# Source Water Protection

**Drinking Water Services**
**Office of Environmental Public Health**
**Public Health Division**
**March 9, 2023**

**Russ Kazmierczak, R.G.**
**Region 2 (Eastern Oregon) Geologist**

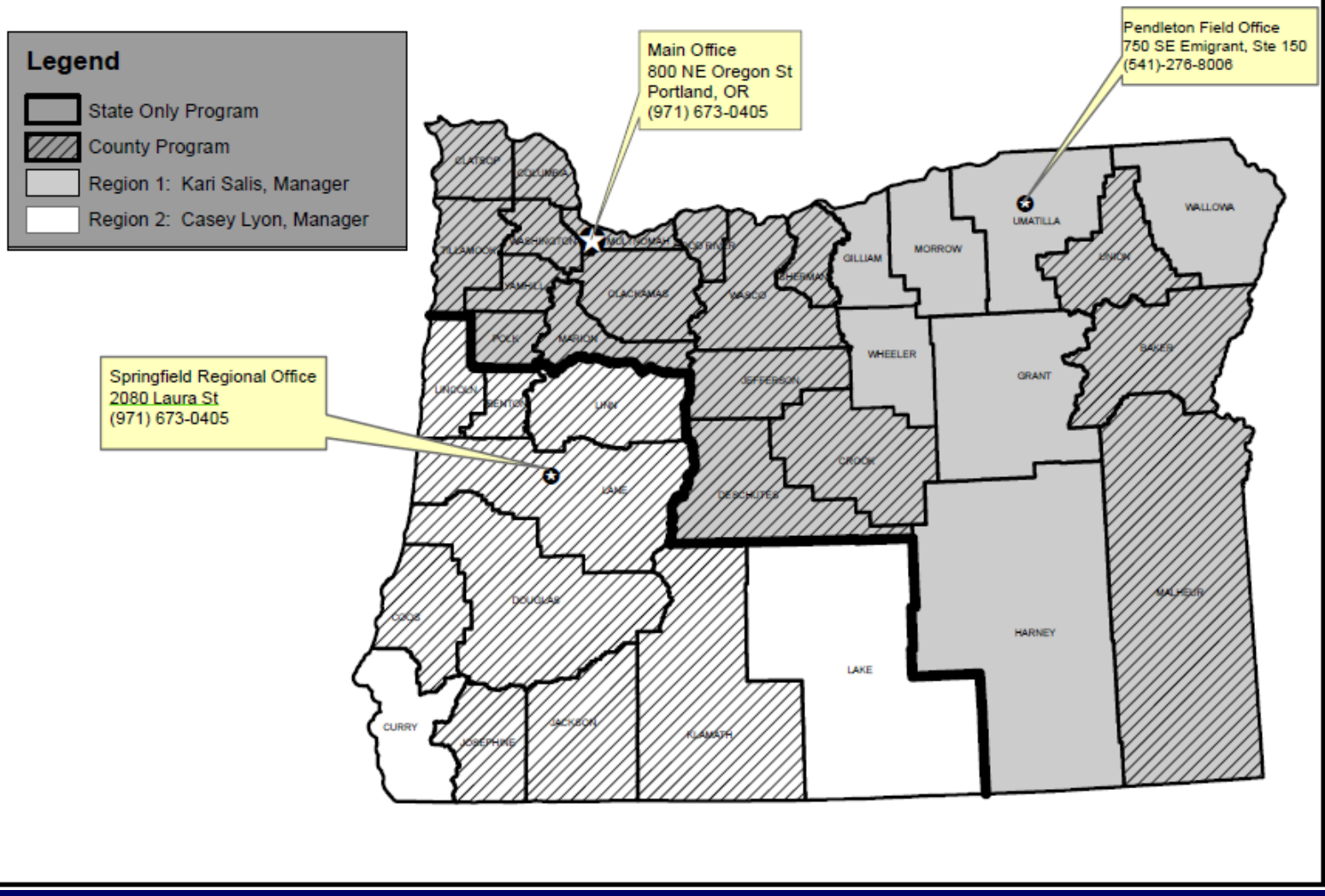
Oregon Health Authority

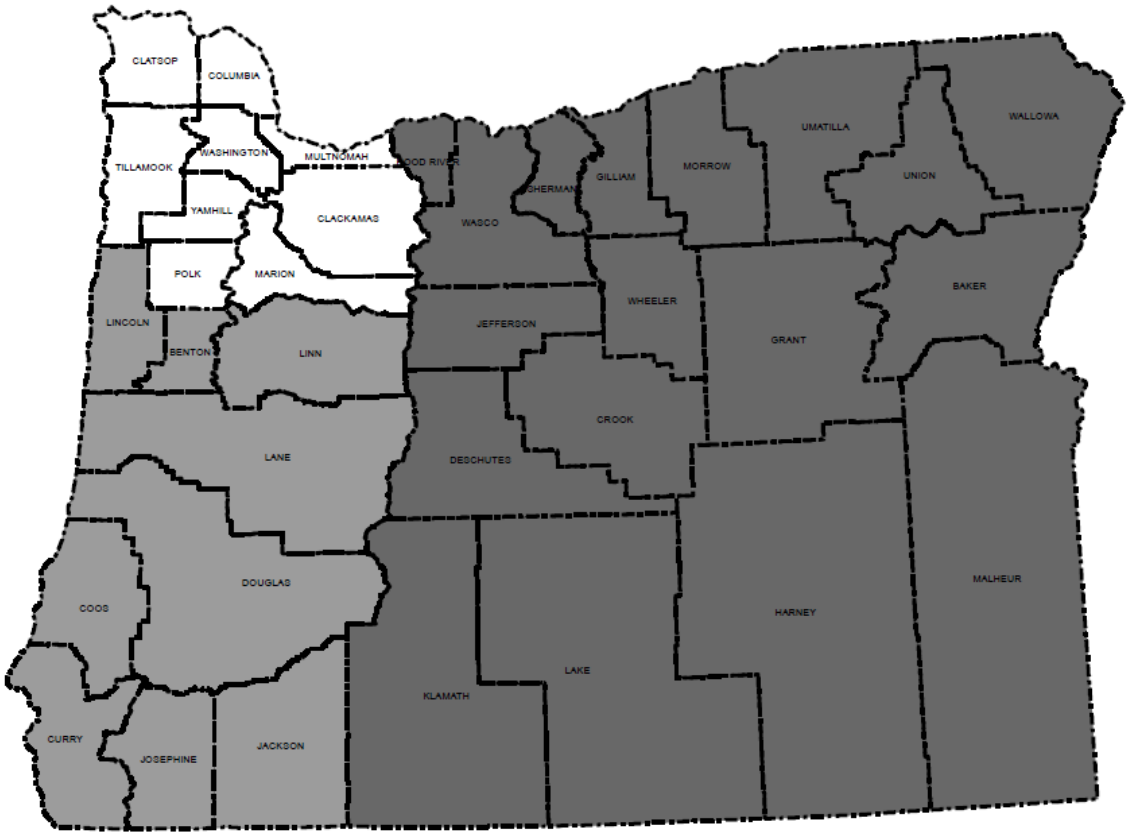
(Enter) DEPARTMENT (ALL CAPS)
(Enter) Division or Office (Mixed Case)

# Topics

- Introduction
- Source Water Protection and Assessments
- Emergency Response Plans and Resiliency
- Water System Surveys (groundwater focus)

# Drinking Water Program Technical Service Regions






**Regional Geologist Source Water Protection/Well Evaluation Plan Review Counties**

- Tom Pattee, Groundwater Coordinator (541) 684-2240
- Russ Kazmierczak, GWUDI Coordinator (971) 521-0121
- Shawn Stevenson (541) 650-1640

