

**BEFORE THE WASHINGTON
UTILITIES & TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

Complainant,

v.

CASCADIA WATER, LLC

Respondent.

DOCKET UW-240151

**CROSS-EXAMINATION EXHIBIT OF MATTHEW J. ROWELL AND
CULLEY J. LEHMAN
ON BEHALF OF THE
WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL
PUBLIC COUNSEL UNIT**

EXHIBIT MJR-CJL-__X

Cascadia Discovery Response to WCAW DR No. 16, Attachment 1
(W&B 2019 Sanitary Survey)

February 6, 2025



State of Washington
DEPARTMENT OF HEALTH

NORTHWEST DRINKING WATER REGIONAL OPERATIONS
20425 72nd Avenue South, Suite 310 • Kent Washington 98032-2388

October 9, 2019

CULLEY LEHMAN
CASCADIA WATER LLC
W&B WATERWORKS 1
PO BOX 549
FREELAND, WA 98249

SUBJECT: W&B Waterworks 1 ID# 466703
Island County
2019 Sanitary Survey
Follow-Up to Significant Deficiencies Required

Dear Culley Lehman:

Thank you for your time and help in completing a sanitary survey this year. This report summarizes the results of the survey. Please pay special attention to the issue listed as a Significant Deficiency or Finding below. **You must correct any of these found during this survey within 45 days of this letter – November 23, 2019.**

However, if you need more time to complete the work, please send me an action plan and schedule and I can extend the due date. Please contact me as soon as possible.

When improvements are made, email verification of completion, including photographs and supporting narrative to Brian Boye at brian.boye@doh.wa.gov or mail to the address above in the letterhead. Include your water system name, ID number, date of correction and label any photographs to help me track the changes.

Ensuring your water system completes each corrective action is a high priority for the Office of Drinking Water. Failure to complete each of these corrections within the designated time may result in enforcement action.

Significant Deficiencies – *those with a known serious risk to public health.*

- **Replace the old conical chimney type of vent on each reservoir with a type of vent that provides better sanitary protection, security and durability.**

Significant Findings – *those that need your immediate attention.*

- None



W&B Waterworks 1 466703
October 9, 2019
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Referrals - *deficiencies that will be addressed by program staff not the survey program.*

- None

Observations - *to notify you of other requirements of the drinking water regulations.*

- Replace the existing screen with a 24-mesh non-corrodible screen over the end of the overflow line on the old reservoir.
- Establish legal authority to implement a cross-connection control program (WAC 246-290-490) and employ a certified cross-connection control specialist (CCS) to develop and implement your CCCP.
- Restore the access to pressure reducing valves and evaluate their operation and take photographs and provide them to DOH.

Recommendations – *to improve your technical, managerial or financial capacity.*

- Replace the extension cord power line to the small 1HP booster pump with permanent wiring.
- Consider replacing well enclosures with a more durable structures to provide better protection from elements, rodents and vandalism.
- Replace an existing wire and pulley water level gauge on the new reservoir with a modern conduit type water level gauge.

By completing this sanitary survey, your water system met the requirements in WAC 246-290-416. Your next sanitary survey will be in **2024**. Please note that you should not interpret satisfying the requirements of a sanitary survey as meeting other applicable local, state or federal statutes, ordinances or regulations.

Thank you for your cooperation in the successful completion of the sanitary survey. If you have any questions or need additional information please call me at (253) 395-6778 or email to brian.boyce@doh.wa.gov.

Sincerely,



Brian Boye, Office of Drinking Water
Washington State Dept. of Health

Enclosures

cc: Denis Mehinagic, R.E., DOH
Aneta Hupfauer, PhD, ICPH



**Office of Drinking Water
 Third Party Sanitary Survey Form (Checklist)**

System Name:	W&B Waterworks 1	Survey Date:	9/19/19
PWS ID#:	46670	County:	Island
		System Type:	Community
Persons Attending Inspection:	Culley Lehman – Manager, Cascadia Water, LLC,		
	Clea Barenburg – Island County Public Health		
Inspector's Name:	Aneta Hupfauer – Island County Public Health		

PART A: SUMMARY OF SIGNIFICANT DEFICIENCIES AND SIGNIFICANT FINDINGS

The following is a completed sanitary survey checklist and summary of inspection findings. This completed sanitary survey checklist is the basis for the cover letter you receive from your local health jurisdiction or from the WA Dept. of Health (DOH). The cover letter documents any significant deficiencies or significant findings that must be corrected. The cover letter may also summarize observations concerning compliance with certain rules, and offer recommendations you can use to make improvements to the operation and management of your water system. Contact your DOH regional office with any questions you have about this survey.

Bolded and highlighted checklist items represent significant deficiencies that, if left uncorrected, create a significant public health risk. **Highlighted** checklist items represent significant findings that, if left uncorrected, create a significant risk to the physical safety, security, or reliability of the public drinking water supply. You will be required to take some sort of corrective action for each checklist answer that is **bolded and highlighted**, or **highlighted**.

Significant deficiencies and significant findings identified during this sanitary survey:

Old conical type of vent on each reservoir should be replaced with a type of vent that provides better sanitary protection, security and durability.

Significant deficiencies or significant findings identified in the previous sanitary survey that remain unaddressed:

Observations and recommendations identified during this survey

Replace an existing screen with a 24-mesh noncorrodible screen over the end of the overflow line on the old reservoir. You can install insect screen on the inside of the 24-mesh screen for added protection.

Replace the extension cord power line to the small 1HP booster pump with permanent wiring.

Consider replacing well enclosures with a more durable structures to provide better protection from elements, rodents and vandalism.

Establish the legal authority to implement an effective cross-connection control program (WAC 246-290-490) and employ a certified cross-connection control specialist (CCS) to develop and implement your cross-connection control (CCC) program.

Replace an existing wire and pulley water level gauge on the new reservoir with a modern conduit type water level gauge.

Restore the access to pressure reducing valves and evaluate their operation. Take photographs and provide them to DOH.

