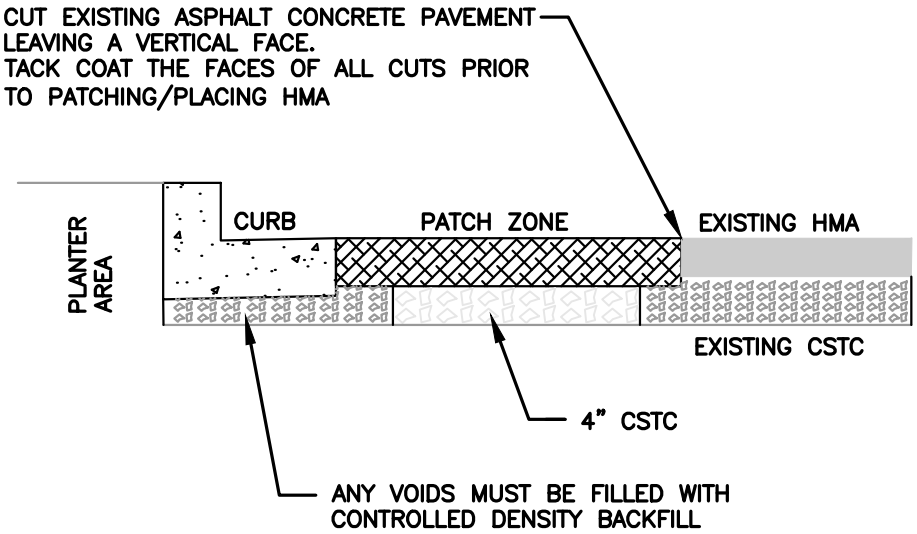


Soap Lake
WASHINGTON

FIGURE W-11
1" AIR AND VACUUM RELEASE ASSEMBLY

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-11 AIRVAC



NOTES:

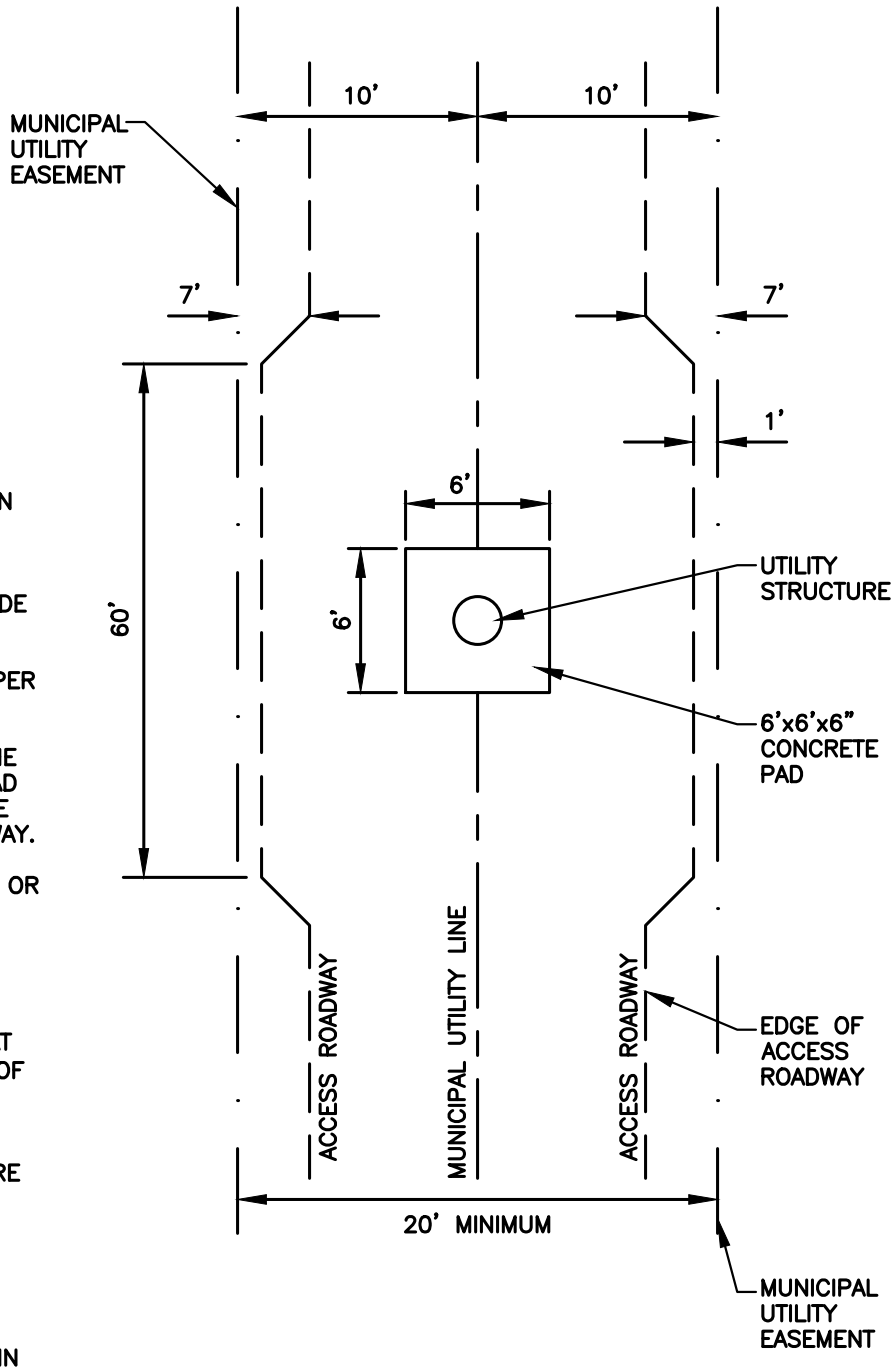
1. HMA IN THE PATCH ZONE SHALL BE A MINIMUM OF 3" THICK, OR MATCH EXISTING, WHICHEVER IS GREATER. HOWEVER, THE MAXIMUM THICKNESS IS NOT REQUIRED TO BE GREATER THAN 6". ALL PATCHES SHALL BE PLACED IN A MINIMUM OF 2 LIFTS. MAXIMUM DEPTH OF LIFTS SHALL BE 2" (COMPACTED).
2. PATCH WIDTH MUST ACCOMMODATE PROPER COMPACTION METHODS AS APPROVED BY THE CITY.
3. ALL CONSTRUCTION AND MATERIALS SHALL MEET THE WSDOT SPECIFICATIONS AND BE APPROVED BY THE CITY.

Soap Lake WASHINGTON

FIGURE W-12
TRENCH PATCH

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-12 TRENCH PATCH



NOTES:

1. MUNICIPAL UTILITIES SHALL BE INSTALLED WITHIN DEDICATED RIGHT-OF-WAY UNLESS A DEVIATION IS APPROVED.
2. MUNICIPAL UTILITIES THAT ARE APPROVED TO BE INSTALLED OUTSIDE OF THE RIGHT-OF-WAY SHALL BE INSTALLED WITHIN A MUNICIPAL EASEMENT AND ACCESS ROADWAY PER THIS DETAIL. THE DEVELOPER MAY SUBMIT AN ALTERNATE PLAN FOR APPROVAL. THE CITY MAY WAIVE THE REQUIREMENT FOR AN ACCESS ROAD IF ALL UTILITY STRUCTURES CAN BE SERVICED BY AN APPROVED ROADWAY.
3. ACCESS ROADWAY SHALL BE CSBC OR CSTC, MINIMUM 3" DEPTH, AND DESIGNED FOR 50,000 lb MAINTENANCE VEHICLES.
4. UTILITY STRUCTURES SHALL BE CENTERED WHERE POSSIBLE AND AT LEAST 1' FROM THE OUTER EDGE OF RIGHT-OF-WAY OR MUNICIPAL EASEMENT.
5. UTILITY STRUCTURES THAT ARE MORE THAN 10' DEEP SHALL REQUIRE ADDITIONAL RIGHT-OF-WAY OR MUNICIPAL EASEMENT WIDTHS.
6. 6'x6'x6" CONCRETE PADS ARE REQUIRED AROUND ALL UTILITY STRUCTURES THAT ARE INSTALLED IN NON-ASPHALT AREAS.
7. ACCESS ROADWAY SHALL DRAIN AWAY FROM UTILITY STRUCTURE.
8. ALL CONSTRUCTION AND MATERIALS SHALL MEET THE WSDOT SPECIFICATIONS AND BE APPROVED BY THE CITY.

