



STATE OF WASHINGTON
DEPARTMENT OF HEALTH
 SOUTHWEST DRINKING WATER OPERATIONS
 P.O. Box 47823 Olympia, Washington 98504-7823
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SANITARY SURVEY REPORT

Sanitary surveys are the Office of Drinking Water’s (ODW) way to inspect public water systems through a field visit. We are also able to offer technical assistance to help improve system operations and ensure public health is protected.

This report documents the findings for the following water system.

December 19, 2024 Julie Rhey-Baumann Clearwood 21603 North Clearlake Boulevard Southeast Yelm, Washington 98597	Clearwood ID #13615U	
	County:	Thurston
	System Type:	Community
	Operating Permit Color:	Green
	Surveyor:	Aasya Abdennour
	Water System Attendees:	Julie Rhey-Baumann Matthew Whitten Racheal Paige Sean Burns
	Inspection Date:	November 18, 2024

Significant Deficiencies and Findings are assigned a due date. If you are not able to complete the work by the assigned date, you **MUST** submit a Corrective Action Plan describing how and when you will complete the work. Failure to respond by the date below will result in further compliance actions in accordance with WAC 246-290-050.

As you correct the items, send me documentation that demonstrates the items have been completed as directed. Include the system name, ID number, item #, and the date the deficiencies were corrected. You can send them to me by e-mail at aasya.abdennour@doh.wa.gov or by mail at PO Box 47823, Olympia, Washington 98504-7823.

SIGNIFICANT DEFICIENCIES*

1. No significant deficiencies were observed.

SIGNIFICANT FINDINGS**

2. No significant findings were observed.

OBSERVATIONS

3. No observations were noted.

RECOMMENDATIONS

4. No recommendations were noted.

SYSTEM INFORMATION

The Clearwood Water system is owned and operated by Clearwood Community Association. The water system is approved for 1459 connections and currently serves single-family homes, campsites, and a convenient store.

Water is pumped from two wellfields, which are both injected with caustic soda for corrosion control, then the water moves directly into distribution and on to the reservoirs. One wellfield is also treated for manganese and iron. The well pumps are controlled by telemetry based on the reservoir levels.

SECTION 1: SOURCE

Clearwood’s water is supplied by two wellfields. Wellfield S03 includes Well #1 and Well #2. The site originally contained a pump house and a chemical shed for caustic soda but was under construction for system improvements. The site is fenced and locked.

Well #1 is located outside the well house under a wood structure. At the time of the survey, Well #1 was disconnected. The caustic soda injection at this wellfield was taken offline in preparation for changing the piping configuration of the wellfield to accommodate for sodium hypochlorite injection. Well #2 is in a cement vault with a drain on the same site as Well #1.

Wellfield S08 includes Well #5 and Well #6. The wellheads are exposed on a field. There is also a treatment building on site, which contains the ATEC filters and caustic soda treatment. The site is fenced and locked, and there is an alarm system with cameras.

Source ID #	Name:	Description:	Ecology Tag #	Listed on WFI		Approved by ODW	
				Yes	No	Yes	No
S01	Well #1	8-inch casing, 90 gpm	AAF169	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S02	Well #2	10-inch casing, 340 gpm	BCK267	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S03	Wellfield (S01, S02)	Wellfield contains S01, S02	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Source ID #	Name:	Description:	Ecology Tag #	Listed on WFI		Approved by ODW	
				Yes	No	Yes	No
S06	Well #5	6-inch casing, 100 gpm	BAL884	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S07	Well #6	8-inch casing, 325 gpm	BKJ818	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
S08	Wellfield (S06, S07)	Wellfield contains S06, S07	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

WELLHEAD	Source ID #S01		Source ID #S02		Source ID #S06		Source ID #S07	
	Yes	No	Yes	No	Yes	No	Yes	No
*Wellcap sealed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
*Openings sealed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
*Vent screened	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
*Protected from flooding	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
**Raw water sample tap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
**Protected from unauthorized access	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Structure in good condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sanitary control area free of contaminants (*If no, is there an approved mitigation plan for the contaminant identified)								
**Protected from physical damage	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

WELL PUMP EQUIPMENT	Source ID #S01		Source ID #S02		Source ID #S06		Source ID #S07	
	Yes	No	Yes	No	Yes	No	Yes	No
*Pump control valve or vacuum relief valve with a protected air gap at discharge	N/A		N/A		N/A		N/A	
Generator available	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Generator has automatic startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The wellfields are visited daily. Emergency power is available at both wellfields. The generators are fueled with propane, and have an automatic start up. The generators are tested monthly.