PART B: GENERAL WATER SYSTEM DESCRIPTION

Provide a general description of the water system including changes, updates, connections, source(s), storage, number of pressure zones, treatment, and control system(s) and alarm(s). Make corrections and updates to the purveyor's water facilities inventory form (WFI).

- **Community water system approved for 471 connections, with 456 connections currently reported as active;**
- **System consists of four wells (SO1-SO4) that form a well field (SO5), two water reservoirs, one booster pump serving three connections and a gravity distribution system;**
- **All wells are located in an area classified as "medium risk" with regard to seawater intrusion;**
- **Service meters are installed on all connections;**

PART C: OPERATIONS and MANAGEMENT

1. Was the system operator, who is most knowledgeable about the system's day-to-day operations, present for the survey?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
2. Were water system records available for your review?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
3. Has the purveyor developed and implemented either a Small Water System Management Program or a Water System Plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
3a. If no, are the following planning documents complete and up to date:	
Service Area and Facility Map	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
Cross-Connection Control Program	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
Source Water Protection Program	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
Emergency Response Plan	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
Operation and Maintenance Program	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
Coliform Monitoring Plan	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
Component Inventory and Assessment	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
Asset Replacement and Other System Improvements	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
Budget	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partial
4. Does the purveyor plan to make capital improvements in the next 1-3 years? If yes, describe below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5. Is there a backup operator available if the regular one is not available? If yes, provide contact info below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
6. Were the water system's current and future water quality monitoring requirements reviewed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
7. Was water quality sample results and trends reviewed with the purveyor?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
8. Does the system have emergency power?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
9. Does the system experience frequent power outages (>2 per year)? If yes, explain below	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
10. Does the system experience frequent water outages (>2 per year)? If yes, explain below	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
11. Does there appear to be adequate reliability provided for this system? If no, explain below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Describe the general level of planning and management documents developed by this water system and any recommendations for additional development, including updates, system management practices and processes, water rates, etc.

Item 4: The purveyor is working on Water System Plan update that will include upgrades to the current water system infrastructure, such as building new water reservoir, centralized pump station etc.

Item 5: System is owned and operated by Cascadia Water, LLC, with several certified operators on staff.

Item 8: System is equipped in a small one-phase portable generator that can operate a pump in SO1 in case of power outage.

PART D: SOURCES		(This page may be reproduced to add more sources)	
12. Did you observe a source connected to the water system that is NOT listed on the WFI and in active use?		<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
12a. If so, has the source received written DOH approval? (confirm with DOH post-survey)		<input type="checkbox"/> Yes	<input type="checkbox"/> No
13. DOH Source Number:		SO #1	SO #2
14. Source Name from the WFI: (For example, North Well; Well #2; ABC334.)		AGA932 Well 1	AGA931 Well 2
15. Dept of Ecology Well Tag Number: (Use Well tag ID#, None or Not readable)		AGA932	AGA931
16. Source Use:	P - Permanent S - Seasonal E - Emergency	P	S
17. If this is an emergency source, should it be disconnected?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
18. Is the source a potential GWI source?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
WELL (if there is no well, skip to question 34)			
19. Is the Sanitary Control Area (SCA) free of unmitigated potential sources of contamination?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
20. Is the wellhead located in a pit or vault?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
21. Is the wellhead at risk of submergence?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
22. Is the well cap sealed, watertight, and free of unprotected openings?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
23. Is the well casing free of any unprotected openings?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
24. Is there a vent on the well?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
24a. If yes, is the vent protected? (24 non-corrodible mesh screen or slots)		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
25. Are conduits and junction boxes sealed to prevent contaminant entry?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
26. Is the well unreasonably at risk to physical damage?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
27. Is there a raw water source sample tap?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
28. Is the source metered?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
28a. If yes, is the source meter read at least monthly?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
28b. If yes, are the water production records maintained?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
29. Is the wellhouse properly constructed and maintained? If no, explain below		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
30. Is there any evidence of infestation by rodents or other pests?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
31. Is the wellhouse and well adequately protected from unauthorized access and tampering?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
32. Is there a pump control valve or vacuum relief valve without an air gap on the valve discharge pipe?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
33. Are the source pump and pump controls operational and adequate to prevent chronic water outages or premature pump failure? If no explain below		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
SPRING (if there is no spring, skip to question 41)			
34. Is the springbox (structure, hatch, and overflow) constructed to prevent the entry of contaminants or direct surface drainage? If yes, describe below.		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
35. Is there a raw water source sample tap?		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
36. Is the source metered?		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
36a. If yes, is the source meter read at least monthly?		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
36b. If yes, are the water production records maintained?		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
37. Is the springhouse properly constructed and maintained? If no, explain below		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
38. Is there any evidence of infestation by rodents or other pests?		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
39. Is the springhouse and spring box adequately protected from unauthorized access?		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
40. Is the Sanitary Control Area (SCA) free of unmitigated potential sources of contamination?		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Describe and evaluate the source facilities including maintenance, operations, sanitary and security observations and any major change made to the source such as pump replacement, deepening or reconstruction:			

- SO1 is a 6-inch diameter well drilled in 1975 to the depth of 310 feet;
- SO1 is equipped in a screened vent, a water meter and a sample tap;
- SO1 is equipped in 5 hp submersible pump, controlled by a float in the water system reservoir;
- SO2 is a 6-inch diameter well drilled in 1977 to the depth of 301 feet;
- SO2 is equipped in a screened vent, a water meter and a sample tap;
- SO2 is equipped in 7.5 hp submersible pump, controlled by a float in the water system reservoir;

PART D: SOURCES cont.