Soap Lake WASHINGTON

FIGURE W-13

ACCESS EASEMENT AND ROADWAY FOR MUNICIPAL UTILITIES

Gray & Osborne, Inc.
CONSULTING ENGINEERS

M:\SOAP LAKE\18026 DEVELOPER STANDARDS\FIGURES\CAD\W-13 ACCESS EASEMENT

APPENDIX K

COST ESTIMATES

City of Soap Lake
Water System Plan
Pipeline Improvements
(April 2018 ENR National Construction Cost Index = 10971)

			1st Ave SE (Daisy to Elder)			Evergreen & Dogwood		
				Unit			Unit	
No.	**Item**	**Qnty.**	**Unit**	**Price**	**Amount**	**Qnty.**	**Price**	**Amount**
1	Mobilization and Demobilization	1	LS	$ 13,000	$ 13,000	1	$ 6,000	$ 6,000
2	Traffic Control	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
3	Temporary Erosion Control	1	LS	$ 2,000	$ 2,000	1	$ 2,000	$ 2,000
4	SPCC Plan	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
5	Trench Excavation Safety Systems	1	LS	$ 2,000	$ 2,000	1	$ 1,000	$ 1,000
6	Install 8" PVC C900 Water Pipe	850	LF	$ 40	$ 34,000	360	$ 40	$ 14,400
7	Rock Excavation	850	LF	$ 40	$ 34,000	0	$ -	$ -
8	8" Gate Valve	4	EA	$ 1,500	$ 6,000	2	$ 1,500	$ 3,000
9	Fire Hydrant Assembly	2	EA	$ 4,500	$ 9,000	2	$ 4,500	$ 9,000
10	Water Main Fittings	1	LS	$ 5,000	$ 5,000	1	$ 2,000	$ 2,000
11	Connection to Existing System	2	EA	$ 2,000	$ 4,000	2	$ 2,000	$ 4,000
12	Service Connection	7	EA	$ 1,000	$ 7,000	8	$ 1,000	$ 8,000
13	Service Pipe	210	LF	$ 20	$ 4,200	240	$ 20	$ 4,800
14	Surface Restoration	570	SY	$ 35	$ 19,950	240	$ 35	$ 8,400
15	Minor Changes	1	LS	$ 10,000	$ 10,000	1	$ 5,000	$ 5,000
	Subtotal (Rounded)				$ 152,000			$ 70,000
	Washington State Sales Tax (7.9%):				$ 12,000			$ 6,000
	Construction Subtotal:				$ 164,000			$ 76,000
	Construction Contingency (25%):				$ 41,000			$ 19,000
	Construction Total:				$ 205,000			$ 95,000
	Inflation (3%)				$ 6,000			$ 3,000
	Construction Total, 2020				$ 211,000			$ 98,000
	Design and Construction Engineering:				$ 63,000			$ 29,000
	Cultural Monitoring:				$ 6,000			$ 3,000
	City Administrative Costs				$ 500			$ 500
	Total Estimated Cost				**$ 280,500**			**$ 130,500**

City of Soap Lake
Water System Plan
Pipeline Improvements
(April 2018 ENR National Construction Cost Index = 10971)

		Lakemore Dr			3rd and SR 17		
			Unit			Unit	
No.	**Item**	**Qnty.**	**Price**	**Amount**	**Qnty.**	**Price**	**Amount**
1	Mobilization and Demobilization	1	$ 8,000	$ 8,000	1	$ 5,000	$ 5,000
2	Traffic Control	1	$ 1,000	$ 1,000	1	$ 500	$ 500
3	Temporary Erosion Control	1	$ 2,000	$ 2,000	1	$ 1,000	$ 1,000
4	SPCC Plan	1	$ 1,000	$ 1,000	1	$ 500	$ 500
5	Trench Excavation Safety Systems	1	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
6	Install 8" PVC C900 Water Pipe	450	$ 40	$ 18,000	480	$ 40	$ 19,200
7	Rock Excavation	450	$ 10	$ 4,500	0	$ -	$ -
8	8" Gate Valve	2	$ 1,500	$ 3,000	2	$ 1,500	$ 3,000
9	Fire Hydrant Assembly	3	$ 4,500	$ 13,500	3	$ 4,500	$ 13,500
10	Water Main Fittings	1	$ 3,000	$ 3,000	1	$ 2,000	$ 2,000
11	Connection to Existing System	2	$ 2,000	$ 4,000	2	$ 2,000	$ 4,000
12	Service Connection	10	$ 1,000	$ 10,000	5	$ 1,000	$ 5,000
13	Service Pipe	300	$ 20	$ 6,000	150	$ 20	$ 3,000
14	Surface Restoration	300	$ 35	$ 10,500	320	$ 35	$ 11,200
15	Minor Changes	1	$ 5,000	$ 5,000	1	$ 5,000	$ 5,000
	Subtotal (Rounded)			$ 91,000			$ 74,000
	Washington State Sales Tax (7.9%):			$ 7,000			$ 6,000
	Construction Subtotal:			$ 98,000			$ 80,000
	Construction Contingency (25%):			$ 25,000			$ 20,000
	Construction Total:			$ 123,000			$ 100,000
	Inflation (3%)			$ 4,000			$ 3,000
	Construction Total, 2020			$ 127,000			$ 103,000
	Design and Construction Engineering:			$ 38,000			$ 31,000
	Cultural Monitoring:			$ 3,000			$ 4,000
	City Administrative Costs			$ 500			$ 500
	Total Estimated Cost			**$ 168,500**			**$ 138,500**

City of Soap Lake
Water System Plan
Pipeline Improvements
(April 2018 ENR National Construction Cost Index = 10971)

			1st & Division			4th & Fern		
				Unit			Unit	
No.	**Item**	**Qnty.**	**Unit**	**Price**	**Amount**	**Qnty.**	**Price**	**Amount**
1	Mobilization and Demobilization	1	LS	$ 6,000	$ 6,000	1	$ 1,000	$ 1,000
2	Traffic Control	1	LS	$ 500	$ 500	1	$ 300	$ 300
3	Temporary Erosion Control	1	LS	$ 1,000	$ 1,000	1	$ 500	$ 500
4	SPCC Plan	1	LS	$ 500	$ 500	1	$ 500	$ 500
5	Trench Excavation Safety Systems	1	LS	$ 1,000	$ 1,000	1	$ 500	$ 500
6	Install 8" PVC C900 Water Pipe	225	LF	$ 40	$ 9,000	50	$ 40	$ 2,000
7	Rock Excavation	225	LF	$ 40	$ 9,000	50	$ 10	$ 500
8	8" Gate Valve	2	EA	$ 1,500	$ 3,000	1	$ 1,500	$ 1,500
9	Fire Hydrant Assembly	3	EA	$ 4,500	$ 13,500	0	$ 4,500	$ -
10	Water Main Fittings	1	LS	$ 2,000	$ 2,000	1	$ 1,000	$ 1,000
11	Connection to Existing System	2	EA	$ 2,000	$ 4,000	2	$ 2,000	$ 4,000
12	Service Connection	5	EA	$ 1,000	$ 5,000	1	$ 1,000	$ 1,000
13	Service Pipe	150	LF	$ 20	$ 3,000	30	$ 20	$ 600
14	Surface Restoration	150	SY	$ 35	$ 5,250	30	$ 35	$ 1,050
15	Minor Changes	1	LS	$ 5,000	$ 5,000	1	$ 15,000	$ 3,000
	Subtotal (Rounded)				$ 68,000			$ 17,000
	Washington State Sales Tax (7.9%):				$ 5,000			$ 1,000
	Construction Subtotal:				$ 73,000			$ 18,000
	Construction Contingency (25%):				$ 18,300			$ 5,000
	Construction Total:				$ 91,300			$ 23,000
	Inflation (3%)				$ 3,000			$ 1,000
	Construction Total, 2020				$ 94,300			$ 24,000
	Design and Construction Engineering:				$ 28,000			$ 7,000
	Cultural Monitoring:				$ 2,000			$ 1,000
	City Administrative Costs				$ 500			$ 500
	Total Estimated Cost				**$ 124,800**			**$ 32,500**

City of Soap Lake
Water System Plan
Pipeline Improvements
(April 2018 ENR National Construction Cost Index = 10971)