# Role of Drinking Water Services

- Protect drinking water from the source…



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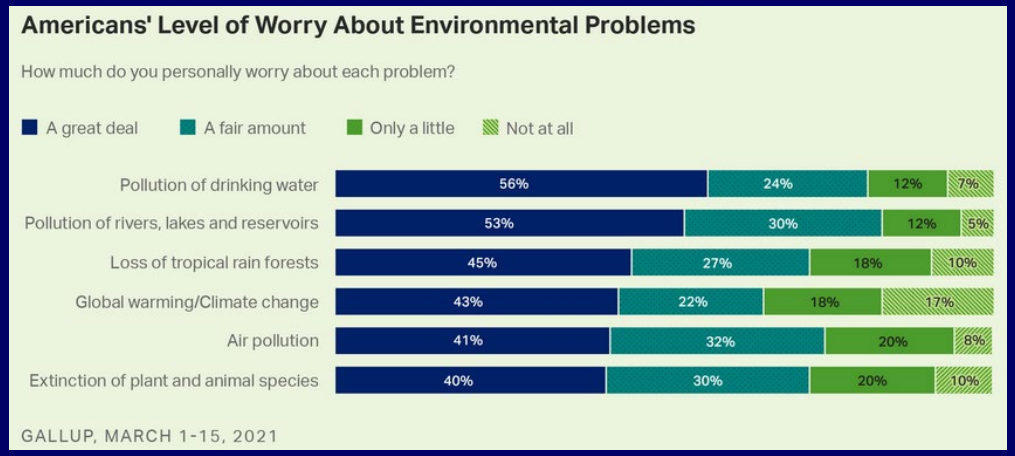
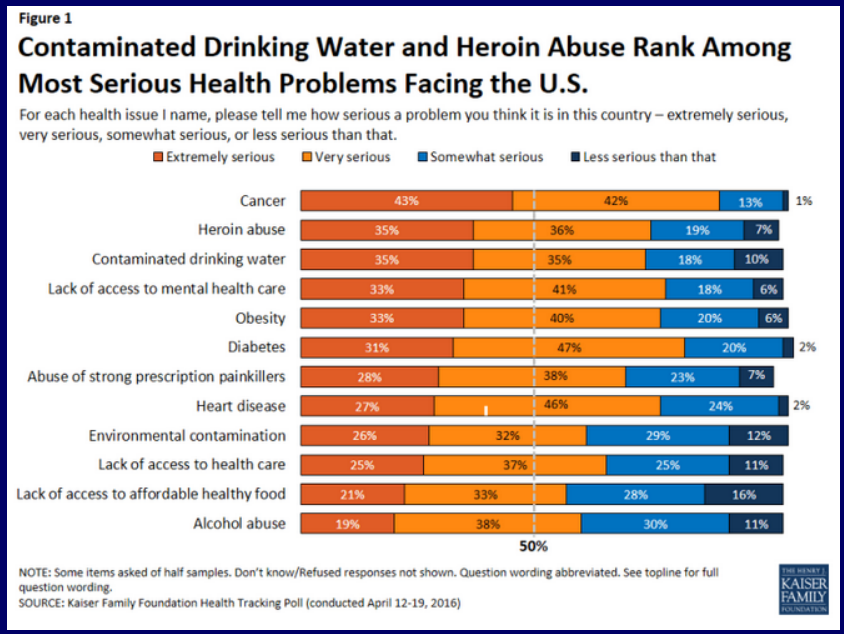
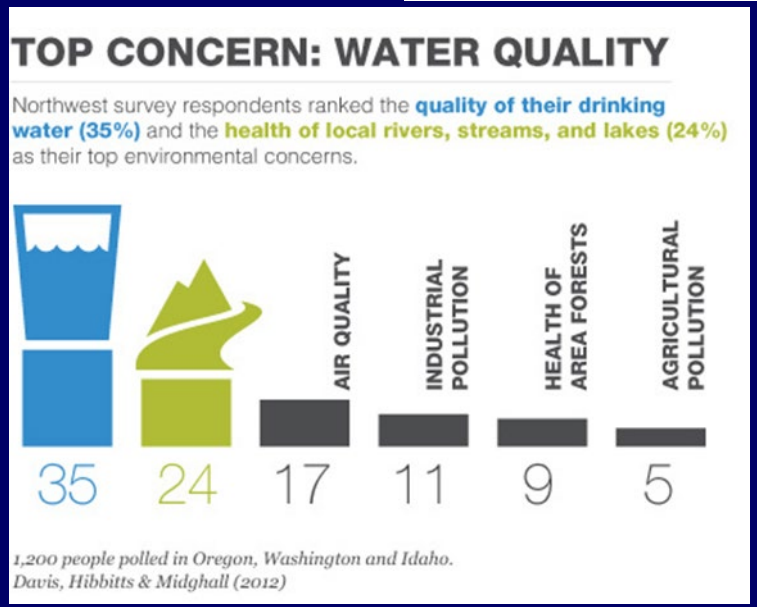
# Role of Drinking Water Services

- …to the tap!

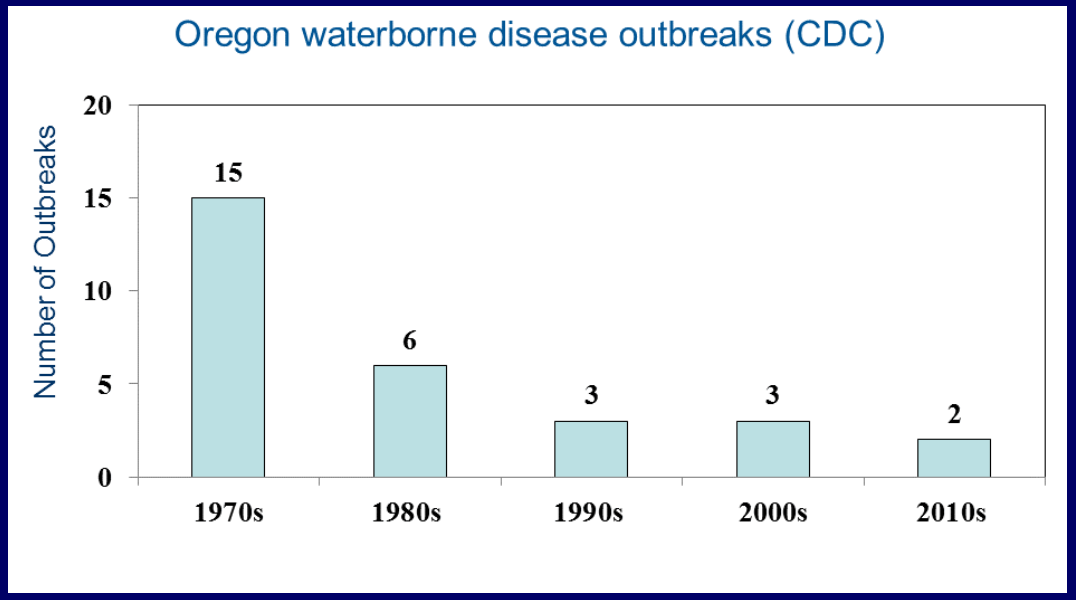
# Drinking Water Matters



# Oregon Waterborne Outbreaks (bacteria, viruses, parasites)




Last outbreaks, 2013-14:

- Crypto, Baker City;
- Legionella

# Source Water Assessments and Protection



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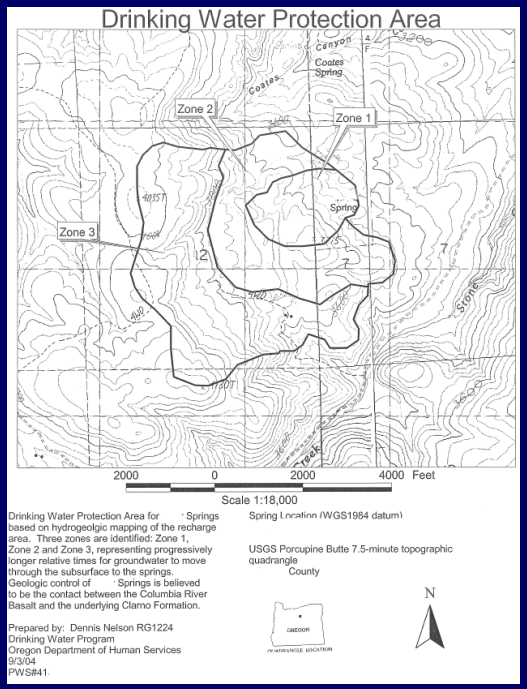
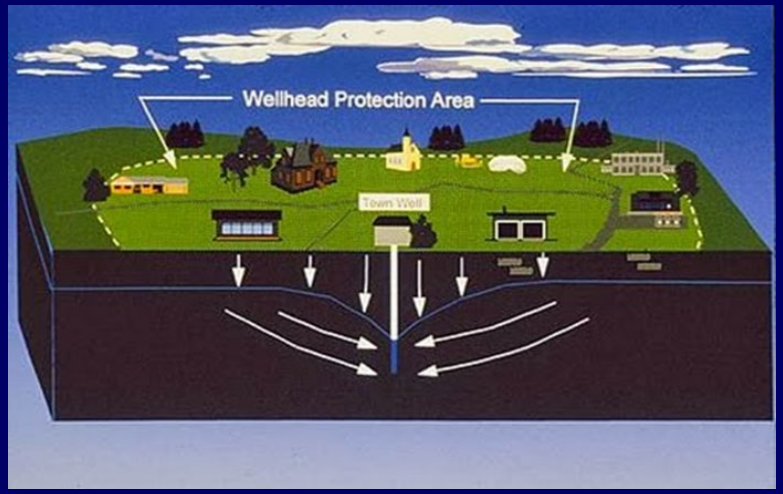
# What is Source Water Protection?