(This page may be reproduced to add more sources)

12. Did you observe a source connected to the water system that is NOT listed on the WFI and in active use?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
12a. If so, has the source received written DOH approval? (confirm with DOH post-survey)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
13. DOH Source Number:	SO #3	SO #4
14. Source Name from the WFI: (For example, North Well; Well #2; ABC334.)	AGA930 Well 3	AGA929 Well 4
15. Dept of Ecology Well Tag Number: (Use Well tag ID#, None or Not readable)	AGA930	AGA929
16. Source Use:	P - Permanent S - Seasonal E - Emergency	P S
17. If this is an emergency source, should it be disconnected?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	
18. Is the source a potential GWI source?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
WELL (if there is no well, skip to question 34)		
19. Is the Sanitary Control Area (SCA) free of unmitigated potential sources of contamination?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
20. Is the wellhead located in a pit or vault?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
21. Is the wellhead at risk of submergence?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
22. Is the well cap sealed, watertight, and free of unprotected openings?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
23. Is the well casing free of any unprotected openings?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
24. Is there a vent on the well?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
24a. If yes, is the vent protected? (24 non-corrodible mesh screen or slots)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
25. Are conduits and junction boxes sealed to prevent contaminant entry?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
26. Is the well unreasonably at risk to physical damage?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
27. Is there a raw water source sample tap?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
28. Is the source metered?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
28a. If yes, is the source meter read at least monthly?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
28b. If yes, are the water production records maintained?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
29. Is the wellhouse properly constructed and maintained? If no, explain below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
30. Is there any evidence of infestation by rodents or other pests?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
31. Is the wellhouse and well adequately protected from unauthorized access and tampering?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
32. Is there a pump control valve or vacuum relief valve without an air gap on the valve discharge pipe?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	
33. Are the source pump and pump controls operational and adequate to prevent chronic water outages or premature pump failure? If no explain below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
SPRING (if there is no spring, skip to question 41)		
34. Is the springbox (structure, hatch, and overflow) constructed to prevent the entry of contaminants or direct surface drainage? If yes, describe below.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
35. Is there a raw water source sample tap?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
36. Is the source metered?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
36a. If yes, is the source meter read at least monthly?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
36b. If yes, are the water production records maintained?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
37. Is the springhouse properly constructed and maintained? If no, explain below	<input type="checkbox"/> Yes <input type="checkbox"/> No	

38. Is there any evidence of infestation by rodents or other pests?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
39. Is the springhouse and spring box adequately protected from unauthorized access?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
40. Is the Sanitary Control Area (SCA) free of unmitigated potential sources of contamination?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Describe and evaluate the source facilities including maintenance, operations, sanitary and security observations and any major change made to the source such as pump replacement, deepening or reconstruction: <ul style="list-style-type: none"> • SO3 is a 6-inch diameter well drilled in 1984 to the depth of 285 feet; • SO3 is equipped in a screened vent, a water meter and a sample tap; • SO3 is equipped in 7.5 hp submersible pump, controlled by a float in the water system reservoir; • SO4 is a 8-inch diameter well drilled in 1993 to the depth of 320 feet; • SO4 is equipped in a screened vent, a water meter and a sample tap; • SO4 is equipped in 15 hp submersible pump, controlled by a float in the water system reservoir; • SO5 is a well field consisting of SO1, SO2, SO3 and SO4; • SO5 is equipped in a sample tap, but no well field water meter; <p>Item 16: SO1 and SO3 are permanent sources, while SO2 and SO4 mainly operate during a summer season, when water demand is higher.</p> <p>Item 28: Source meters are read weekly and water production records are maintained.</p> <p>Item 29: Each source is protected by an individual well cover. Well covers could use a little upgrade.</p>		

PART E: DISINFECTION		<i>(if no disinfection, answer question 41 and skip rest of Part E)</i>
41. Does the operator batch chlorinate the source, the distribution system, or the reservoir just before collecting routine or repeat coliform samples? If yes, provide details below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
42. Did you observe disinfection treatment connected to the water system in active use that is NOT listed on the WFI? If yes, explain below	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
43. Is ultraviolet light (UV) used for disinfecting a drinking water source? If no, skip to question 46.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
44. Is the UV unit sized for the maximum flow rate, and is there a UV transmittance sensor controlling a solenoid valve or other device to shut off supply if the UV light fails?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
45. Describe the UV equipment including: UV manufacturer and model number: _____ Rated capacity (gpm): _____ Cleaning frequency of quartz sleeve : _____ Mo/Yr UV light last replaced: _____		
46. Is there continuous chlorination? If no, skip to Part F	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
46a. If yes, please measure the free chlorine residual from a representative location in the distribution system.		
Location description:	Free chlorine residual:	
47. Is there a water supply line plumbed directly into a chlorine solution tank without a reduced pressure backflow assembly on the supply line?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
48. Is there a post-treatment sample tap?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
49. Does the chlorine compound meet NSF/ANSI Standard 60? - household bleach is exempted	<input type="checkbox"/> Yes <input type="checkbox"/> No	
50. Is a backup chemical feed pump or spare parts for the operating chemical feed pump available onsite?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
51. According to the operator, is there a DOH requirement for Chlorine Contact Time? If no, skip to Part F	<input type="checkbox"/> Yes <input type="checkbox"/> No	
51a. If yes, measure and record the free chlorine residual at the CT6 compliance location: Describe compliance sampling location below – location must be prior to the first service connection downstream of chlorine addition.		
52. Is the chlorine pump and pump controls constructed and maintained to provide uninterrupted, reliable CT6 treatment? If no, describe below.	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Describe the chlorination facilities including purpose for chlorination, concerns with maintenance or operations, purveyor's record keeping of monthly reports, and sanitary and security observations: System is not chlorinated and the coliform history is excellent, with last positive total coliform hi in 2012.		