			Ginkgo St			Evergreen St		
				Unit			Unit	
No.	**Item**	**Qnty.**	**Unit**	**Price**	**Amount**	**Qnty.**	**Price**	**Amount**
1	Mobilization and Demobilization	1	LS	$ 10,000	$ 10,000	1	$ 15,000	$ 15,000
2	Traffic Control	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
3	Temporary Erosion Control	1	LS	$ 2,000	$ 2,000	1	$ 2,000	$ 2,000
4	SPCC Plan	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
5	Trench Excavation Safety Systems	1	LS	$ 2,000	$ 2,000	1	$ 3,000	$ 3,000
6	Install 8" PVC C900 Water Pipe	680	LF	$ 40	$ 27,200	1,170	$ 40	$ 46,800
7	Rock Excavation	0	LF	$ -	$ -	0	$ -	$ -
8	8" Gate Valve	7	EA	$ 1,500	$ 10,500	8	$ 1,500	$ 12,000
9	Fire Hydrant Assembly	2	EA	$ 4,500	$ 9,000	3	$ 4,500	$ 13,500
10	Water Main Fittings	1	LS	$ 4,000	$ 4,000	1	$ 6,000	$ 6,000
11	Connection to Existing System	2	EA	$ 2,000	$ 4,000	2	$ 2,000	$ 4,000
12	Service Connection	15	EA	$ 1,000	$ 15,000	20	$ 1,000	$ 20,000
13	Service Pipe	450	LF	$ 20	$ 9,000	600	$ 20	$ 12,000
14	Surface Restoration	460	SY	$ 35	$ 16,100	780	$ 35	$ 27,300
15	Minor Changes	1	LS	$ 10,000	$ 10,000	1	$ 15,000	$ 15,000
	Subtotal (Rounded)				$ 121,000			$ 179,000
	Washington State Sales Tax (7.9%):				$ 10,000			$ 14,000
	Construction Subtotal:				$ 131,000			$ 193,000
	Construction Contingency (25%):				$ 33,000			$ 48,000
	Construction Total:				$ 164,000			$ 241,000
	Inflation (3%)				$ 5,000			$ 7,000
	Construction Total, 2020				$ 169,000			$ 248,000
	Design and Construction Engineering:				$ 51,000			$ 74,000
	Cultural Monitoring:				$ 5,000			$ 9,000
	City Administrative Costs				$ 500			$ 500
	Total Estimated Cost				**$ 225,500**			**$ 331,500**

City of Soap Lake
Water System Plan
Pipeline Improvements
(April 2018 ENR National Construction Cost Index = 10971)

		Dogwood St			Cherry St		
			Unit			Unit	
No.	**Item**	**Qnty.**	**Price**	**Amount**	**Qnty.**	**Price**	**Amount**
1	Mobilization and Demobilization	1	$ 10,000	$ 10,000	1	$ 10,000	$ 10,000
2	Traffic Control	1	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
3	Temporary Erosion Control	1	$ 2,000	$ 2,000	1	$ 2,000	$ 2,000
4	SPCC Plan	1	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
5	Trench Excavation Safety Systems	1	$ 2,000	$ 2,000	1	$ 2,000	$ 2,000
6	Install 8" PVC C900 Water Pipe	680	$ 40	$ 27,200	680	$ 40	$ 27,200
7	Rock Excavation	0	$ -	$ -	0	$ -	$ -
8	8" Gate Valve	7	$ 1,500	$ 10,500	7	$ 1,500	$ 10,500
9	Fire Hydrant Assembly	2	$ 4,500	$ 9,000	2	$ 4,500	$ 9,000
10	Water Main Fittings	1	$ 4,000	$ 4,000	1	$ 4,000	$ 4,000
11	Connection to Existing System	2	$ 2,000	$ 4,000	2	$ 2,000	$ 4,000
12	Service Connection	15	$ 1,000	$ 15,000	15	$ 1,000	$ 15,000
13	Service Pipe	450	$ 20	$ 9,000	450	$ 20	$ 9,000
14	Surface Restoration	460	$ 35	$ 16,100	460	$ 35	$ 16,100
15	Minor Changes	1	$ 15,000	$ 10,000	1	$ 10,000	$ 10,000
	Subtotal (Rounded)			$ 121,000			$ 121,000
	Washington State Sales Tax (7.9%):			$ 10,000			$ 10,000
	Construction Subtotal:			$ 131,000			$ 131,000
	Construction Contingency (25%):			$ 33,000			$ 33,000
	Construction Total:			$ 164,000			$ 164,000
	Inflation (3%)			$ 5,000			$ 5,000
	Construction Total, 2020			$ 169,000			$ 169,000
	Design and Construction Engineering:			$ 51,000			$ 51,000
	Cultural Monitoring:			$ 5,000			$ 5,000
	City Administrative Costs			$ 500			$ 500
	Total Estimated Cost			**$ 225,500**			**$ 225,500**

City of Soap Lake
Water System Plan
Pipeline Improvements
(April 2018 ENR National Construction Cost Index = 10971)

			Birch St			3rd Ave SE		
				Unit			Unit	
No.	**Item**	**Qnty.**	**Unit**	**Price**	**Amount**	**Qnty.**	**Price**	**Amount**
1	Mobilization and Demobilization	1	LS	$ 10,000	10000	1	$ 9,000	$ 9,000
2	Traffic Control	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
3	Temporary Erosion Control	1	LS	$ 2,000	$ 2,000	1	$ 2,000	$ 2,000
4	SPCC Plan	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
5	Trench Excavation Safety Systems	1	LS	$ 2,000	$ 2,000	1	$ 1,000	$ 1,000
6	Install 8" PVC C900 Water Pipe	680	LF	$ 40	$ 27,200	480	$ 40	$ 19,200
7	Rock Excavation	0	LF	$ -	$ -	0	$ -	$ -
8	8" Gate Valve	7	EA	$ 1,500	$ 10,500	7	$ 1,500	$ 10,500
9	Fire Hydrant Assembly	2	EA	$ 4,500	$ 9,000	2	$ 4,500	$ 9,000
10	Water Main Fittings	1	LS	$ 4,000	$ 4,000	1	$ 3,000	$ 3,000
11	Connection to Existing System	2	EA	$ 2,000	$ 4,000	2	$ 2,000	$ 4,000
12	Service Connection	15	EA	$ 1,000	$ 15,000	15	$ 1,000	$ 15,000
13	Service Pipe	450	LF	$ 20	$ 9,000	450	$ 20	$ 9,000
14	Surface Restoration	460	SY	$ 35	$ 16,100	320	$ 35	$ 11,200
15	Minor Changes	1	LS	$ 10,000	$ 10,000	1	$ 5,000	$ 5,000
	Subtotal (Rounded)				$ 121,000			$ 100,000
	Washington State Sales Tax (7.9%):				$ 10,000			$ 8,000
	Construction Subtotal:				$ 131,000			$ 108,000
	Construction Contingency (25%):				$ 33,000			$ 27,000
	Construction Total:				$ 164,000			$ 135,000
	Inflation (3%)				$ 5,000			$ 4,000
	Construction Total, 2020				$ 169,000			$ 139,000
	Design and Construction Engineering:				$ 51,000			$ 42,000
	Cultural Monitoring:				$ 5,000			$ 4,000
	City Administrative Costs				$ 500			$ 500
	Total Estimated Cost				**$ 225,500**			**$ 185,500**

City of Soap Lake
Water System Plan
Pipeline Improvements
(April 2018 ENR National Construction Cost Index = 10971)

			Canna Street			2nd Ave SE		
				Unit			Unit	
No.	**Item**	**Qnty.**	**Unit**	**Price**	**Amount**	**Qnty.**	**Price**	**Amount**
1	Mobilization and Demobilization	1	LS	$ 8,000	$ 8,000	1	$ 8,000	$ 8,000
2	Traffic Control	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
3	Temporary Erosion Control	1	LS	$ 2,000	$ 2,000	1	$ 2,000	$ 2,000
4	SPCC Plan	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
5	Trench Excavation Safety Systems	1	LS	$ 1,000	$ 1,000	1	$ 1,000	$ 1,000
6	Install 8" PVC C900 Water Pipe	400	LF	$ 40	$ 16,000	450	$ 40	$ 18,000
7	Rock Excavation	0	LF	$ -	$ -	0	$ -	$ -
8	8" Gate Valve	7	EA	$ 1,500	$ 10,500	7	$ 1,500	$ 10,500
9	Fire Hydrant Assembly	2	EA	$ 4,500	$ 9,000	2	$ 4,500	$ 9,000
10	Water Main Fittings	1	LS	$ 2,000	$ 2,000	1	$ 3,000	$ 3,000
11	Connection to Existing System	2	EA	$ 2,000	$ 4,000	2	$ 2,000	$ 4,000
12	Service Connection	15	EA	$ 1,000	$ 15,000	15	$ 1,000	$ 15,000
13	Service Pipe	450	LF	$ 20	$ 9,000	450	$ 20	$ 9,000
14	Surface Restoration	270	SY	$ 35	$ 9,450	300	$ 35	$ 10,500
15	Minor Changes	1	LS	$ 10,000	$ 10,000	1	$ 5,000	$ 5,000
	Subtotal (Rounded)				$ 98,000			$ 97,000
	Washington State Sales Tax (7.9%):				$ 8,000			$ 8,000
	Construction Subtotal:				$ 106,000			$ 105,000
	Construction Contingency (25%):				$ 27,000			$ 26,000
	Construction Total:				$ 133,000			$ 131,000
	Inflation (3%)				$ 4,000			$ 4,000
	Construction Total, 2020				$ 137,000			$ 135,000
	Design and Construction Engineering:				$ 41,000			$ 41,000
	Cultural Monitoring:				$ 3,000			$ 3,000
	City Administrative Costs				$ 500			$ 500
	Total Estimated Cost				**$ 181,500**			**$ 179,500**