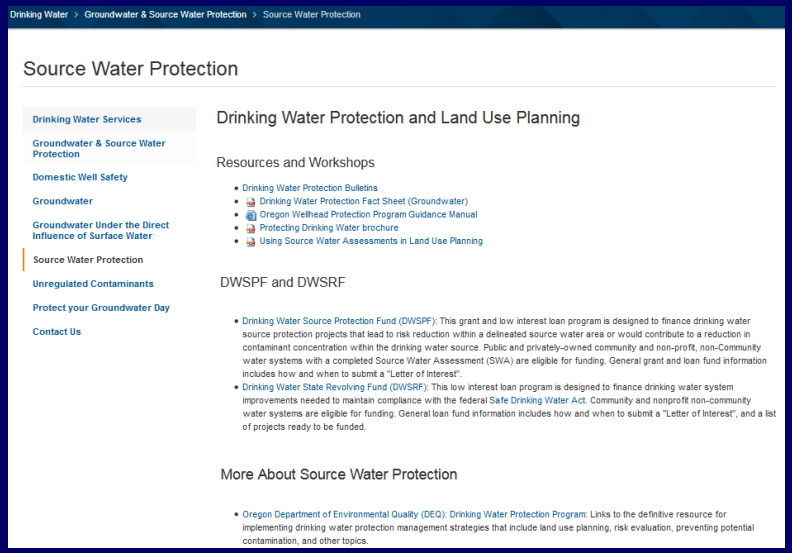
- Taking proactive measures to prevent the pollution of lakes, rivers, streams and groundwater that serve as sources of drinking water
- Wellhead Protection is another frequently used term that applies to Source Water Protection for groundwater sources (wells and springs)

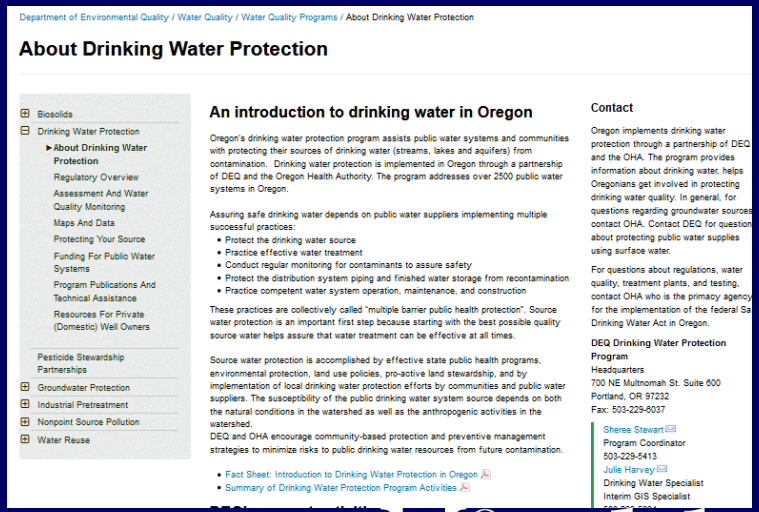


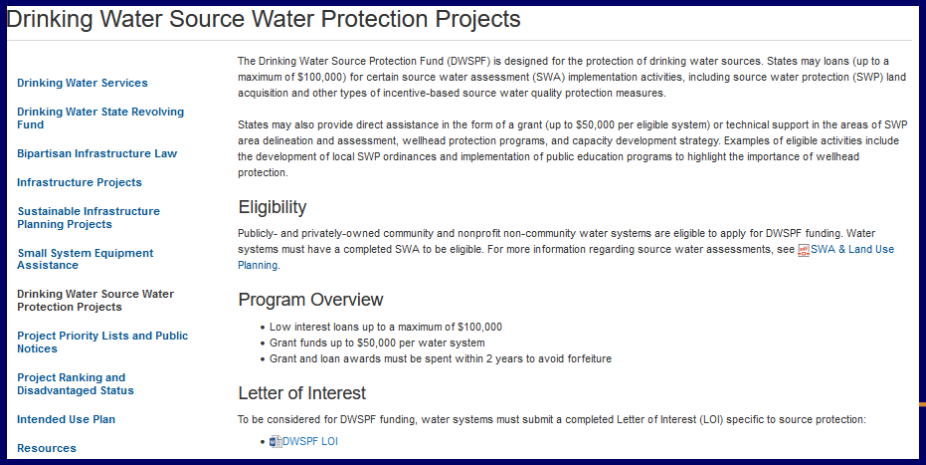




# Oregon's Drinking Water Protection Effort

- Agency partnership – OHA/DEQ
- Voluntary, collaborative approach
- Set priorities based on assessment results
- Distribute useful source water information to communities and interested parties
- Incentives
  - Protection loans and grants

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# Value of Planning and Protection

- Protecting the current resource
  - Water quality – Multiple barrier approach
    - Baker City cryptosporidium outbreak is an example of breakdown in the multiple barrier approach

- Sustainable supply for the future:  Resource Adequacy
  - Asset Management: Your source is an asset so protect it





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# Value of Planning and Protection

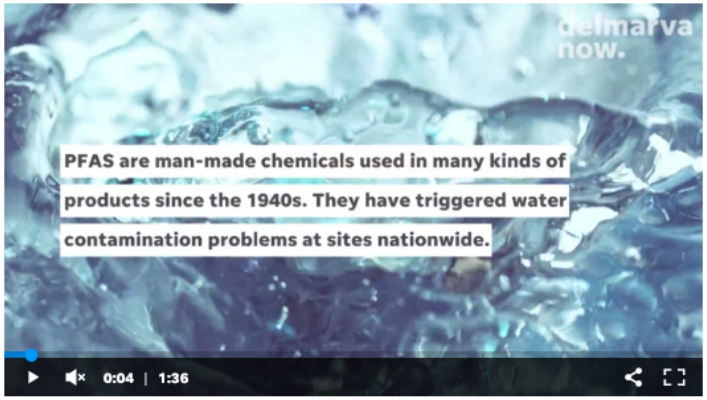
- Preserving public trust

NEWS

## Oregon drinking water systems mostly free from 'forever chemicals' contamination

Tracy Loew
Salem Statesman Journal

Published 6:00 a.m. PT July 22, 2022




**Five things to know about PFAS**

Used in numerous products from stain repellents to food packaging, they have become a pollution concern nationwide. Here are five things to know about PFAS. *Julia Rentsch / The Daily Times, Wochit*

Oregon has just finished testing 140 drinking water systems across the state for PFAS, or per- and poly-fluorinated substances.

The results: Only five small systems had detectable levels of PFAS, and none exceeded the state's health advisory level.

## Epidemiologist: Baker City crypto outbreak historic

Written by Jayson Jacoby August 06, 2013 09:16 am

**By Jayson Jacoby**

jjacoby@bakercityherald.com

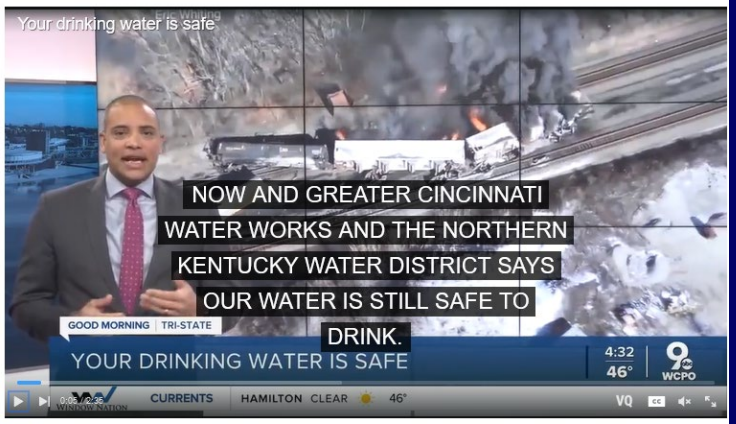
Baker City's cryptosporidium outbreak is historic, and possibly in more ways than one.

Dr. Bill Keene, senior state epidemiologist with the Oregon Health Division, said Monday afternoon that if the city's water is definitely proved to be the source of the rash of illness — and that's the most plausible theory, he said — then this probably would be the largest outbreak in a municipal water system since a 1994 episode in Las Vegas.

"It's a significant outbreak," Keene said.

Most of the confirmed crypto cases in the U.S. over the past 20 years — there were 7,656 confirmed or probable cases in 2009, and 8,951 in 2010 — were linked to

## Your drinking water is safe

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Mon, February 20, 2023 at 8:40 AM PST

Greater Cincinnati Water Works is reporting there is no detectable chemicals in the Ohio River intakes as anticipated contaminated water from the East Palestine train derailment reached the area. The intakes were closed at 2 a.m. Sunday morning "out of an abundance of caution," GCWW said.

# Value of Planning and Protection

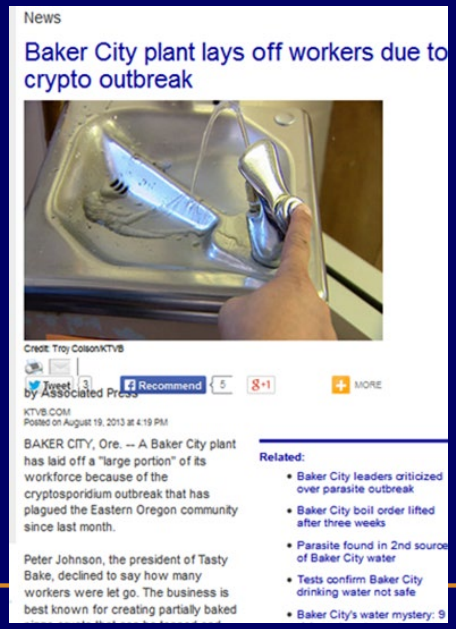
- Protecting economic value: Property values
- Community Viability: Attracting and retaining new residents and businesses

East Palestine real estate market rattled by derailment, as residents weigh how to respond

90.5 WESA | By Oliver Morrison
Published March 2, 2023 at 5:34 AM EST

Oliver Morrison / 90.5 WESA

Residents in the East Palestine area want to know what is going to happen to the value of their homes after cleanup efforts by Norfolk Southern have ended.

News

Baker City plant lays off workers due to crypto outbreak

Credit: Troy Colson/KTVB

by Associated Press
KTVB.COM
Posted on August 19, 2013 at 4:19 PM

BAKER CITY, Ore. -- A Baker City plant has laid off a "large portion" of its workforce because of the cryptosporidium outbreak that has plagued the Eastern Oregon community since last month.