PART F: TREATMENT	
53. Is there any treatment other than chlorination or UV in use? If no, skip Part F.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

54. Did you observe a treatment process connected to the water system in active use that is NOT listed on the WFI? If yes, describe below.	<input type="checkbox"/> Yes <input type="checkbox"/> No
55. Is there a water supply line plumbed directly into a chemical solution tank (e.g., fluoride saturator) without a reduced pressure backflow assembly on the supply line?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
56. Are primary contaminant treatment facilities (e.g., nitrate, corrosion control, arsenic) operating properly? If no, describe below	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
57. Do the water treatment chemicals meet NSF/ANSI Standard 60?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
58. Is there a post-treatment sample tap?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Describe the treatment facilities including purpose for treatment, concerns with maintenance or operations, purveyor's record keeping of monthly reports, and sanitary and security observations:	

PART G: BOOSTER PUMPING FACILITIES and CONTROLS	
59. Are there any booster pumps in use? If no, skip Part G	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
60. Are the booster pumps in good working condition? If no, explain below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
61. Are pump and pump controls operational and adequate to prevent chronic water outages or premature pump failure? If no explain below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
62. If there is a booster pump house/pump station, is it secure against unauthorized entry? If no, explain below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
63. Is the booster pump house/pump station properly constructed and maintained? If no, explain below	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Describe and evaluate the pump facilities and controls including maintenance, operations, sanitary and security observations:	

PART H: PRESSURE TANKS	
64. Are there any pressure tanks in use? If no, skip Part H	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
65. For systems using an air compressor, is the compressor an oil-free type or does it use food-grade oil?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
66. Are valves present to isolate pressure tanks for maintenance or repair?	<input type="checkbox"/> Yes <input type="checkbox"/> No
67. Is there an ASME pressure relief valve installed between each pressure tank and any shutoff valve? (see DOH publication #331-429)	<input type="checkbox"/> Yes <input type="checkbox"/> No
68. Are the pressure tanks in good working condition? If no, explain below	<input type="checkbox"/> Yes <input type="checkbox"/> No
Describe and evaluate the pressure tanks including maintenance, operational, sanitary and security observations:	

PART I: FINISHED WATER STORAGE			
69. Is there a finished water storage tank in use? If no, skip Part I	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
70. If unable to physically inspect the storage tank hatch, vent, roof, or overflow outlet, select the method you discussed with the purveyor to document their condition:			
a <input checked="" type="checkbox"/> Reviewed and discussed maintenance records and recent photos			
b <input type="checkbox"/> Photos will be taken and mailed by purveyor; additional follow-up required by DOH			
c <input type="checkbox"/> Purveyor unable or unwilling to document; additional follow-up required by DOH			
	Insert Tank Names	New Tank (north)	Old Tank (south)
71. Is the storage tank protected from unauthorized entry or vandalism? If no, explain below		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk
72. Is the reservoir roof free of any unprotected openings? If no, explain below		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk
73. Is the access hatch constructed and sealed to prevent the entry of contaminants? If no, explain below		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk
74. If able to open hatch, is the stored water free of visible contaminants? If no, explain below		<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> unk	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> unk
75. Is there a dedicated air vent on the storage tank?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk

75a. If yes, is the air vent constructed to prevent the entry of contaminants? If no, explain below	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk
76. Is the overflow line constructed to prevent contaminants from entering the tank? If no, explain below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk
77. Does the overflow line discharge near ground level?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk
78. Is the overflow line discharge area protected from potential erosion?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk
79. Does the overflow line discharge into a storm drain or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk
79a. If yes, is there an air gap at the discharge of the overflow OR does the overflow drop at least 34 vertical feet measured from the overflow connection to the reservoir down to the receiving water body?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk
80. Does the overflow line discharge directly into a sanitary sewer without an air gap?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk
81. Can the reservoir be isolated from the rest of the water system and be drained through a dedicated drain line?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> unk
82. When was the tank inspected last? Explain below if necessary	2018	2019
83. What is the tank cleaning frequency? Explain below if necessary	Every two years	Every two years
84. Does the tank size, operation, and internal piping configuration appear to provide adequate water turnover (i.e. separate inlet/outlet, baffling or mixing to reduce stagnant water)? If no, explain below	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> unk
85. Does the tank show signs of excessive leakage, significant structural cracking, or an advanced concrete spalling?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Describe and evaluate the finished water storage facilities including volume, operational drawdown, configuration of the inlet/outlet piping, any concerns about operations and maintenance, and sanitary and security observations:

- **Two 50,000 gallons above-ground, concrete, octagonal reservoirs;**
- **Reservoirs are filled from the bottom;**
- **Separate floats control pumps in each source;**

Item 70: The reservoirs have not been inspected during the survey. The purveyor provided pictures from the top of the reservoirs and findings were discussed.

Item 75: A vent on each reservoir is an old conical type vent. This type of vent should be replaced with a newer design vent providing an adequate protection of stored water.

Item 76: Screen on the overflow of old reservoir needs to be replaced with a 24 non-corrodible mesh screen or slots to prevent insects and rodents accessing the tank;

PART J: DISTRIBUTION SYSTEM

86. Is a complete, up to date and accurate map of the distribution system maintained?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
87. Does the system provide adequate pressure throughout the distribution system? If no, explain below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
88. Are proper procedures followed for disinfection of new construction or repairs?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
89. Are there any air relief or vacuum relief valves subject to submersion?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
90. Does the purveyor seasonally or annually flush the distribution system? If yes, describe below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
91. Does the purveyor exercise its distribution system valves? If yes, describe below	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Describe and evaluate the distribution system including maintenance, operational, sanitary and security observations:

- **Gravity distribution system with only 2 active connections served by a pressure zone;**
- **Three pressure reducing valves reduce pressure to lower elevation connections;**
- **The water mains are 8-inch PVC and 6-inch PVC throughout with a few 4-inch laterals.**
- **Fire flow is provided to 34 fire hydrants;**
- **Water system is fully metered and service meters are read every two months;**

Item 90 and 91: System is flushed whenever deemed necessary but at the minimum once every year and its distribution valves are exercised at the time of flushing;

PART K: CROSS CONNECTION CONTROL (CCC)