City of Soap Lake
Water System Plan
Fire Hydrant Replacement
(April 2018 ENR National Construction Cost Index = 10971)

No.	Item	Qnty.	Unit	Unit Price	Amount
1	Mobilization and Demobilization	1	LS	$ 12,700	12700
2	Project Temporary Traffic Control	1	LS	$ 5,000	$ 5,000
3	Trench Excavation Safety Systems	1	LS	$ 1,000	$ 1,000
4	Temporary Water Pollution/Erosion Control	1	LS	$ 500	$ 500
5	SPCC Plan	1	LS	$ 500	$ 500
6	Locate Existing Utilities	10	EA	$ 300	$ 3,000
7	Fire Hydrant Replacement	19	EA	$ 4,500	$ 85,500
8	Bank Run Gravel for Trench Backfill	20	CY	$ 25	$ 500
9	6-Inch DI Pipe for Fire Hydrant	475	LF	$ 35	$ 16,625
10	Sidewalk Repair	20	SY	$ 40	$ 800
11	Curb and Gutter	40	LF	$ 30	$ 1,200
12	Surface Restoration	1	LS	$ 2,500	$ 2,500
13	Minor Changes	1	LS	$ 10,000	$ 10,000
	Subtotal (Rounded)				$ 127,300
	Washington State Sales Tax (7.9%):				$ 10,100
	Construction Subtotal:				$ 137,400
	Construction Contingency (25%):				$ 34,400
	Construction Total:				$ 171,800
	Inflation (3%)				$ 5,200
	Construction Total, 2020				$ 177,000
	Design and Construction Engineering:				$ 53,000
	Cultural Monitoring:				$ 4,000
	City Administrative Costs				$ 500
	Total Estimated Cost				**$ 234,500**

City of Soap Lake
Water System Plan
AMR System
(April 2018 ENR National Construction Cost Index = 10971)

No.	Item	Qnty.	Unit	Unit Price	Amount
1	Mobilization and Demobilization	1	LS	$ 14,900	$ 14,900
2	Meter Box Modification	180	LS	$ 50	$ 9,000
3	Water Service Meter and Register	732	EA	$ 100	$ 73,200
4	Installation	732	EA	$ 50	$ 36,600
5	Software	1	LS	$ 15,000	$ 15,000
6	Hardware	1	LS	$ 5,000	$ 5,000
7	Minor Changes	1	LS	$ 10,000	$ 10,000
	Subtotal (Rounded)				$ 153,700
	Washington State Sales Tax (7.9%):				$ 12,100
	Construction Subtotal:				$ 165,800
	Construction Contingency (25%):				$ 41,500
	Construction Total:				$ 207,300
	Inflation (3%)				$ 6,200
	Construction Total, 2020				$ 213,500
	Design and Construction Engineering:				$ 64,000
	Cultural Monitoring:				$ -
	City Administrative Costs				$ 2,500
	Total Estimated Cost				**$ 280,000**

APPENDIX L

SEPA

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background

1. Name of proposed project, if applicable: **Water System Plan Update**

2. Name of applicant: **City of Soap Lake**

3. Address and phone number of applicant and contact person:

Mr. Darrin Fronsman
P.O. Box 1270, Soap Lake, WA 98851
509-246-1211

4. Date checklist prepared: **December 6, 2017**

5. Agency requesting checklist: **Department of Health**

6. Proposed timing or schedule (including phasing, if applicable): **The Water System Plan provides a schedule for capital improvements.**

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain. **The Water System Plan discusses the anticipated growth within the planning period.**

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. **None.**

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. **No.**

10. List any government approvals or permits that will be needed for your proposal, if known. **This checklist has been prepared for a Water System Plan which requires only DOH approval. Some of the projects proposed by the plan may require additional permits as follows:**

- **For all water main construction projects approval of plans and specifications might be required or the City will utilize the Distribution Main Exception Process.**

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.) **This project includes multiple items, as follows:**

The Water System Plan is a document describing the location and type of actions and policies needed to provide municipal water supply to the service area to meet present and future needs. The proposal provides a method of implementation of the various components by prioritizing based on need and the effect financing may have on water rates. The following projects, as described in greater detail in Chapter 8 of the Plan, are representative of the maintenance efforts and improvements proposed for the Water System.

- **Well Replacement – This includes drilling and equipping a new well which would be an additional point of withdrawal to the City's water rights.**
- **Telemetry Improvements – This includes replacement of the software and telemetry equipment for the Water System Plan.**

- **Distribution System Improvements – This includes upsizing of various lines throughout the City to improve fire flow.**
- **Booster Pump Station (BPS) – The BPS does not have sufficient fire flow capacity and does not have emergency power. Larger fire flow pumps and a generator may be installed.**
- **O&M Improvements – Several improvements, including adjustments to the bolted steel reservoir, replacing and calibrating source and service meters, replacing aging valves and hydrants, and pipeline replacement are necessary within the planning period.**

Project actions not exempt from SEPA will be evaluated separately.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist. **The improvements will be within the City's urban growth area. Additional mapping is shown in the Water System Plan.**

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

(underline one): Flat, **rolling**, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)? **5-10%**

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. **Soils in the area consist primarily of fine sandy loam and silty loam.**

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. **There is no indication of unstable soils in the immediate vicinity.**

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill. **No filling or grading of any significance is anticipated other than minor backfilling of native material and grading associated with construction of water mains and service loops.**

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. **No, construction will include best management practices to mitigate any possible erosion.**

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? **No additional impervious surfaces will be constructed. Only removal and replacement of existing surfaces.**

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any: **Construction specifications will include erosion control measures.**

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known. **Minimal dust and vehicle emissions typical of small scale construction project will be created.**

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe. **No off-site sources of emissions or odor will affect the proposal.**

c. Proposed measures to reduce or control emissions or other impacts to air, if any: **Watering of the site will be utilized to control dust.**

3. **Water**

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into. **Yes, Soap Lake is within the immediate vicinity.**

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans. **No.**

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material. **None.**

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known. **No.**

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan. **No.**

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge. **No.**

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known. **The City provides water to**

its customers from two existing groundwater wells and is in compliance with its water rights. Additional information about the wells and water quantities is shown within the Water System Plan.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve. **None.**

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe. **Water from the flushing of water mains will be contained within the immediate construction site and will not flow into any other waters.**

2) Could waste materials enter ground or surface waters? If so, generally describe. **No.**

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. **No.**

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any: **None.**

4. **Plants**

a. Check the types of vegetation found on the site:

__x__deciduous tree: alder, maple, aspen, other
____evergreen tree: fir, cedar, pine, other
__x__shrubs
__x__grass
____pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered? **Where appropriate, private property sod and trees will be replaced and open land will be reseeded with its natural grasses. Most of the proposed pipelines will be constructed under streets and will not disrupt vegetation.**

c. List threatened and endangered species known to be on or near the site. **None known.**

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any: **Existing landscaped which is disturbed will be replaced in-kind.**

e. List all noxious weeds and invasive species known to be on or near the site. **None known.**

5. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, **songbirds**, other:
mammals: deer, bear, elk, beaver, other: **Squirrels**
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site. **None.**

c. Is the site part of a migration route? If so, explain. **No.**

d. Proposed measures to preserve or enhance wildlife, if any: **None.**

e. List any invasive animal species known to be on or near the site. **None.**

6. **Energy and Natural Resources**

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. **Electricity is used to pump groundwater for the water system.**

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe. **No.**

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any: **None.**

7. **Environmental Health**

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe. **No.**

1) Describe any known or possible contamination at the site from present or past uses.
None.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity. **None.**

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project. **The only hazardous materials associated with the proposed project would be fuels, lubricants, and coolants used in construction equipment.**

4) Describe special emergency services that might be required. **None.**

5) Proposed measures to reduce or control environmental health hazards, if any: **None.**

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)? **Noise will not significantly affect the project area.**

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site. **Only short-term noise associated with heavy construction equipment will be involved in this project.**