Peter Johnson, the president of Tasty Bake, declined to say how many workers were let go. The business is best known for creating partially baked

Related:
- Baker City leaders criticized over parasite outbreak
- Baker City boil order lifted after three weeks
- Parasite found in 2nd source of Baker City water
- Tests confirm Baker City drinking water not safe
- Baker City's water mystery: 9



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# Value of Planning and Protection

- Protect Investment – Asset Management

- Avoiding costly treatment, M&O

# Value of Planning and Protection

- New regulations, emerging contaminants of concern
  - Unregulated Contaminate Monitoring Rule
- Environmental Working Group (EGW) PFAS Map https://www.ewg.org/interactiv
- Mapping the PFAS contamination crisis: New data show 2,858 si states and two territories

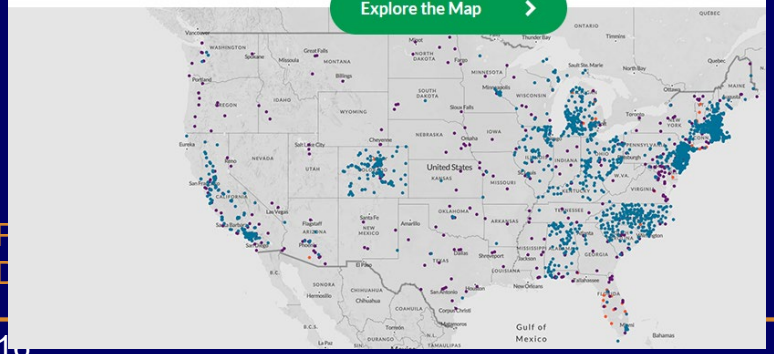
WHY IS THIS MAP IMPORTANT?

The number of U.S. communities confirmed to be contaminated with the highly toxic fluorinated compounds known as P grow at an alarming rate. As of June 2022, 2,858 locations in 50 states and two territories are known to be contaminate

The latest update of this interactive map documents PFAS pollution in public and private water systems. Details about o methodology are here.

Information about sites newly added to the map comes from various PFAS detections reported to government agencies Hampshire, North Carolina, Ohio and other states, as well as updated records from the Department of Defense.

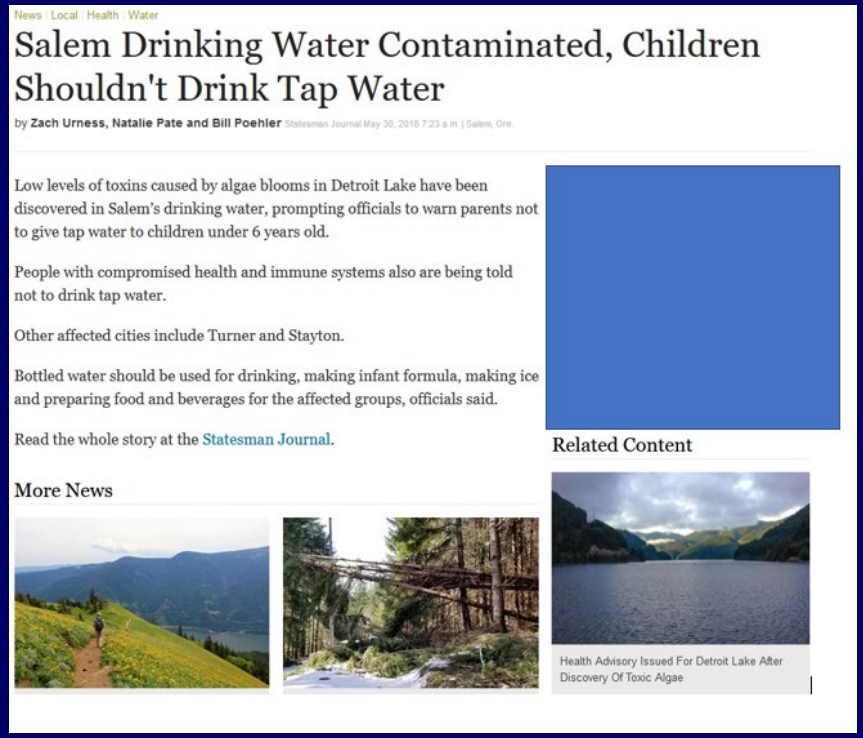
Explore the Map





# “Price Tag”of Contamination

- Indirect costs
- Fear of unknown chemicals
- Loss of trust in water system
- Frustration in lengthy process
- Change in water quality
- Negative press
- Decrease in property values



News | Local | Health | Water

## Salem Drinking Water Contaminated, Children Shouldn't Drink Tap Water

by Zach Urness, Natalie Pate and Bill Poehler Statesman Journal May 30, 2018 7:23 a.m. | Salem, Ore.

Low levels of toxins caused by algae blooms in Detroit Lake have been discovered in Salem's drinking water, prompting officials to warn parents not to give tap water to children under 6 years old.

People with compromised health and immune systems also are being told not to drink tap water.

Other affected cities include Turner and Stayton.

Bottled water should be used for drinking, making infant formula, making ice and preparing food and beverages for the affected groups, officials said.

Read the whole story at the Statesman Journal.

Related Content

More News



February 5, 2014

## Chemical Spill Cost West Virginia Businesses $61M

RELATED STORIES

Some Businesses Reopen After Chemical Spill

Patriot Coal Spills Slurry in West Virginia Tributary

Chemical Spill Company Files for Bankruptcy

The West Virginia chemical spill last month cost businesses $61 million, according to a preliminary economic impact study by the Marshall University Center for Business and Economic Research.

The Jan. 9 chemical spill closed restaurants and schools and left more than 300,000 residents and many businesses without drinkable tap water.

# Price Tag"of Contamination

- Long term health effects
- New regulations (e.g., PFOS, PFAS, Perchlorate, etc.)
- Cost of dealing with a contaminated source can cost 200 times more than Source Water Protection
- "An ounce of prevention is worth a pound of cure"

WISCONSIN

**DNR expects to spend up to $600,000 per year to supply bottled water to French Island residents with PFAS contamination**

Laura Schulte
Milwaukee Journal Sentinel

Published 9:00 a.m. CT Oct. 12, 2021

MADISON – The state's cost to supply bottled water to residents of French Island dealing with "forever chemical" contamination is expected to reach a half million dollars per year, potentially drawing down dollars for other environmental responses in the state.

Dave Rozeboom, a team supervisor for the DNR's remediation and redevelopment program, said the anticipated cost for providing bottled water for the island near La Crosse will cost between $500,000 and $600,000 a year.

Because the cost of water was higher than anticipated for the community, money may be taken from other areas of the department's Environmental Repair Fund to help cover the cost.

Senators say Oregon to get $18.9 million to address 'emerging contaminants' in drinking water

KTVZ file

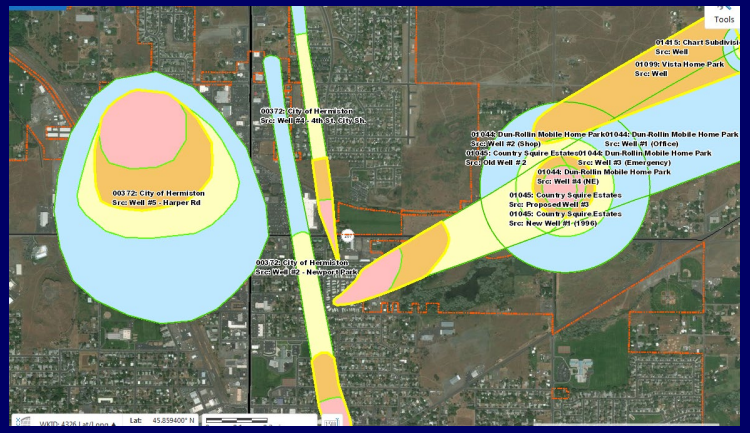
WASHINGTON (KTVZ) -- Sens. Ron Wyden and Jeff Merkley, D-Ore., this week announced Oregon will receive $18.9 million from the Bipartisan Infrastructure Law to address emerging contaminants like Per- and Polyfluoroalkyl Substances (PFAS) in drinking water.

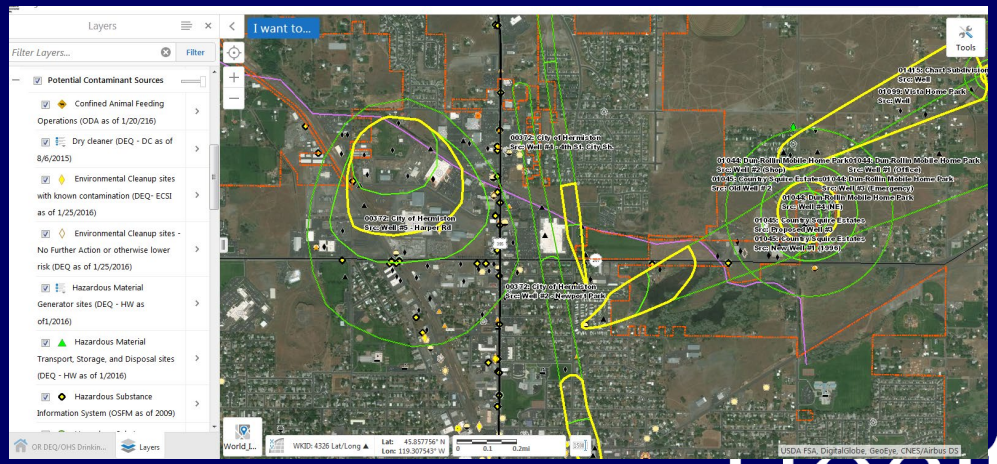
Here's their news release announcing the funding:

"Access to clean drinking water is a human right that is undermined by the presence of PFAS and other contaminants that often go unaddressed in too many water systems around the state due to outdated infrastructure," said Wyden, who supported the Bipartisan Infrastructure Law. "These dollars will go a long way to identify the communities affected by PFAS contamination, neutralize the pollutants, and then safeguard our state's future drinking water sources."