92. Does the water system serve a single connection? If yes, refer the purveyor to the Uniform Plumbing Code and skip Part K	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
93. Is the water system known to serve one or more high health hazard premises, such as those listed in Table 9 in WAC 246-290-490? If yes, describe the premise(s) below.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
94. Has the purveyor established the legal authority to implement a CCC program (i.e., formally adopted an ordinance, resolution, by-laws, or other document defining the purveyor's CCC program requirements, and empowering the purveyor to enforce them)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
95. Has the purveyor designated a CCC Specialist (CCS) to be in responsible charge of the CCC program?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
95a. If yes, has the CCS conducted a hazard evaluation to identify high health hazard premises?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
95b. If yes, has the purveyor completed installation of a backflow prevention assembly on the service line to each identified high health hazard premise?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
96. Has each testable backflow prevention assembly installed for premises isolation been tested by a DOH certified backflow assembly tester (BAT) within the past 12 months?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
97. Did you observe the end of a hose connected to the potable water system submerged in a pool, hot tub, watering trough, or other non-potable body of water observed during the survey?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
98. This question only applies to a facility operating a sewage dump station: Is there a sewage dump station without a reduced pressure backflow assembly on the water supply at the dump station?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
Additional cross connection control program comments:	

PART L: OPERATOR

99. Is the operator of the water system certified?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
100. Describe the operator's certification level (if certified), duration of employment with this water system, relationship with the system (e.g., contract operator, SMA, direct hire employee, volunteer, temporary, or owner), and duties and responsibilities.	
101. Does the operator conduct self-inspections of the water system? If yes, describe frequency and scope of these self-inspections below.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
102. <i>Is the operator performing measurements and calibration of water treatment monitoring equipment consistent with manufacturer recommendations? If no, describe below.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
103. <i>Is the operator using proper inputs to treatment plant operations reports, such as correct volume, peak flow rate, time, and making the proper calculations? If no, describe below.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA
104. <i>Does the operator take compliance water quality samples at the proper location? If no, describe below.</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Additional operator comments: System is owned and managed by Cascadia Water, LLC with Adam Lehman as a certified operator of record.	

PART M: FIELD NOTES AND OTHER

Descriptions of any water quality tests, physical measurements, or simple repairs completed during the inspection:
WFI has been updated (no change) and emailed to DOH NW Drinking Water Program.
Location of SO1, SO2, SO3 and SO4 has been GPSed and GPS coordinates are attached to this survey.

PART N: SUPPLEMENTAL NOTES AND SAFETY CONCERNS

Supplemental comments from other parts of the checklist, and documentation of field safety concerns:

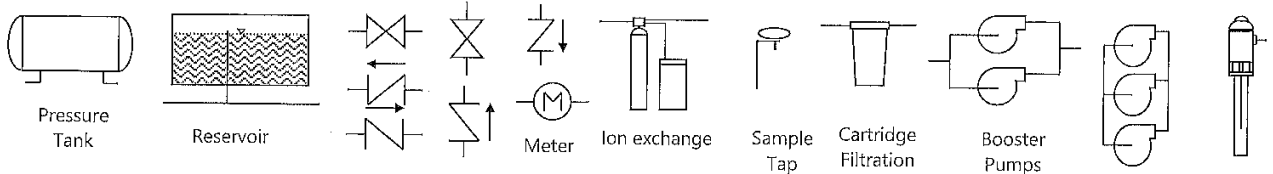
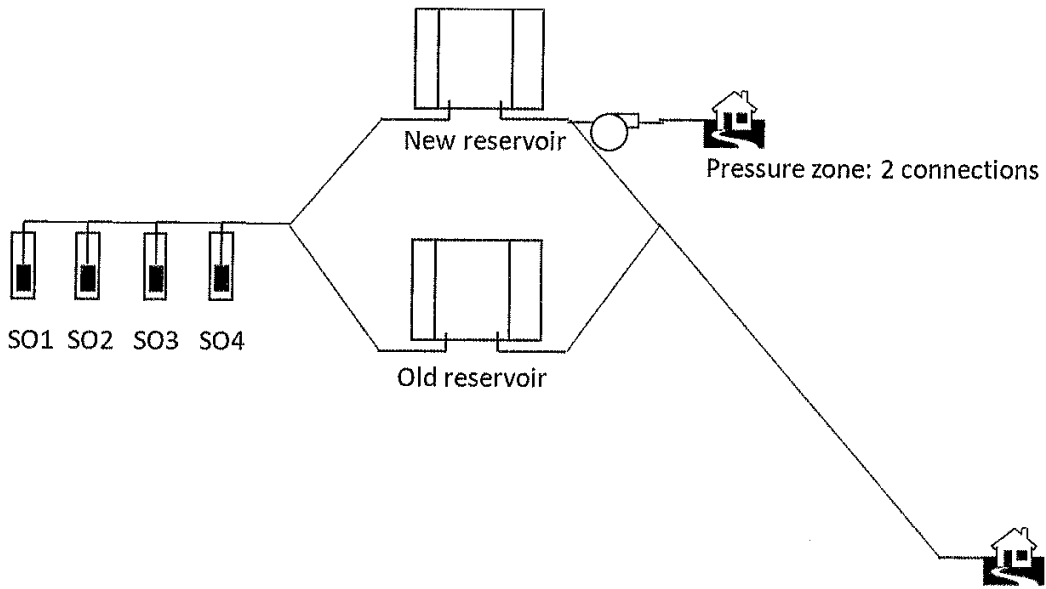
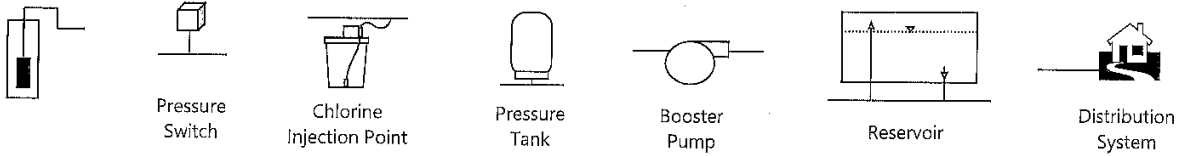
If you need this publication in an alternative format, call 800.525.0127 (TDD/TTY call 711). This and other publications are available at www.doh.wa.gov/drinkingwater.