3) Proposed measures to reduce or control noise impacts, if any: **None.**

8. **Land and Shoreline Use**

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. **The City is predominantly residential. Zoning maps are included in the Water System Plan. The proposal will not affect adjacent uses or properties.**

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? **The area served by the water system is not used for farmland or working forest land.**

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how: **No.**

c. Describe any structures on the site. **Residential homes, equipment sheds, garages, commercial and retail businesses, and other residential/ commercial buildings.**

d. Will any structures be demolished? If so, what? **No.**

e. What is the current zoning classification of the site? **There are several different zoning classifications within the water service area, as shown within the mapping in the Water System Plan.**

f. What is the current comprehensive plan designation of the site? **There are several different designations within the water service area, as shown within the mapping in the Water System Plan.**

g. If applicable, what is the current shoreline master program designation of the site? **Not applicable.**

h. Has any part of the site been classified as a critical area by the city or county? If so, specify. **No.**

i. Approximately how many people would reside or work in the completed project? **Approximately 1,800 people live within the City.**

j. Approximately how many people would the completed project displace? **None.**

k. Proposed measures to avoid or reduce displacement impacts, if any: **None.**

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any: **The Water System Plan will be sent to applicable local planning agencies for evaluation of the "Local Government Consistency Determination Form."**

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any: **None.**

9. **Housing**

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. **None.**

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. **None.**

c. Proposed measures to reduce or control housing impacts, if any: **None.**

10. **Aesthetics**

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed? **All proposed pipelines would be below grade. The existing reservoirs are 40 feet tall.**

b. What views in the immediate vicinity would be altered or obstructed? **None.**

b. Proposed measures to reduce or control aesthetic impacts, if any: **None.**

11. **Light and Glare**

a. What type of light or glare will the proposal produce? What time of day would it mainly occur? **None.**

b. Could light or glare from the finished project be a safety hazard or interfere with views? **No.**

c. What existing off-site sources of light or glare may affect your proposal? **None.**

d. Proposed measures to reduce or control light and glare impacts, if any: **None.**

12. **Recreation**

a. What designated and informal recreational opportunities are in the immediate vicinity? **City parks and Soap Lake.**

b. Would the proposed project displace any existing recreational uses? If so, describe. **No.**

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any: **None.**

13. **Historic and cultural preservation**

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe. **None known.**

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources. **No.**

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc. **The National Historic Registry was searched and yielded no properties within the City's service area. Additionally, the majority of the projects are located in areas which have been previously disturbed by construction and are unlikely to impact cultural resources.**

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required. **No measures are anticipated to be needed to minimize disturbance to resources. During construction, if any locations are found to contain objects of suspected historical interest, work will halt and the Unanticipated Discovery Plan will be followed.**

14. **Transportation**

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. **The City is accessed by State Route 28, State Route 17, and local streets.**

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? **Grant Transit Authority provides access to several areas in Grant County, including a stop in Soap Lake.**

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? **No change.**

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). **No.**

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. **No.**

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? **None.**

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. **No.**

h. Proposed measures to reduce or control transportation impacts, if any: **None.**

15. **Public Services**

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe. **No.**

b. Proposed measures to reduce or control direct impacts on public services, if any. **No.**

16. **Utilities**

a. Underline utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

c. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed. **The proposed services are to provide improvements to the existing water system. These include pipeline, pumping, operations, and maintenance improvements to increase system efficiency. General activities typical of this type of construction include excavating, trenching, de-watering, backfill and compaction, roadway repair, and surface restoration.**

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee Robert Scott

Position and Agency/Organization Engineering Consultant, Gray & Osborne

Date Submitted: 4/25/18

D. supplemental sheet for nonproject actions

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Completing a water system plan will not change any of the above referenced items.

Proposed measures to avoid or reduce such increases are:

None.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

The proposal will not adversely affect plants, animals, fish, or marine life. Completion of the water system plan will ensure that resources continue to be used in a stewardly manner.

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

None.

3. How would the proposal be likely to deplete energy or natural resources?

The proposal will not deplete energy or natural resources.

Proposed measures to protect or conserve energy and natural resources are:

None.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

The proposal will have no major environmental influence on these areas.

Proposed measures to protect such resources or to avoid or reduce impacts are:

None.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

This proposal will not affect land or shoreline use.

Proposed measures to avoid or reduce shoreline and land use impacts are:

None.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

This proposal will have no influence on these services.

Proposed measures to reduce or respond to such demand(s) are:

None.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The water system plan has been written in coordination with applicable laws and requirements.

WAC 197-11-970 Determination of nonsignificance (DNS).

DETERMINATION OF NONSIGNIFICANCE

Description of proposal: City of Soap Lake Water System Plan _____

_____

_____

Proponent City of Soap Lake _____

Location of proposal, including street address, if any The General Water System Plan covers the jurisdictional boundaries of the City of Soap Lake _____

_____

_____

Lead agency City of Soap Lake _____

The lead agency for this proposal has determined that it does not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of a completed environmental checklist and other information on file with the lead agency. This information is available to the public on request.

☐ There is no comment period for this DNS.

☐ This DNS is issued after using the optional DNS process in WAC 197-11-355. There is no further comment period on the DNS.

☒ This DNS is issued under WAC 197-11-340(2); the lead agency will not act on this proposal for 14 days from the date below. Comments must be submitted by . . . . . .

Responsible official Darryl Piercy _____

Position/title City Planner _____ Phone: 509 859 2943

Address City of Soap Lake PO Box 1 270, Soap Lake WA 98851 _____

Date. 6/26/2018 _____ Signatures/*Darryl Piercy* _____

APPENDIX M

CORRESPONDENCE

RESOLUTION NO. 910

A RESOLUTION OF THE CITY OF SOAP LAKE ADOPTING AN UPDATED WATER SYSTEM PLAN

RECITALS:

1. Municipal water systems with 1,000 or more service connections are required to have an adopted Water System Plan.
2. Water System Plans must be updated at least every six (6) year and must be submitted to the Washington State Department of Health (DOH) for approval.
3. The City' Water System Plan is necessary for planning purposes and to assist the City in the decisions that must be made about water system capital improvements and operations.
4. It is the desire of the City Council to update the City Water System Plan.

NOW THEREFORE, BE IT RESOLVED by the City Council of the City of Soap Lake:

The City of Soap Lake adopts the attached 2019 Water System Plan Update.

ADOPTED by the City Council of the City of Soap Lake, Washington, this 19th day of June, 2019.

Raymond Gravelle, Mayor

ATTEST:

Karen Dillon, Interim Finance Director

MINUTES REGULAR SOAP LAKE CITY COUNCIL MEETING

June 19, 2019

CALL TO ORDER

Mayor Gravelle called the regular council meeting to order at 5:30 pm.

ROLL CALL

Council members present: Mayor Gravelle, Rushton, Wellein, Tweedy, Kovach and Still

M/Rushton, S/Tweedy; to excuse Council Members Glassco and Sanderson. **Motion carried unanimously**.

City Staff Members Present: Police Chief Cox, City Planner Piercy, City Attorney Kenison, Interim City Finance Clerk Dillon, City Administrator Tijerina and Administrative Assistant Siebert

AGENDA ITEMS

- **CONSENT AGENDA**
  - Regular Council Meeting Minutes – June 5, 2019
  - Claim EFTs & Claims #19381-19430 in the amount of $208,482.59
  - Payroll EFTs & Claims #25797-25813 in the amount of $32,935.75
  - A Resolution of the City of Soap Lake Adopting an Updated Water System Plan
  - Reimbursement Resolution
- **PUBLIC HEARING**
  - A. No Street Parking – 6th Ave SE
- **MAYOR'S MESSAGE**
- **REPORT OF STANDING COMMITTEES**
- **REPORT OF SPECIAL COMMITTEES**
- **PUBLIC COMMENT**
- **OLD BUSINESS**
  - A. Snow Removal Ordinance
  - B. Lease with Healing Waters Property Development
- **NEW BUSINESS**
  - A. Temporary Street Closure
  - B. Contract Award or Rejection of Bids for the AMR System Installation
  - C. Oath of Office
  - D. Public Works Supervisor Job Description
  - E. Public Works Maintenance Job Description
  - F. a. Changing Authorized Signers on Banner Bank Accounts by Removing Anna Eastabrooks and Karen Dillon and Adding City Administrator Nic Tijerina
    b. Authorize a City Credit Card to be Issued to City Administrator Nic Tijerina in the Amount of $5000.00

G. Interlocal Agreement for Equipment Rental between the City of Soap Lake, Washington and the Soap Lake School District #156, Washington

- **REPORT OF CITY OFFICERS**
- **NEXT ORDINANCE #1293; NEXT RESOLUTION #910**
- **COMMENTS**
- **ADJOURNMENT**

CONSENT AGENDA

M / Tweedy, S / Kovach; to accept the consent agenda as presented. **Motion carried unanimously.**

PUBLIC HEARING

Started at 5:39

Chief Cox gave video presentation on the segment of road in question.