# How do we protect our drinking water?

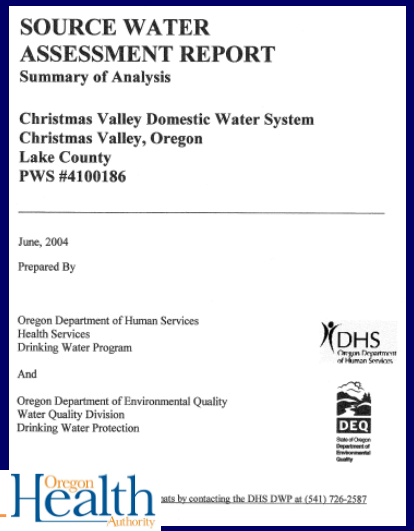
- Where is our drinking water coming from?
- What are the potential risks to our drinking water quality?
- How susceptible is our drinking water to these potential risks?
- What specifically can we do to reduce those risks?



# Source Water Assessments and Updates

- 1986 Safe Drinking Water Act (SDWA) Amendment - Wellhead Protection Program
- 1996 SDWA Amendment - Source Water Assessments (SWA)
- SWA addresses both surface water and groundwater
- Delineate source water protection areas
- Identify potential contaminant sources
- Determine Susceptibility to contamination
- Communicate results publicly
- Over 2,300 completed, including 800+ community water systems
- Assessments are reviewed and periodically updated



**SOURCE WATER ASSESSMENT REPORT**
**Summary of Analysis**

**Christmas Valley Domestic Water System**
**Christmas Valley, Oregon**
**Lake County**
**PWS #4100186**

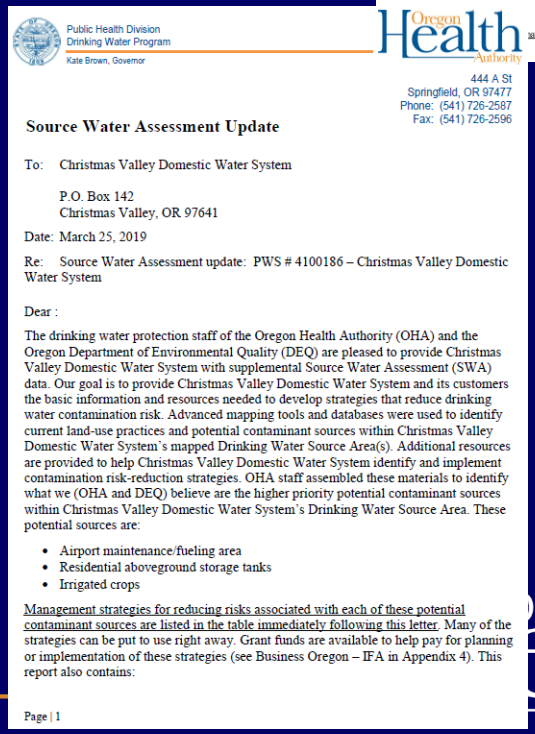
June, 2004

Prepared By

Oregon Department of Human Services
Health Services
Drinking Water Program

And

Oregon Department of Environmental Quality
Water Quality Division
Drinking Water Protection



Public Health Division
Drinking Water Program
Kate Brown, Governor

Oregon Health Authority

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Phone: (541) 726-2587
Fax: (541) 726-2596

**Source Water Assessment Update**

To: Christmas Valley Domestic Water System

P.O. Box 142
Christmas Valley, OR 97641

Date: March 25, 2019

Re: Source Water Assessment update: PWS # 4100186 – Christmas Valley Domestic Water System

Dear :

The drinking water protection staff of the Oregon Health Authority (OHA) and the Oregon Department of Environmental Quality (DEQ) are pleased to provide Christmas Valley Domestic Water System with supplemental Source Water Assessment (SWA) data. Our goal is to provide Christmas Valley Domestic Water System and its customers the basic information and resources needed to develop strategies that reduce drinking water contamination risk. Advanced mapping tools and databases were used to identify current land-use practices and potential contaminant sources within Christmas Valley Domestic Water System's mapped Drinking Water Source Area(s). Additional resources are provided to help Christmas Valley Domestic Water System identify and implement contamination risk-reduction strategies. OHA staff assembled these materials to identify what we (OHA and DEQ) believe are the higher priority potential contaminant sources within Christmas Valley Domestic Water System's Drinking Water Source Area. These potential sources are:

- Airport maintenance/fueling area
- Residential aboveground storage tanks
- Irrigated crops

Management strategies for reducing risks associated with each of these potential contaminant sources are listed in the table immediately following this letter. Many of the strategies can be put to use right away. Grant funds are available to help pay for planning or implementation of these strategies (see Business Oregon – IFA in Appendix 4). This report also contains:

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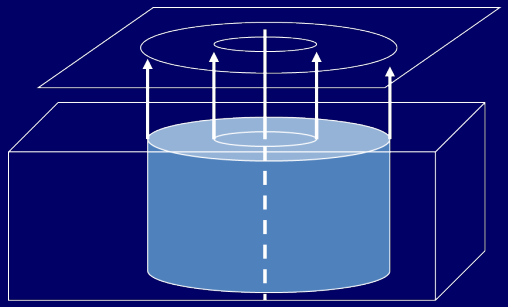
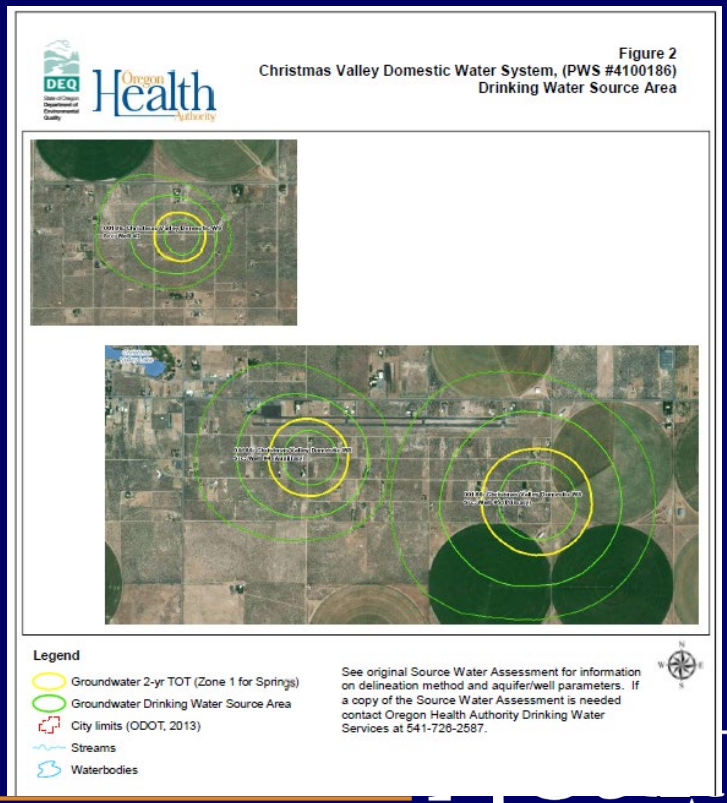
# Procedures for Groundwater Delineation

- Identify that part of the aquifer that supplies water to the well or spring
- Site-specific parameters
- Project to the surface
- Dependent on population, number of wells and hydrogeologic setting





# Source Water Assessment Elements

- Identify the drinking water protection area (map)
- Identify potential sources of pollution within the area
- Determine the relative risk to the water supply from those pollution sources

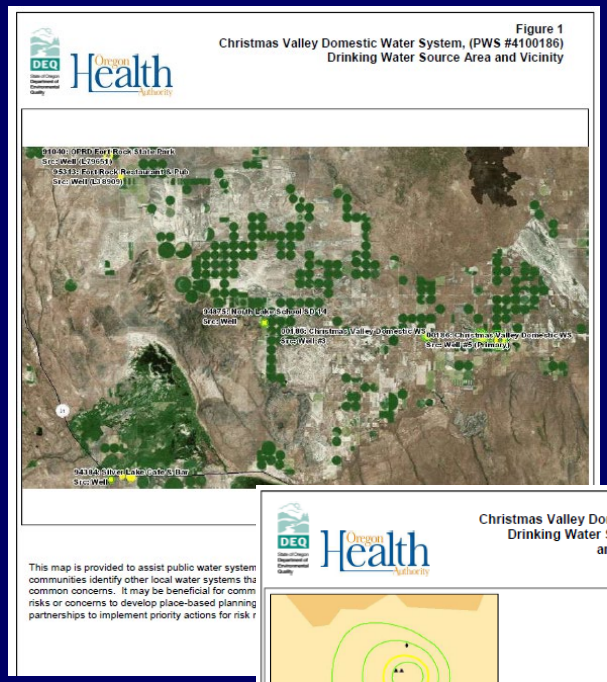


Figure 1
Christmas Valley Domestic Water System, (PWS #4100186)
Drinking Water Source Area and Vicinity