PART O: WATER SYSTEM FACILITIES FIELD SCHEMATIC

Use the space below to sketch a simple schematic of the water system facilities. You may use the templates shown below to help build your schematic. The sketch should show location of sources, treatment, pressure tanks, booster pumps, storage tanks, and a simple representation of the distribution system. Include direction of flow (directional arrows) and brief description of how the controls function

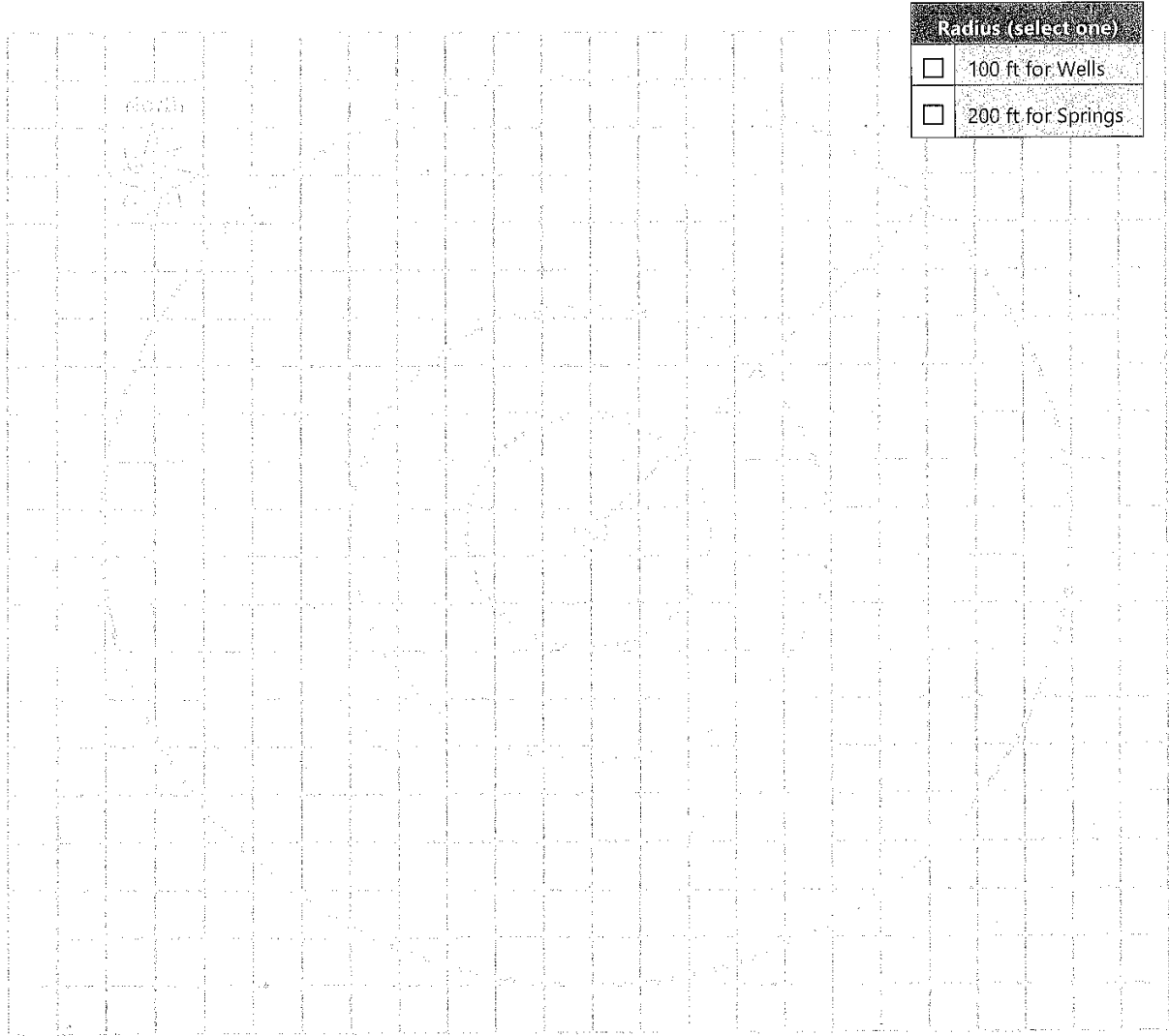
Source Name:		Source Number:	SO1, SO2, SO3 and SO4
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Example templates you can use to build your schematic:

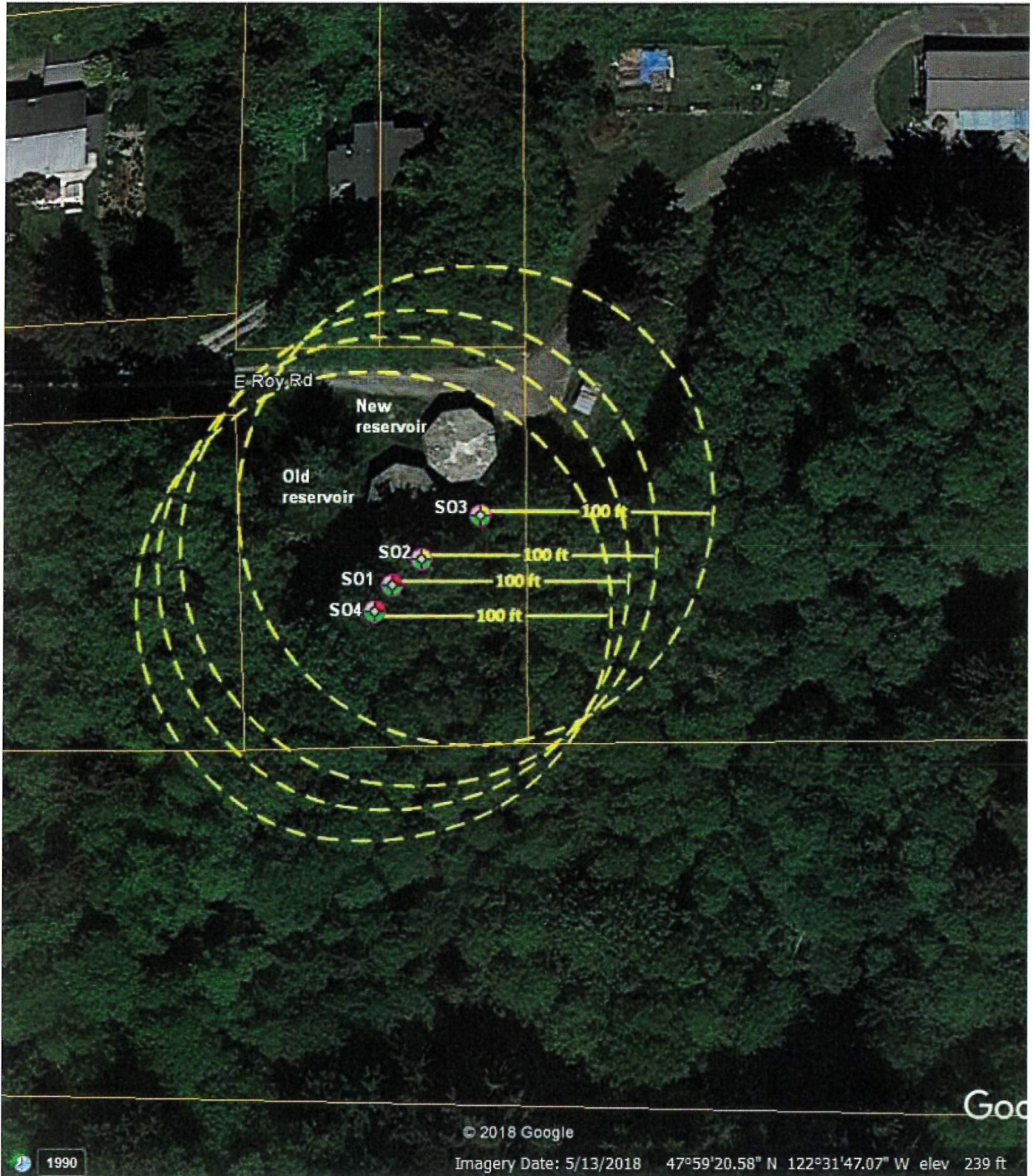


PART P: INVENTORY OF POTENTIAL SOURCES OF CONTAMINANTS WITHIN THE SANITARY CONTROL AREA
 Use the graph below to locate any potential biological and chemical contaminants found within the source's Sanitary Control Area (SCA). The SCA is the protective area within 100 feet of wells or 200 feet of springs.

Source Name: _____ Source Number: _____



Description of Features Shown on the SCA Schematic					
A.		C.		E.	
B.		D.		F.	
Sources of Contamination	Feet	Sources of Contamination	Feet	Sources of Contamination	Feet
Abandoned water wells		Dumpsters		Pesticide storage	
Animal burial		Fuel tanks (above or below ground)		Roads and parking lots	
Biological contaminants		Graveyards		Sewer lines, gravity or pressure	
Buildings		Hazardous waste disposal site		Storm water catch basins	
Chemical contaminants		Hazardous waste facility		Surface water	
Drainfields and septic tanks		Irrigation canal		Wastewater spray irrigation	
Drug lab		Landfill, dump, disposal area		Other:	
Dry wells		Pesticide application			





SO3



SO3 well tag



SO3 sample tap (and side vent)



SO3 side vent



SO3 water meter and sample tap



SO3 vent

SO3 cover



SO2



SO2 cover



SO2 side vent



SO2 well tag



SO2 vent



SO2 water meter



SO2 sample tap



SO1 wellhead and enclosure



SO1 water meter



SO1 sample tap



SO1 well tag



SO1 vent



SO4 wellhead and cover



SO4 water meter



SO4 sample tap



SO4 well tag



Old reservoir



Old reservoir water level gauge



Old reservoir overflow



Well pumps control panel



Well pumps control panel



New reservoir overflow



New reservoir water level gauge remnants



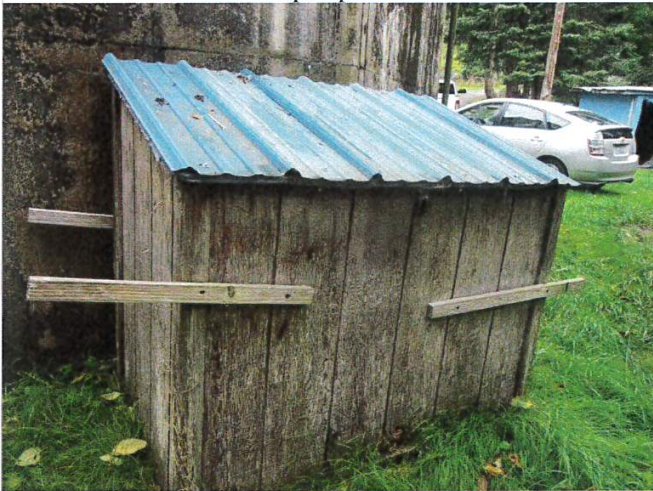
Booster pump for 2 connections



SO5 (well field) sample tap



Booster pump enclosure



New Reservoir Lid



New reservoir hatch seal



New reservoir vent screen



New reservoir vent



Old reservoir hatch seal



Old reservoir vent



Old reservoir wiring



Old reservoir top





Drinking Water Tech Tips:

Sanitary Protection of Reservoirs: Vents

331-250 • Updated July 2016

Stored Water Sanitary Protection: Reservoirs must have adequate sanitary protection to prevent the water supply from being contaminated. Drinking water regulations require reservoirs to prevent entry by birds, animals, insects, excessive dust and other potential sources of contamination. You must correct unprotected reservoir openings as soon as possible.

Finished water storage facilities must have dedicated screened vents designed to allow air in and out to balance internal pressures when water levels change (WAC 246-290-235). Overflows are not vents.

Vents should be constructed and maintained to avoid plugging or air restriction from ice build-up. Use reasonable security measures to protect the reservoir and stored water from possible damage and compromise by unauthorized persons (WAC 246-290-415(8)).