Nine members of the public commented.

Mayor polled the City Council for their comments/suggestions.

Consensus: The center line will be moved allowing for parking along the North side only. City Administrator and Public Works will bring forward costs for restriping and signs.

Ended at 6:13

MAYOR'S MESSAGE

The Hydroplane event was a big success with 30 entries.

Introduced the new City Administrator, Nic Tijerina. Mr. Tijerina comes from the City of Moses Lake. He has experience as a Project Manager. The Mayor hopes that his experience will help with the continuity and long term stability of the city and is looking forward to the increase in city development.

REPORT OF STANDING/SPECIAL COMMITTEES

Centennial Committee: Centennial Celebration Day was a lot of fun. Next event is the Suds n Sun on July 6th which will include classic car show.

Lake Liaison Committee: Reminder that committee meets every 2nd Monday at the Senior Center at 4:00. Discussions include Lake health and storm water drainage.

PUBLIC COMMENT

Ms. Alison Gooding of Soap Lake – Wanted to thank Karen Dillon for all her hard work and coming back to help out these last few months.

Ms. Judith Gorman 207 Gingko – She is on the Public Hospital District Foundation board. They are meeting every 2nd Wednesday at 5:30 pm at McKay Conference Room. Discussions include outpatient therapy and veteran issues. Currently seeking volunteers for their board, if anyone is interested.

OLD BUSINESS

A. Snow Removal Ordinance – After discussion, City Attorney Kenison will bring Ordinance with recommended revisions for approval at next Council Meeting.
B. Lease with Healing Waters Property Development – The Food Bank Board will be meeting tomorrow. Still considering the Food Bank as the primary beneficiary of the land in question. Will bring this item back for the next Council Meeting.

NEW BUSINESS

A. Temporary Street Closure – **M/Tweedy, S/Still**; to approve the closure of the one way street/parking area in front of City Hall on 2nd Avenue in front of City Hall. **Motion carried unanimously**. The payment box will be moved closer to the portable city hall building.
B. Contract Award or Rejection of Bids for the AMR System Installation – **M/Tweedy, S/Rushton;** to reject all bids received for the AMR System Installation and rebid the project in January as part of the larger Water and Sewer (Phase II) Improvements project. **Motion carried unanimously**.
C. Oath of Office – Officer Sara Hanson was sworn in by the Mayor.
D. Public Works Supervisor Job Description – **M/Still, S/Wellein**; to accept the Public Works Supervisor job description, *subject to the following changes: the position will be non-exempt, the Wastewater Operator's certificate will be obtained within the first 30 days of the orientation period, add requirement for proficiency in the English language, add additional work environment conditions such as high/open spaces, confined spaces, etc., include language from the Municipal Maintenance job description, need to maintain level 2 certifications and change job title to Public Works Foreperson*, as presented by the Personnel Committee. **Motion carried unanimously.**
E. Public Works Maintenance Job Description – after much discussion, decision to bring this item back to next Council Meeting as two separate job descriptions. One for the Water Distribution Manager and one for Waste Water Treatment Plant Operator.
F. (a) Changing Authorized Signers on Banner Bank Accounts by Removing Anna Eastabrooks and Karen Dillon and Adding City Administrator Nic Tijerina
(b) Authorizing a City Credit Card to be Issued to City Administrator Nic Tijerina in the Amount of $5000.00 – **M/Still, S/Rushton**; to change authorized signers on Banner Bank accounts ending in 0246, 3520 and 4221 by removing Eastabrooks and Dillon and adding Tijerina and to issue a city credit card to city administrator Tijerina. **Motion carried unanimously**.
G. Interlocal Agreement for Equipment Rental between the City of Soap Lake, Washington and the Soap Lake School District #156, Washington – **M/Rushton, S/Tweedy**; to accept the Interlocal Agreement for the Equipment Rental between the City of Soap Lake, Washington and the Soap Lake School District #156, Washington. **Motion carried unanimously**.

REPORTS OF CITY OFFICERS

Police Chief Cox – Department handled 72 calls in the last 2 weeks, including many arrests.

City camera system was used to solve a case related to another county.

Can bring proposal for overtime on the 4th of July to next Council Meeting.

Volunteer Code Enforcement Officer, Harold Ross, has been busy identifying 30 properties for code violations, 15 of which came from City Complaint Forms. 3 citations have been issued.

City Planner, Darryl Piercy – the Shoreline application is closing to the final plan. There will be a 14 day public comment period soon. Developer has been very cooperative, and plans have been modified to best suit lake development.

Interim Finance Director, Karen Dillon – WCIA audit was conducted on Public Works, no findings.

City Administrator, Nic Tijerina – becoming familiar with current city projects

City Attorney Kenison – Will bring James Lease for approval at next Council Meeting.

Next Ordinance #1293; Next Resolution #912

COMMENTS

N/A

ADJOURNMENT

M /Rushton, S /Kovach; to adjourn at 8:00 pm. **Motion carried unanimously.**

Raymond Gravelle, Mayor

Jody Siebert, Administrative Assistant

From: Nancy Wetch <nwetch@g-o.com>
Sent: Monday, November 26, 2018 2:13 PM
To: lakeviewparkwater@gmail.com
Cc: Darrin Fronsman; 'Tim DeVries'
Subject: Water System Plan

Debbie,

As we discussed on the phone, the City of Soap Lake is updating their Water System Plan. As an adjacent water purveyor, you have the opportunity to comment on the Plan.

You should receive a link to an FTP site where the Plan can be retrieved as a PDF and sent to Mr. Trammell.

Thank you

Nancy Wetch, P.E. | Gray & Osborne, Inc.
Project Engineer | Yakima, WA
(509) 453-4833 Office | (509) 945- 9894 Cell
www.g-o.com | 180 Iron Horse Court

Tim DeVries

From: Tim DeVries <tdevries@g-o.com>
Sent: Friday, May 17, 2019 9:38 AM
To: 'Gardipe, Jamie C (DOH)'; 'raymondg@soaplakewa.gov'; 'Darrin Fronsman'
Cc: 'nwetch@g-o.com'; 'Mau, Russell E (DOH)'; 'DOH EPH DW ERO ADMIN'
Subject: RE: Soap Lake WSP 2nd Draft Review
Attachments: All Maps- 11x17 color.pdf

Hi Jamie,

Responses to the comments are below in red.

Thanks,

Tim DeVries, P.E. | Gray & Osborne, Inc.
Civil Engineer | Yakima, WA
509.453.4833 Office
180 Iron Horse Court, Yakima, WA 98901

From: Gardipe, Jamie C (DOH) [mailto:jamie.gardipe@doh.wa.gov]
Sent: Tuesday, May 14, 2019 9:20 AM
To: raymondg@soaplakewa.gov; 'Darrin Fronsman' <dfronsman@smwireless.net>
Cc: nwetch@g-o.com; Mau, Russell E (DOH) <russell.mau@doh.wa.gov>; DOH EPH DW ERO ADMIN <eroadmin@doh.wa.gov>; Tim DeVries <tdevries@g-o.com>
Subject: Soap Lake WSP 2nd Draft Review

Good morning,

DOH has completed the review of the Soap Lake Water Department Water System Plan 2nd draft (PWS# 81300, Grant County; Sub# 18-0611) received in our office on February 22, 2019. We only have a few remaining comments, so we do not require proceeding to a third draft. The following comments will need to be addressed before DOH can approve the document:

- Provide all maps in 11"x17" and in color, if applicable. All of the maps are attached in 11x17 and in color.
- Please reconcile the number of connections shown in the WSP with the number of connections documented in the WFI, particularly the significant difference in "commercial" connections. We believe that the 168 commercial connections listed on the WFI was a typo and it should have listed 68. The City has confirmed that this is a more accurate number. The connection data shown in the WSP was determined from the City's current billing records at the time the WSP was written. The number of connections listed for the other categories are within +/-4 and that difference is attributed to the difference in time between the creation of the WFI and the WSP.
- Since the initial WSP draft was created, a substantial amount of time has passed, including two full years of data. Please provide an appendix/addendum sheet documenting flow data for 2017 and 2018, including a narrative for any significant changes in production/consumption.
  Production and consumption date was obtained from the City for the period May 2017-May 2018 and May 2018-May 2019. The table below compares these years to the previous years listed in Table 2-5 of the Water System Plan.