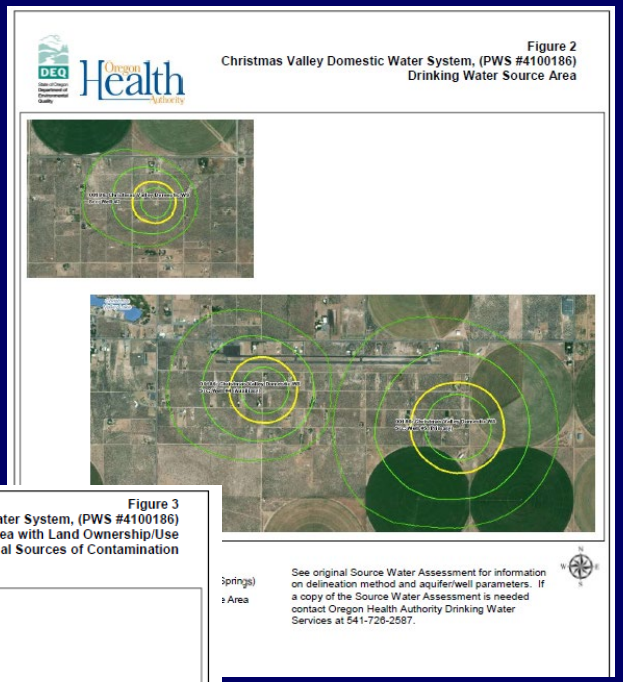


Figure 2
Christmas Valley Domestic Water System, (PWS #4100186)
Drinking Water Source Area

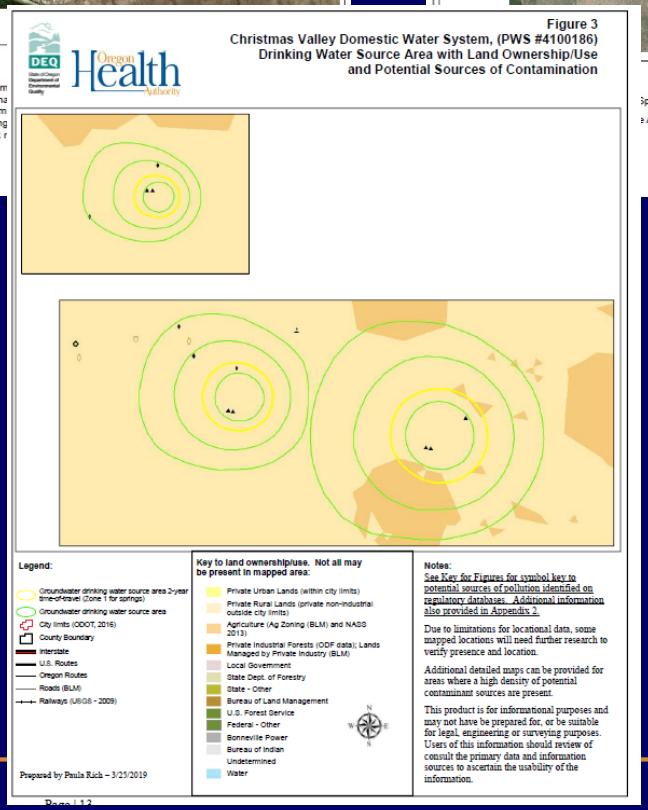
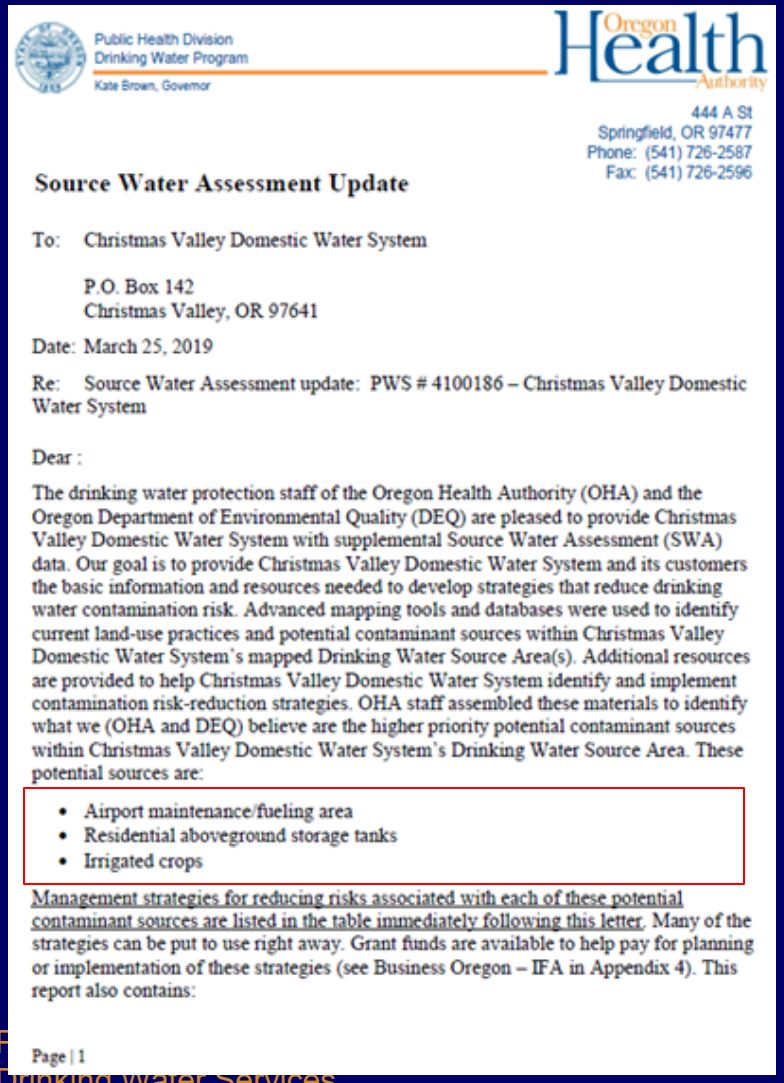


Figure 3
Christmas Valley Domestic Water System, (PWS #4100186)
Drinking Water Source Area with Land Ownership/Use and Potential Sources of Contamination

# Potential Contaminate Sources and Risk



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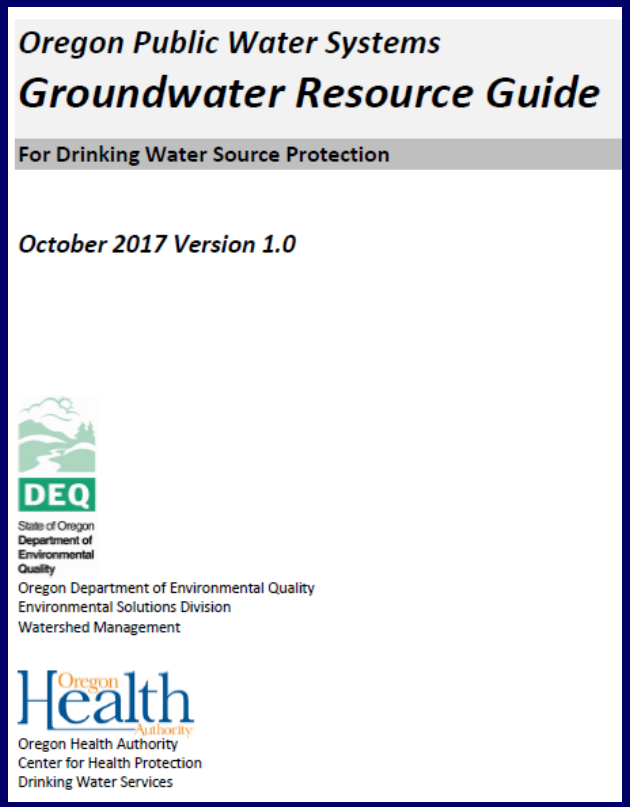
Page | 1