General Principles

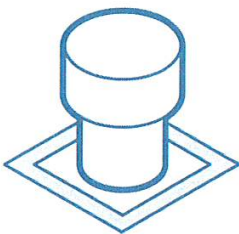
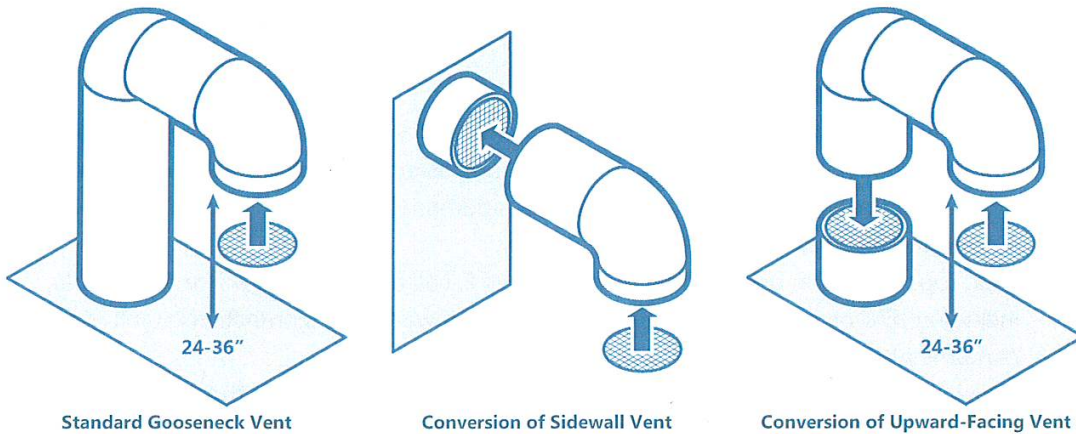
- Water storage tanks must be free of sanitary defects. Sanitary defects are unnecessary risks to public health that can lead to illness, unsatisfactory coliform samples, more frequent sanitary surveys, boil water notices, additional sampling and/or treatment requirements, public notice, and legal liability.
- Tank tops may have debris that are a source of *E. coli* and pathogens like *Salmonella*, including bird droppings. You should consider any water that contacts the tank roof contaminated.
- You will need to repair or replace older, improperly designed vents that don't adequately protect stored water with secure and durable vents.
- Even the best design will fail if it isn't sealed and anchored to the tank to keep surface water from seeping into the interior. Approved sealers and epoxies work well if you use proper techniques.
- All systems must have an active Operations and Maintenance Program to document routine self-inspections, the results, and follow-up work. For guidance on routine preventive maintenance, see *Preventive maintenance program: Guide for small public water systems using groundwater* (331-351)*. Routine inspections detect damage from corrosion, vandals, severe weather, animal activity, and so on.
- Some old storage tanks may be at the end of their useful lives. Start planning for the replacement!

Examples of Good Vent Designs

Vents must have screens to keep insects and animals out of the reservoir. We recommend using durable 24-mesh noncorrodible screen backed with 4-mesh screen. Further, vent openings must face downward or have shielding to minimize the entrance of insects, surface splatter, rainwater, and excessive dust. Modern vent designs protect against icing, vacuum conditions, and tampering. Vent size must be adequate to relieve vacuum during peak-flow conditions. Consult with an engineer when retrofitting vents on larger steel reservoirs to avoid structural damage caused by inadequate vent capacity, especially if vents may experience ice buildup.

Gooseneck-Style Vents

Vents must be sealed and secured to the roof to keep out contaminated surface water and to deter vandalism (typical for all vent designs).



Mushroom-Style Vents

These vents, made of durable noncorrodible steel, have an internal downward or vertical screen with hood shield; they are secured or sealed to the reservoir roof to keep out contaminants.

Examples of Poor Vent Designs

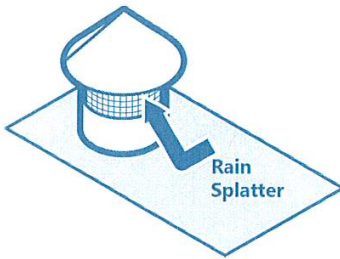
Many existing reservoir vents are deteriorating or poorly designed and require upgrades to protect stored water adequately. Replace poorly designed, damaged or deteriorated vents with vents made of durable material and adequate security to keep contaminants out.



Sidewall Vents

A screened opening on the side of a tank provides little or no protection from rain, tank run-off, or windblown contaminants.

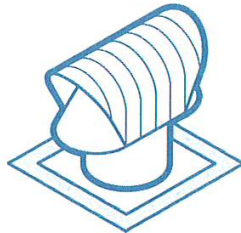
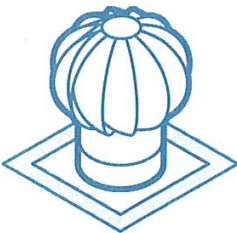
Install a downward facing extension or hood, and screen the downward-facing open end.



Chimney Vents

The screened area is not adequately hooded. The screen must be high enough off the roof to prevent rain splatter from entering the vent.

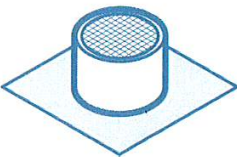
Thin galvanized steel construction is prone to corrosion or structural failure. Check the strength of the connection and the integrity of the seal between vent and reservoir roof.



Ventilators

You cannot retrofit these vents to eliminate the potential for contaminants to enter.

These vents weren't designed for use on finished water storage tanks. **You must replace them.**



Upward Facing Vents

A screened upward-facing opening provides no protection from contaminants. **You must replace an upward-facing vent. We recommend installing a downward-facing vent in its place.**

Inspect your storage tank vents at least once per year. You must correct corroded, broken, or missing screens and other unprotected openings as soon as possible.

Make reservoir vent inspection a routine activity. Don't wait until the lab reports contamination to perform an inspection.

For more information

Our publications are online at <http://www.doh.wa.gov/drinkingwater>.

Contact our nearest regional office from 8 a.m. to 5 p.m. Monday through Friday. If you have an after-hours emergency, call (877) 481-4901.

Eastern Region, Spokane Valley (509) 329-2100 Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, and Yakima counties.

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