The electrical conduit from the well casing of Well #2 was not completely sealed at the underside of the junction box that allows possible contaminants to enter the system. This was sealed with National Sanitation Foundation (NSF) approved silicon at the survey.

EMERGENCY SOURCES

ID #	Name:	Description:	Ecology Tag #	Listed on WFI		Disconnected		Inspected		Approved by ODW	
				Yes	No*	Yes	No*	Yes	No*	Yes	No
S05	Well #4	E. coli contaminated	AEC890	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Well #4 is technically listed as the emergency source but the Clearwood Association is currently discussing decommissioning the well all together. The source is contaminated with E. coli and a boil water advisory must be issued if it is necessary to put the source back online.

SECTION 2: DISINFECTION

Clearwood does not have disinfection treatment.

SECTION 3: OTHER TREATMENTS

Clearwood deals with corrosive water. Clearwood injects caustic soda at both S03 Wellfield and S08 Wellfield. However, the caustic soda was offline and disconnected at S03 Wellfield, due to construction happening at the S03 Wellfield.

In response to the high manganese and iron levels at S08 Wellfield, Clearwood was approved to install five 48-inch diameter ATEC filters with air as the oxidant for the treatment feed. This is only done on S08 Wellfield. The filters are backwashed every 18 hours of runtime and the backwash is deposited into a catch basin.

#	Treatment Process	Chemical Added	Purpose	On WFI		Approved by ODW		Location in system
				Yes	No**	Yes	No	
1	pH adjustment	Caustic Soda	Corrosion Control	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	S08
2	ATEC treatment	N/A	Iron and Manganese Removal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	S08

TREATMENT	1		2	
	Yes	No	Yes	No
Operated & maintained properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
*RPBA or air gap at water fill line to chemical tank	<input checked="" type="checkbox"/>	<input type="checkbox"/>	N/A	
**Post treatment sample tap	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

TREATMENT	1		2	
	Yes	No	Yes	No
Adequate testing equipment available and used	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
**Approved chemicals used	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

For the caustic soda, there is an online pH analyzer that will trigger an alarm and will shut off the chemical injection system if the pH exceeds 8.5. There is also an installed calibration cylinder.

Clearwood has a HACH DR-900 to test for manganese and iron. The iron and manganese treatment filters are removing iron, but the system is still seeing manganese at the post treatment. It is suspected this is due to using air as an oxidant. The system plans to switch the air to sodium hypochlorite and install disinfection at both wellfields. This project is currently under review for approval with ODW.

SECTION 4: DISTRIBUTION SYSTEM

Clearwood’s distribution is primarily made up of polyvinyl chloride and asbestos-cement, with sizes that include four-inch, six-inch, and eight-inch piping. The system is currently in their second year of a ten-year pipe replacement plan.

FEATURES	Yes	No
Service area and facility map	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Service meters (reading frequency: quarterly)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water system leakage (%)	27.8%	

CROSS CONNECTION CONTROL (Community Systems)	Yes	No
System has enabling authority	<input checked="" type="checkbox"/>	<input type="checkbox"/>
High hazards identified	<input checked="" type="checkbox"/>	<input type="checkbox"/>
High hazards protected	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Annual testing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
CCS on staff or under contract	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cross connections observed have been eliminated	<input checked="" type="checkbox"/>	<input type="checkbox"/>

In 2023, the distribution system leakage (DSL) was 22.8 percent with a three-year running average of 27.8 percent. For Cross Connection Control, customers are responsible for testing. Clearwood performs routine distribution flushing and valve exercising annually.

SECTION 5: FINISHED WATER STORAGE

There are two reservoirs located on a hillside across the road from the water system. The reservoirs are on land owned by a timber company. To gain access to the reservoirs, the operators have keys to the locked gates. The reservoirs are located within a fenced area secured with a lock, alarmed door sensors, and cameras.

Reservoir	Reservoir Name	Description	Year Built	Total Volume (Gal)
1	Tank 1	36 feet diameter and 14 feet tall	1973	182,000
2	Tank 2	56 feet diameter and 26 feet tall	1998	478,000

TOP OF RESERVOIR	Res #1	Res #2
	Yes No	Yes No
**Hatch: Locked	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
*Hatch: Watertight seal or gasket	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
Hatch: Over-lapping cover	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
*Screened air vent	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
*Openings sealed/protected	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>

FEATURES	Res #1	Res #2
	Yes No	Yes No
Protected drain outlet	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
*Protected overflow outlet	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>
*Overflow line discharges into a sanitary sewer with an air gap	<input type="checkbox"/> <input checked="" type="checkbox"/>	<input type="checkbox"/> <input checked="" type="checkbox"/>
**Protected from unauthorized entry	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>

MAINTENANCE	Res #1	Res #2
	Yes No	Yes No
Frequency of cleaning	5 years	5 years
Frequency of routine site visit	Weekly	Weekly
**Structure in good condition	<input checked="" type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/>

Tanks #1 and #2 were cleaned in the summer of 2024 and are on a five-year cleaning schedule. Both reservoirs were painted in 2011. Internal coating was discussed in 2011, but there were issues with the coating leaching into the water. Clearwood confirmed they have not had any issues with this since.