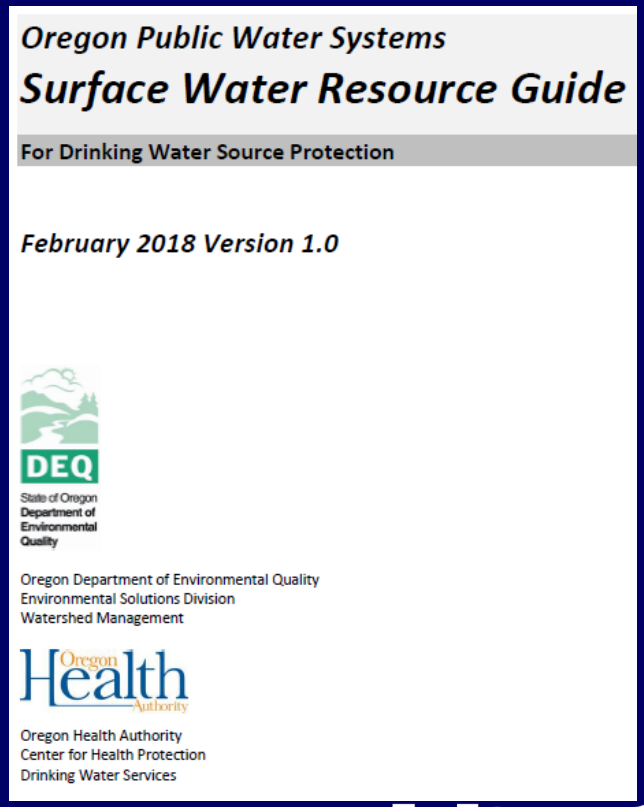
| *Potential Pollutant Type* | *Potential Impact* | *Pollutant Reduction and Outreach Ideas* |
|---|---|---|
| **Aboveground storage tanks** | Spills, leaks, or improper handling of stored materials may impact the drinking water supply<br><br>*(Moderate potential risk)* | ▫ Conduct a survey of existing aboveground storage tanks to determine status.<br>▫ Ensure aboveground storage tanks (ASTs) are 1) placed on a concrete pad or 2) have a drip pan or 3) have secondary containment.<br>▫ Local government can potentially adopt ordinance, covenant, or rules to ensure ASTs have secondary containment.<br>▫ Notify the AST owner of their location within your drinking water source area and send:<br>*Proper Care and Maintenance for Unregulated Tank Systems: http://www.oregon.gov/deq/FilterDocs/ProperCareMaintenance.pdf<br>*Managing Aboveground Storage Tanks to Prevent Contamination of Drinking Water: http://www.oregon.gov/deq/FilterDocs/EPASWPPracticesBulletin_ASTs.pdf<br>Heating Oil Tank Program: http://www.oregon.gov/DEQ/tanks/Pages/hot.aspx<br>Additional recommendations:<br>▫ Develop a plan for ongoing (yearly) education to aboveground storage tank owners.<br>▫ Implement the following best management practices: check regularly for leaks and loose fittings, and check the integrity of gaskets; test pipes for leaks; cleanup the area around the tank; know how to clean up spills and drips. |
| **Cropland --**<br><br>Irrigated (includes orchards, vineyards, nurseries, greenhouses)<br><br>Non-irrigated (includes Christmas trees, grains, grass seed, pasture) | Over-application or improper handling of pesticides/fertilizers may impact drinking water. Excessive irrigation may transport contaminants or sediments to groundwater/surface water through runoff or infiltration.<br><br>*(Higher risk if irrigated or high precipitation - Moderate risk if drip-irrigated or non-irrigated)* | ▫ Encourage farm operator to work with their local SWCD, Oregon State University County Extension Agent, or Natural Resources Conservation Service to develop a Farm Plan, if they have not done so already (websites below). Ensure the Farm Plan addresses: crop production practices, pesticide/fertilizer/petroleum product handling and storage, vehicle/equipment maintenance and repair, livestock waste storage and treatment, hazardous waste management, wastewater disposal/fill, and wells.<br><br>**Agency Websites:**<br>Soil and Water Conservation Districts: http://oacd.org/conservation-districts/directory<br>OSU Extension: http://extension.oregonstate.edu/find-us<br>Natural Resources Conservation Service, Oregon: http://www.nrcs.usda.gov/wps/portal/nrcs/site/or/home/<br>Oregon Department of Agriculture: http://www.oregon.gov/ODA/Pages/default.aspx<br>▫ Also send relevant fact sheets and information below.<br><br>**Fact Sheets/Resources**<br>*Managing Agricultural Fertilizer Application (US EPA source): http://www.oregon.gov/deq/FilterDocs/EPASWPPracticesBulletin_AgFertilizer.pdf<br>*Managing Large-Scale Application of Pesticides: http://www.oregon.gov/deq/FilterDocs/EPASWPPracticesBulletin_PesticidesLargeScale.pdf<br>*Irrigation System Maintenance, GW Quality, and Improved Production: |
| | | https://catalog.extension.oregonstate.edu/em8862<br>*Guidance for Evaluating Residual Pesticides on Lands Formerly Used for Agricultural Production http://www.oregon.gov/DEQ/FilterDocs/GuidanceEvalResidualPesticides.pdf<br>▫ If this land covers a large percentage of your Drinking Water Source Area, notify your local Soil and Water Conservation District (SWCD) of your source area location.<br>▫ Identify and document any pesticides used to maintain site and areas applied.<br><br>*Additional recommendations:*<br>▫ Set up or participate in a local material exchange program. http://www.oregon.gov/DEQ/mm/Pages/Material-Recovery-and-Recycling.aspx<br>▫ Participate in Pesticide Stewardship or Integrated Pest Management Programs (or other efforts , such as pesticide collection events for unused and legacy pesticides) to reduce use of products that threaten water quality: http://www.oregon.gov/DEQ/wq/programs/Pages/Pesticide.aspx http://www.deq.state.or.us/wq/pubs/factsheets/community/pesticide.pdf<br>▫ See DEQ factsheet "Pesticide use in the vicinity of drinking water sources" for additional regulations and recommendations: http://www.oregon.gov/deq/FilterDocs/pesticideuseVicdws.pdf |
| **Chemicals stored or used in close proximity to well or spring** | Chemicals, fuels, and equipment maintenance materials may impact groundwater source<br><br>*(Higher potential risk)* | ▫ Verify that no fuels, pesticides, fertilizers or other chemicals are used within 100 feet of the well or spring or stored near the wellhead or spring, and that all backup fuel supplies have secondary containment.<br>▫ Consider increased setbacks based on aquifer sensitivity and degree of hazard. See info on Integrated Pest Management (http://npic.orst.edu/pest/ipm.html) for alternative methods. Alternate methods for vegetation management within the well or spring setback may include mechanical removal, mowing, or non-chemical pre-emergent or post-emergent herbicide.<br>▫ Correct any outstanding well/spring box construction or casing seal deficiencies.<br>▫ Create a spill response plan.<br>▫ Acquire spill response equipment and any regulatory required training.<br>▫ Ensure all fuels and chemicals have secondary containment.<br><br>**Fact Sheets/Resources**<br>*Managing Small Quantity Chemical Use: http://www.oregon.gov/deq/FilterDocs/EPASWPPracticesBulletin_ChemUseSmallQ.pdf<br>*Integrated Pest Management: http://npic.orst.edu/pest/ipm.html |

# Resource Guides

- Groundwater (Springs/Wells) : http://www.oregon.gov/deq/FilterDocs/gwresguide.pdf



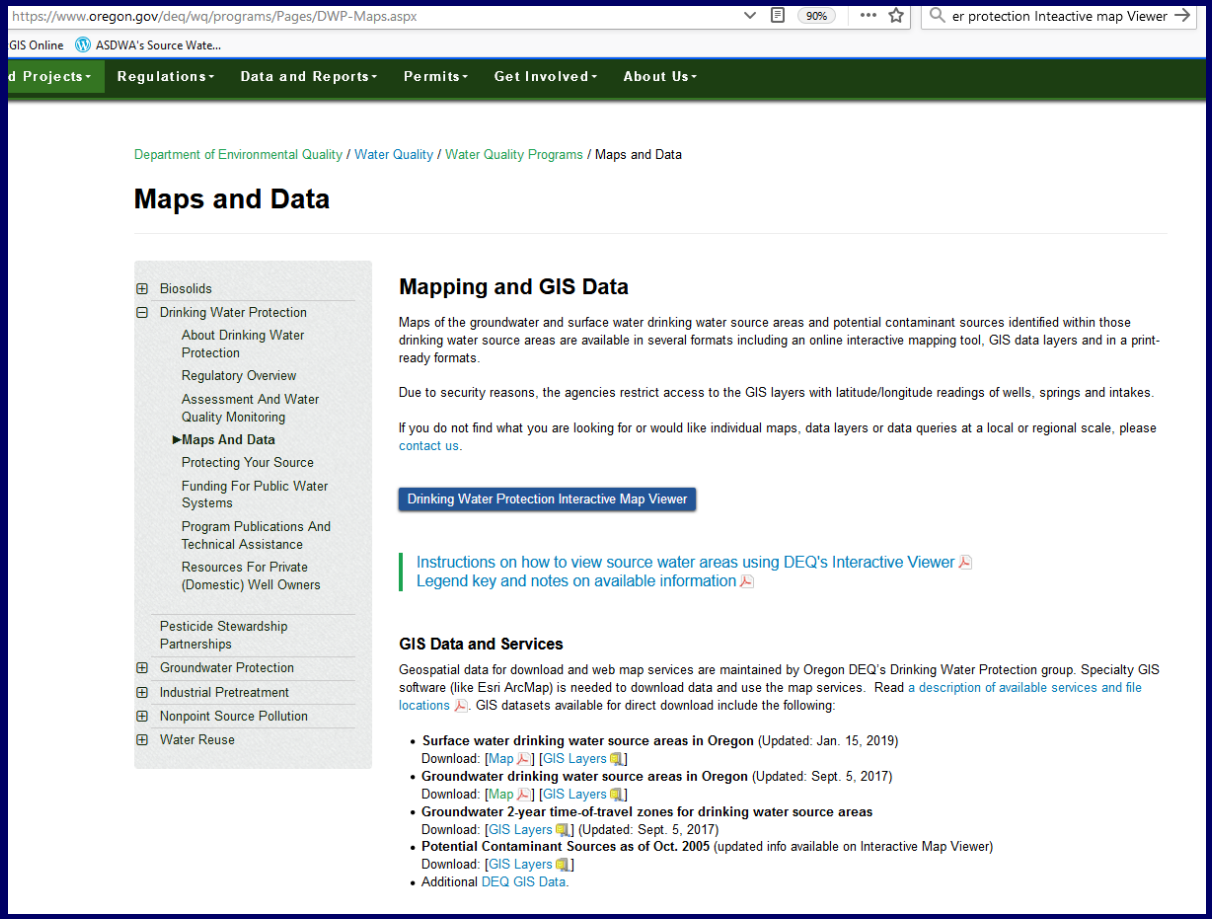

- Surface Water: http://www.oregon.gov/deq/FilterDocs/SurfaceWaterResourceGuide.pdf