Data Period	Production (gallons)	Consumption (gallons)

2011	98,814,000	108,351,000
2012	106,674,000	98,941,000
2013	96,854,000	92,041,000
2014	109,685,000	98,010,000
2015	118,173,000	103,649,000
2016	122,937,000	88,286,000
May 2017-May 2018	**106,113,000**	**119,317,140**
May 2018 –May 2019	**106,805,000**	**109,841,930**

This table shows a slight decline in production in 2017 and 2018 compared to the three previous years and an increase in consumption. During this period, the flow meter at Well No. 3 failed due to a battery failure and as a result the production data is not accurate. As shown in the table the City consumed more water than what was produced, which also occurred in 2011. In addition, the City had a major water main break in October of 2017 that resulted in the loss of over 1,000,000 gallons of water. As noted in the Plan, the City Staff had indicated that there are a number of consumption meters that required replacement. As a result of the Plan, the City has developed a project funded by RD to replace all consumption and production meters in the system. The AMR meter project will advertise for bids on June 23, 2019. It is anticipated that it will be complete by October of 2019. The production meters will be replaced as part of a larger water main replacement project that is scheduled for advertisement in January 2020 and will be complete in August of 2020.

The City is investing over $3 million in their water system in the next year. As a result of this project the City will have more accurate production and consumption data, at this time the City is not confident that further review of the data will provide useful information regarding their production, consumption or DSL.

- Following the corrections listed above, have the City Council officially approve the WSP and send DOH documentation, such as a copy of the signed meeting minutes or a copy of the signed resolution. When the documentation is received we will send a letter documenting DOH approval. Is a signed resolution required, or is documentation of the motion to approve the Water System Plan in the City's signed meeting minutes sufficient?

Please let me know if you have any questions.

Regards,

Jamie Gardipe
Regional Planner
Office of Drinking Water
Environmental Public Health
Washington State Department of Health
jamie.gardipe@doh.wa.gov
509-329-2137 | www.doh.wa.gov
Gender Pronouns: She/Her

APPENDIX N

WUE PUBLIC HEARING

STATE OF WASHINGTON – GRANT COUNTY

No. 18213

Affidavit of Publication

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that a public hearing will be held by the City of Soap Lake in the Council Chambers, 239 SE 2nd Ave, Soap Lake, WA 98851, January 17, 2018 at 5:30 pm.

The purpose of the public hearing is to take public comment regarding the City of Soap Lake Water Use Efficiency Program and the draft Water System Plan. The council chamber is handicap accessible.

Additional arrangements to reasonably accommodate special needs, including handicap accessibility or an interpreter, will be made upon receiving 24-hour advance notice. Contact the Deputy City Clerk at (509) 246-1211, 239 2nd Ave SE, Soap Lake, WA.

1/8, 1/11, 1/15

The undersigned, on oath, states that he/she is an authorized representative of the Grant County Journal, a semi-weekly newspaper, which is a legal newspaper of general circulation and it is now and has been for more than six months prior to the date of publication hereinafter referred to, published in the English language continuously in Ephrata, Grant County, Washington, and it is now and during all of said time, was printed in an office maintained at the aforesaid place of publication of this newspaper.

The Grant County Journal was on the 2nd day of July 1941, approved as a legal newspaper by the Superior Court of Grant County.

The notice in the exact form annexed, was published in regular issues of the Grant County Journal, which was regularly distributed to its subscribers during the below stated period.

The annexed notice, a Notice of Public Hearing

was published 1/8, 1/11, 1/15

The amount of the fee charged for the aforegoing publication is the sum of $ 77.00, which amount has been paid in full.

JENNIFER DECHENNE NOTARY PUBLIC STATE OF WASHINGTON Commission Expires MAY 24, 2021

Subscribed and sworn to before me on January 16, 2018

Notary Public for the State of Washington, residing in Ephrata

MINUTES REGULAR SOAP LAKE CITY COUNCIL MEETING

January 17, 2018

CALL TO ORDER

John Glassco, Mayor Pro Tem called the regular council meeting to order at 5:30 pm and led the Pledge of Allegiance.

ROLL CALL

Council members present: Glassco, Sanderson, Wellein, Tramayne, Still, Rushton and Tweedy

City Staff Members Present: Deputy Clerk Richardson, City Attorney Kenison and City Planner Piercy

AGENDA ITEMS

- **CONSENT AGENDA**
  Regular Council Meeting Minutes –January 3, 2018
  Claims EFTs & Claims #18044 – 18077 in the amount of $59,765.37
- **MAYOR'S MESSAGE**
- **PUBLIC HEARING** – Water Use Efficiency Program
- **PUBLIC COMMENT**
- **OLD BUSINESS**
  A. Grant County Health Dist. Alternate – Kevin Newland, City of Wilson Creek
  B. Soap Lake Food Bank Complaint
- **NEW BUSINESS**
  A. Gray & Osborne, Inc. - Water Plan
  B. Snow Removal Policy – 2018-001
  C. Senior Guidance
  D. Fremont Campout – Special Event Permit Application – Alky Angels Motorcycle Association
  E. Gray Excavation – Change Order for Police Station
  F. An Ordinance of the City of Soap Lake, Washington Adopting Soap Lake Municipal Code Chapter 15.28 Entitled "Unfit Buildings"
  G. Low Income Discount – Information from Sequim
  H. Lake Liaison Committee
- **REPORTS OF CITY OFFICERS**
- **NEXT ORDINANCE 1262, NEXT RESOLUTION 884**
- **COMMENTS**
- **ADJOURNMENT**

M / Tramayne, S / Tweedy; to add an Executive Session – Performance of Public Employee RCW 42.30.110(1) (g). **Motion carried unanimously.**

CONSENT AGENDA

M / Rushton, S/ Sanderson; to accept the consent agenda. **Motion carried unanimously.**

MAYOR'S MESSAGE

Infrastructure issues – water, sewer, mineral water – lack of maintenance a big problem.

PUBLIC HEARING

Gray & Osborne discussed the Water Use Efficiency Program for the City of Soap Lake.

Public Hearing open at 5:48.

Samuel Palmer – 823 W Main Ave – Palmer asked about setting goals when the City does not have good information and/or some meters are not working.

Chief Sheppard – Leakage – Between 2012 – 2014 there was an arsonist setting fires in and around the City and a lot of water was used that may not have been accounted for.

Public Hearing closed at 5:55.

PUBLIC COMMENT

Crystal Bean – 120 7th Ave SE – Crystal is going to organize a farmers market for Soap Lake this spring. If anyone is interested please let her know.

OLD BUSINESS

A. Grant County Health Dist. Alternate – Kevin Newland, City of Wilson Creek – Informed Council that Kevin Newland of Wilson Creek is willing to be the Alternate for the Grant County Health District Board. Steve Wellein is removed as alternate.

B. Soap Lake Food Bank Complaint – Fred Wright with the Soap Lake Food Bank said they were contacted by their adjacent neighbor and he is getting started on cleaning up the area out back and the inside of the building. The Food Bank thanked the City for their help in this matter.

NEW BUSINESS

A. Gray & Osborne, Inc. - Water System Plan – Gray & Osborne discussed the Water System Plan for the City of Soap Lake.

B. Snow Removal Policy – 2018-001 – moved to February 7, 2018 Agenda to allow for Public Works input.

C. Senior Guidance – Deputy Clerk Richardson shared e-mail and asked council approval to place a link to Senior Guidance on our website. **M / Sanderson, S / Still;** to approve adding a link to Senior Guidance to the City of Soap Lake's website. **Motion carried unanimously.**

D. Fremont Campout – Special Event Permit Application – Alky Angels Motorcycle Association – Brenda Ready discussed the event. **M / Wellein, S / Tweedy;** to approve the Special Event Permit Application for the Alky Angels Motorcycle Association – Fremont Campout. **Motion carried unanimously.**

E. Gray Excavation – Change Order for Police Station – **M / Sanderson, S / Rushton;** to approve Gray Excavation change order in the amount of $10,875.00. **Motion carried unanimously.**

F. An Ordinance of the City of Soap Lake, Washington Adopting Soap Lake Municipal Code Chapter 15.28 Entitled "Unfit Buildings" – Discussion ensued. **M / Tramayne, S / Tweedy;** to approve Ordinance No. 2018 – 1262 – An Ordinance of the City of Soap Lake, Washington Adopting Soap Lake Municipal Code Chapter 15.28 Entitled "Unfit Buildings". **Motion carried unanimously.**

G. Low Income Discount – Information from Sequim – moved to February 7, 2018 Agenda.

H. Lake Liaison Committee – moved to February 7, 2018 Agenda.

REPORT OF CITY OFFICERS

City Planner Piercy – The City has applied for a Strategic Infrastructure Program (SIP) grant for the 10% match for the Federal Government Grant received.