SECTION 6: PRESSURE TANKS

This system originally had three 150 gallon hydropneumatic tanks in the S03 Wellfield pump house. Those tanks have been replaced with a single 82 gallon bladder tank. This tank was not yet plumbed to the system.

There are two lines entering the treatment building, one from Well #5 and one from Well #6. Each line has a 35 gallon bladder tank.

Site	Location	# and size of Bladder Tanks
1	S03 Wellfield pump house	1, 82 gallon tank
2	S08 Wellfield treatment building	2, 35 gallon tank

BLADDER	Site: 1		Site: 2	
	Yes	No	Yes	No
Isolation valve	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pressure relief valve	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pressure gauge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
In good condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

BUILDINGS/ENCLOSURE	Site: 1		Site: 2	
	Yes	No	Yes	No
**Facility secure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Structure in good condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Clearwood stated they plan on installing an additional bladder tank at Wellfield S03, this bladder will connect to Well #2.

SECTION 7: BOOSTER PUMPS AND FACILITIES

Clearwood does not have any booster pumps or stations.

SECTION 8: WATER QUALITY MONITORING AND REPORTING

Refer to the Water Quality Monitoring Schedule for your monitoring requirements and status. If you have any questions on source monitoring, please contact Sophia Petro at (360) 236-3046.

CHEMICAL	
Sample Point	Description
1	Source sample tap at well field- IOC, VOC, SOC
2	LCR full time residential homes in distribution (10)

CHEMICAL	Sample Point 1		Sample Point 2	
	Yes	No	Yes	No
Monitoring adequate	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ODW WQ data reviewed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample collection sites correct	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
System has prior: <ul style="list-style-type: none"> <input type="checkbox"/> Nitrate results above 5 mg/L <input type="checkbox"/> Nitrite results above 0.5 mg/L <input type="checkbox"/> Primary MCL <input type="checkbox"/> Secondary MCL exceedance(s) <input type="checkbox"/> Organic detections <input type="checkbox"/> Other <u>Enter Other</u> 				

COLIFORM	Yes	No
Monitoring adequate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Monitoring plan adequate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Monitoring plan followed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# of Treatment Technique Violations (TTV)	0	
# of <i>E. coli</i> MCL Violations	0	

LEAD & COPPER	Yes	No
Monitoring adequate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Monitoring plan adequate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Monitoring plan followed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Results below action level	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The Lead Service Line Inventory has been completed and turned into ODW for review.

SECTION 9: SYSTEM MANAGEMENT AND OPERATIONS

Clearwood is operated by an appropriately certified operator. The system currently has a project under review with ODW to switch their oxidant from air to sodium hypochlorite for their iron and manganese removal treatment. To maintain similar water quality, chlorine disinfection will be installed at both wellfields.

PROJECT/PLANNING	Yes	No
System approved	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Current WSP/SWSMP	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Year WSP/SWSMP approved	2022	

REPORTING	Yes	No	N/A
WFI reviewed and updated with purveyor	<input checked="" type="checkbox"/>	<input type="checkbox"/>	---
Consumer confidence report (Community only)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Water use efficiency report (Municipal Water Suppliers)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cross connection control annual report (> 1000 conn)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

OPERATOR CERTIFICATION

This system is required to have two certified operators, one operator must have a Water Distribution Manager 2 certification. With the addition of the iron and manganese treatment, there should also be a Water Treatment Plant Operator 1. The operator is responsible for oversight of the daily operations of the water system.

If you have any questions or this information is inaccurate, please contact Operator Certification at dwopcert@doh.wa.gov.

Name of Operator	Certification Number	Certifications	Mandatory Operator
Julie Rhey-Baumann	010623	WDM2	<input checked="" type="checkbox"/>
Julie Rhey-Baumann	010623	WTPO1	<input checked="" type="checkbox"/>

WDS-Water Distribution Specialist; WDM-Water Distribution Manager; WTPO-Water Treatment Plant Operator, BTO-Basic Treatment Operator; CCS-Cross Connection Specialist; BAT-Backflow Assembly Tester

OPERATIONS	Yes	No
Operational records maintained	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Current survey has significant deficiencies identified	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Previous survey deficiencies/findings corrected, if no list below	<input checked="" type="checkbox"/>	<input type="checkbox"/>

CLOSING

Your system qualifies for the reduced frequency of sanitary surveys under WAC 246-290-416. Your next survey is due in 5 years.

Regulations establishing a schedule of fees, including fees for sanitary surveys, were adopted March 18, 2012 (WAC 246-290-990). The amount due is \$795.60. An itemized worksheet is enclosed with the invoice.

If you have any questions, please contact me by phone at (564) 669-9792 or by e-mail at aasya.abdennour@doh.wa.gov.

Sincerely,



Aasya Abdennour, E.I.T
Office of Drinking Water, Regional Engineering Staff

Enclosures

cc: Racheal Paige, Clearwood
Matthew Whitten, Clearwood
Thurston County Public Health & Social Health Services



S03 under construction



Well #1 Pump House, disconnected



Well #1's vault, disconnected



Well #1 Pump House's new bladder tank,
disconnected



Well #2's vault



Well #2's vent screened



Well #2's junction box not sealed at the conduit connection



This was sealed with silicon at the survey



S08 treatment building



Caustic soda tank



ATEC filters



Aerator



Caustic soda injection pump



S06



S07



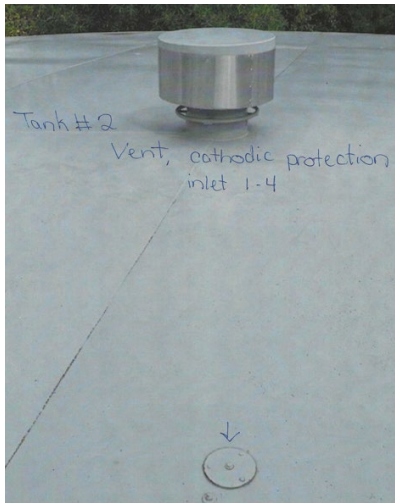
Reservoirs



Reservoirs combined drain/overflow



Reservoir controls



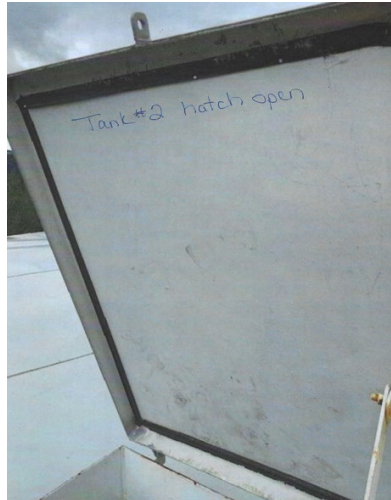
Reservoir #2 vent



Reservoir #2 vent screened



Reservoir #2 hatch locked



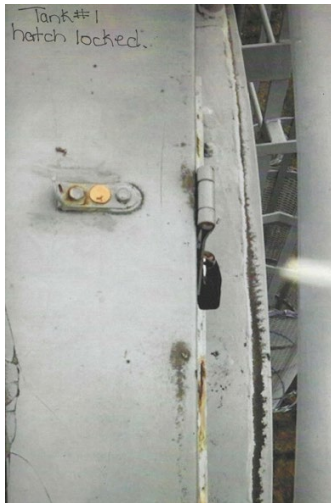
Reservoir #2 hatch seal



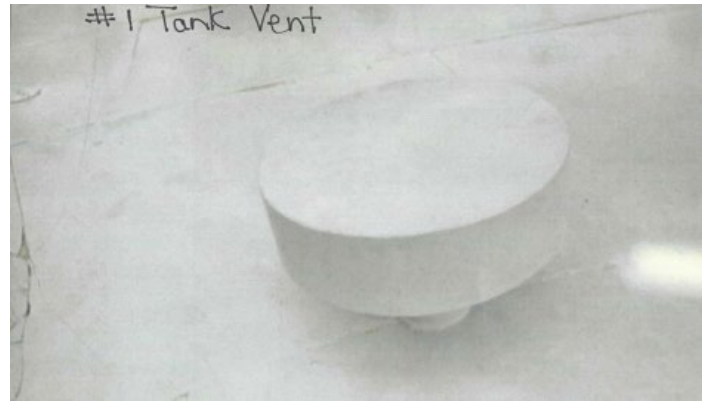
Reservoir #1 vent screens



Reservoir #1 hatch seal



Reservoir #1 hatch lock



Reservoir #1 vent