Police Chief Cox – The crane should be done placing the police department building and 2nd Ave. should be open Thursday afternoon.

Code Violations – Officer Diaz - 59 contacts; all but 6 corrected. 6 have been cited and 2 out of 6 have made improvements.

Other Officers - 17 contacts; all but 4 corrected. 4 cited; 4 corrected.

323 E Main has been evicted and is to be out at the end of February.

4 residential tenants are being evicted due to police/code enforcement action.

First Municipal Court Tuesday, January 16, 2018. Four cases. Four guilty verdicts.

Police Building should be set Thursday.

Security Cameras working Great.

Fire Chief Sheppard – Very Busy. 24 calls so far this year to include 2 assaults, a fall, a roll-over accident and a structure fire at the trailer park. Continuing to educate.

EXECUTIVE SESSION Performance of a public employee
In Executive Session at 7:30 for 10 minutes.
Out of Executive Session at 7:50.

ADJOURNMENT

There being no further business of the Council; **M/ Tramayne, S/ Sanderson;** to adjourn at 7:50pm. **Motion carried unanimously.**

John Glassco, Mayor Pro Tem

Anita Richardson, Deputy Clerk

APPENDIX O

SAMPLE CALCULATIONS

MEMORANDUM

TO: File

FROM: Robert Scott

DATE: April 24, 2018

SUBJECT: Soap Lake WSP Calculations

Table 3-2

2016 Source Capacity: Assumes both wells are in operation. This number is capped by the available water rights.

MDD Values: from Table 2-9

Surplus = Source Capacity - MDD

Table 3-3

Q (req'd)

MDD & Replenish FSS w/i 72 hrs = MDD + 180,000 gal / [(72 hrs) * (60 min/hr)]
For 2038: 836 + 180,000/(72*60) = 836 + 42 = 878 gpm

Meet MDD w/ 18 hrs Pumping = MDD from Table 2-9
For 2038: 836 gpm

Meet ADD w/o Largest Source = ADD from Table 2-9 / (1440 min/day)
For 2016: 430,000 gpd / 1440 = 299 gpm

Q (avail)

MDD & Replenish FSS w/i 72 hrs = Source Capacity from Table 3-2
For 2038: 2,050 gpm

Meet MDD w/ 18 hrs Pumping = Source Capacity from Table 3-2 * 18/24
For 2038: 2,050 * 18 / 24 = 1,538 gpm

Meet ADD w/o Largest Source = Source Capacity from Table 3-2 – 1,100 gpm
For 2038: 950 gpm

Surplus/Deficit

Surplus/Deficit = Q (avail) – Q (req'd)

Table 3-4

MDD = MDD from Table 2-9
For 2016: 656 gpm

Surplus/Deficit = 2,050 gpm - MDD
For 2016: 2,050 – 656 = 1,394 gpm

Annual Prod. = ADD from Table 2-9
For 2016: 377 af/yr

Surplus/Deficit = 896 ac-ft/yr – ADD
For 2016: 896 – 377 = 519 ac-ft/yr

Operational Storage (Page 3-9)

Reservoir No. 1 Volume per foot = $(\rho)(r)^2 = (\pi)(23.25)^2 = 1{,}698$ ft^2 = 12,704 gal/ft

Reservoir No. 2 Volume per foot = $(\rho)(r)^2 = (\pi)(24)^2 = 1{,}810$ ft^2 = 13,537 gal/ft
Sum = 26,242 gal/ft

Operational Storage is approximately 8.7 feet deep. (26,242 gal/ft)(8.7 ft) = 229,000 gallons.

Table 3-5

ERUs = ERUs from Table 2-9
For 2016: 1,307 ERUs

V_{OS} = 229,000 gallons (calculated above)

$V_{ES} = (Q_{PH} - Q_S)(150)$
Q_{PH} from Table 2-9
Q_S: Source capacity from Table 3-2
For 2016: $V_{ES} = (1{,}180 - 2{,}050)(150) < 0$

V_{SB} = [(2 days)(ADD)(N) – $t_m(Q_S-Q_L)$] *or* (200 gal)(N)
For all years within the planning period, (200 gal)(N) is the larger value.
For 2016: V_{SB} = (200 gal)(1,307) = 261,500 gallons.

V_{FF} = (120 min)(1,500 gpm) = 180,000 gallons.

Total = $V_{OS} + V_{ES} + V_{FF} + V_{SB}$
For 2016: 229,000 + 0 + 180,000 + 261,500 = 670,500 gallons

+/- = 1,000,000 – Total
For 2016: 1,000,000 – 670,500 = 329,500 gallons

Res El = 1208 + (+/-)/(26,242 gal/ft)
For 2016: 1208 + (329,500)/(26,242) = 1220

Lowest Press. = (Res. El – 1155) * 0.433
For 2016: (1220 – 1155) * 0.433 = 28 psi

Table 3-8

All values are determined from Tables, as identified in Reference column.

Worksheet 6-1

Specific Single-Family Residential Connection Criteria

Average Day Demand: 257 gpd/ERU (determined above)

Maximum Day Demand: 720 gpd/ERU (determined above)

Soap Lake Water System Physical Capacity Documentation

Total MDD for the Classification = 2016 ERUs * 720 gpd/ERU (rounded)

Total # Services in the Classification: Number of connections from Table 2-1

2016 ERUs: ERUs from Table 2-9

Physical Capacity as ERUs

Source(s) at 18 hr/d: Same value and rationale as Table 3-3 "Source MDD" above.

Equalizing Storage: Using Equation 6-6, WSDM. Assuming all available storage is ES.
N = $\left(\frac{1}{C}\right)\left[\left(\frac{1{,}440}{MDD}\right)\left(\frac{ES}{150} + Qs - 18\right) - F\right]$

N = $\left(\frac{1}{1.6}\right)\left[\left(\frac{1{,}440}{720}\right)\left(\frac{330{,}000}{150} + 2{,}050 - 18\right) - 225\right]$=5,145 ERU

Standby Storage: Using Equation 6-7, WSDM. Assuming available storage, including Operating Storage, is SB.
N = $\left(\frac{SBT}{(SBi)(td)}\right) = \left(\frac{330{,}000+229{,}000}{(200)}\right)$= 2,795 ERU

Water Rights, Q_i: 2,050 gpm * 1440 / (720 gpd/ERU) = 4,097 ERUs

Water Rights, Q_a: (896 af/yr) * (325,851 gal/af) / 365 / (257 gpd/ERU) = 3,108 ERUs

Water System Physical Capacity is equal to lowest ERU total of all components.

ERUs Available for Growth = Water System Physical Capacity – 1,307 ERUs
ERUs Available for Growth = 2,795 – 1,307 = 1,488 ERU

APPENDIX P

SHORT LIVED ASSETS

USDA RURAL DEVELOPMENT
ESTIMATED SCHEDULE OF SHORT-LIVED ASSETS

Owner:	City of Soap Lake									
System:	Potable Water System									
		2 to 5 year period			6 to 10 year period			11 to 15 year period		
Water System Assets		quantities	unit price	total	quantities	unit price	total	quantities	unit price	total
Items 1	Distribution System Pipes	0	$ -	$ -	0	$ -	$ -	250	$ 300	$ 75,000
Items 2	Misc. Tools	10	$ 100	$ 1,000	0	$ -	$ -	0	$ -	$ -
Items 3	Radios	4	$ 80	$ 320	0	$ -	$ -	0	$ -	$ -
Items 4	Office Equipment	1	$ 5,000	$ 5,000	0	$ -	$ -	0	$ -	$ -
Items 5	Vehicles	0	$ -	$ -	1	$ 30,000	$ 30,000	0	$ -	$ -
Items 6	Booster Station Pumps	0	$ -	$ -	2	$ 3,500	$ 7,000	2	$ 5,000	$ 10,000
Items 7	Telemetry Software	0	$ -	$ -	1	$ 10,000	$ 10,000			$ -
Items 8	Water Meters	0	$ -	$ -	0	$ -	$ -	10	$ 150	$ 1,500
Items 9	Fire Hydrants	0	$ -	$ -	0	$ -	$ -	5	$ 6,000	$ 30,000
Items 10	Cross Connection Control Devices	0	$ -	$ -	0	$ -	$ -	5	$ 350	$ 1,750
		subtotal		$ 6,320	subtotal		$ 47,000	subtotal		$ 118,250
User Note: This schedule is used as an estimating tool only. It is of the simplist format, and does not include inflation, depreciation, or other factors.										
	The estimated item costs should be based on current replacement costs (material, sales tax, engineer's $, contractor's $, but not typical labor of owner).									