# Data Available to Support Groundwater Protection Efforts

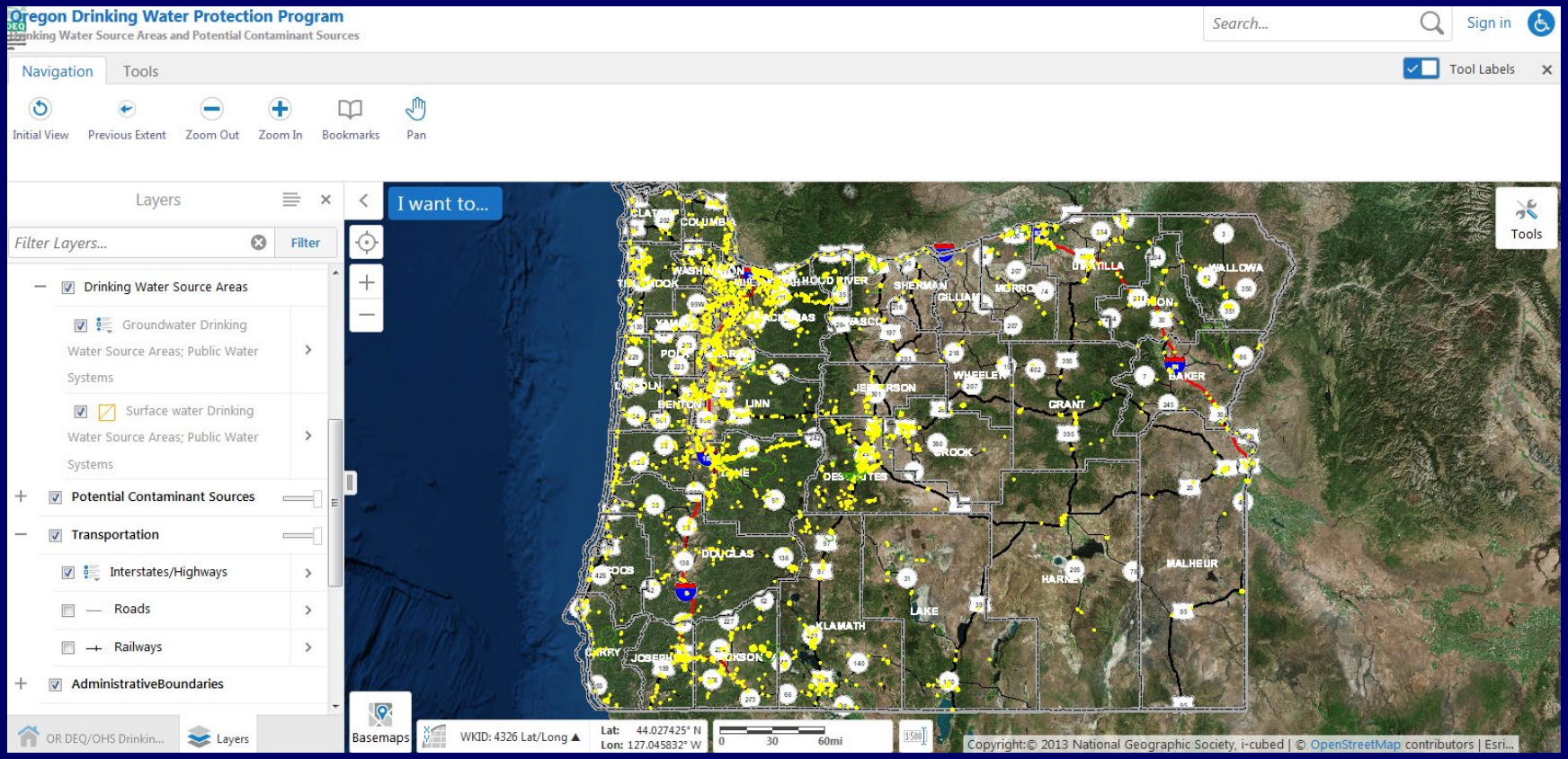
- DEQ Drinking Water Source Area data layers
- Drinking water source area conditions and risks from Source Water Assessment Report
- National Land Cover Database (NLCD) for land use
- Aerial photography (current and past) from Google Earth
- Digital elevation models (DEMs) from Oregon Geospatial Enterprise Office
- Waterbody locations and flow paths from USGS (National Hydrology Dataset);USDA-NASS Cropland Data Layer (USDA 2015) for land use
- Groundwater levels, aquifers, water use, and water quality data from USGS
- DOGAMI's geology data on local area
- Disturbance data from USFS
- Aquifer characteristics, e.g. permeability, infiltration capacity, confined vs. unconfined, etc. from USGS, WRD Watermasters, others
- Soil contaminant leaching research data from Oregon State University
- Additional data on land uses, management, or potential risks due to human activities:
- Agricultural Water Quality Management Plan for your area (ODA)
- Source Water Assessments and Updated Assessments completed by DEQ and OHA contain information on potential contaminant sources, well construction, and susceptibility
- Site Assessment database at DEQ
- Land ownership category data from ODF and other agencies
- Most recent data on locations of hazardous material from DEQ and the State Fire Marshall
- More details on locations of county roads, forest roads (County, ODF)
- Forest practice notifications for harvest and application of pesticides (ODF)
- Update on locations of quarries and gas wells from DOGAMI

# Mapping and GIS Data



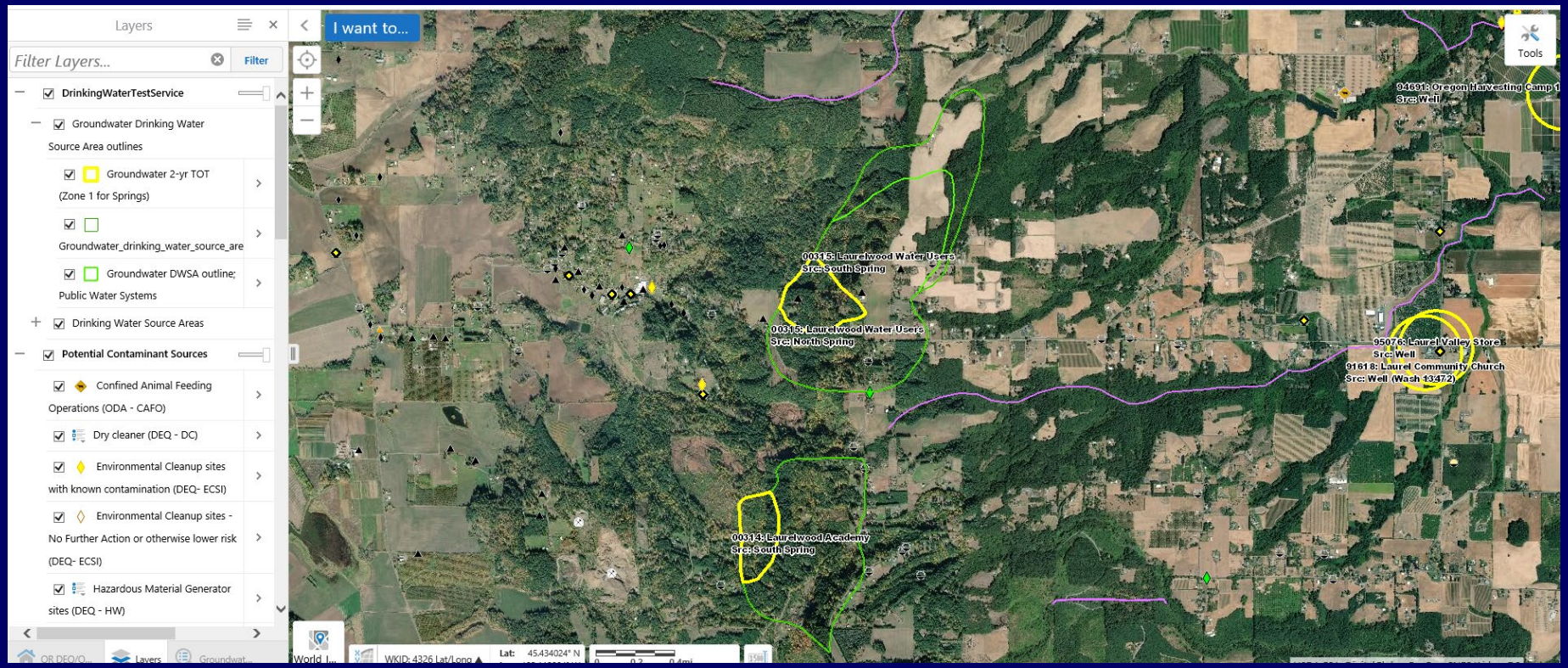

https://hdcgcx2.deq.state.or.us/Html5Viewer211/?viewer=drinkingwater

# Drinking Water Protection Interactive Map Viewer



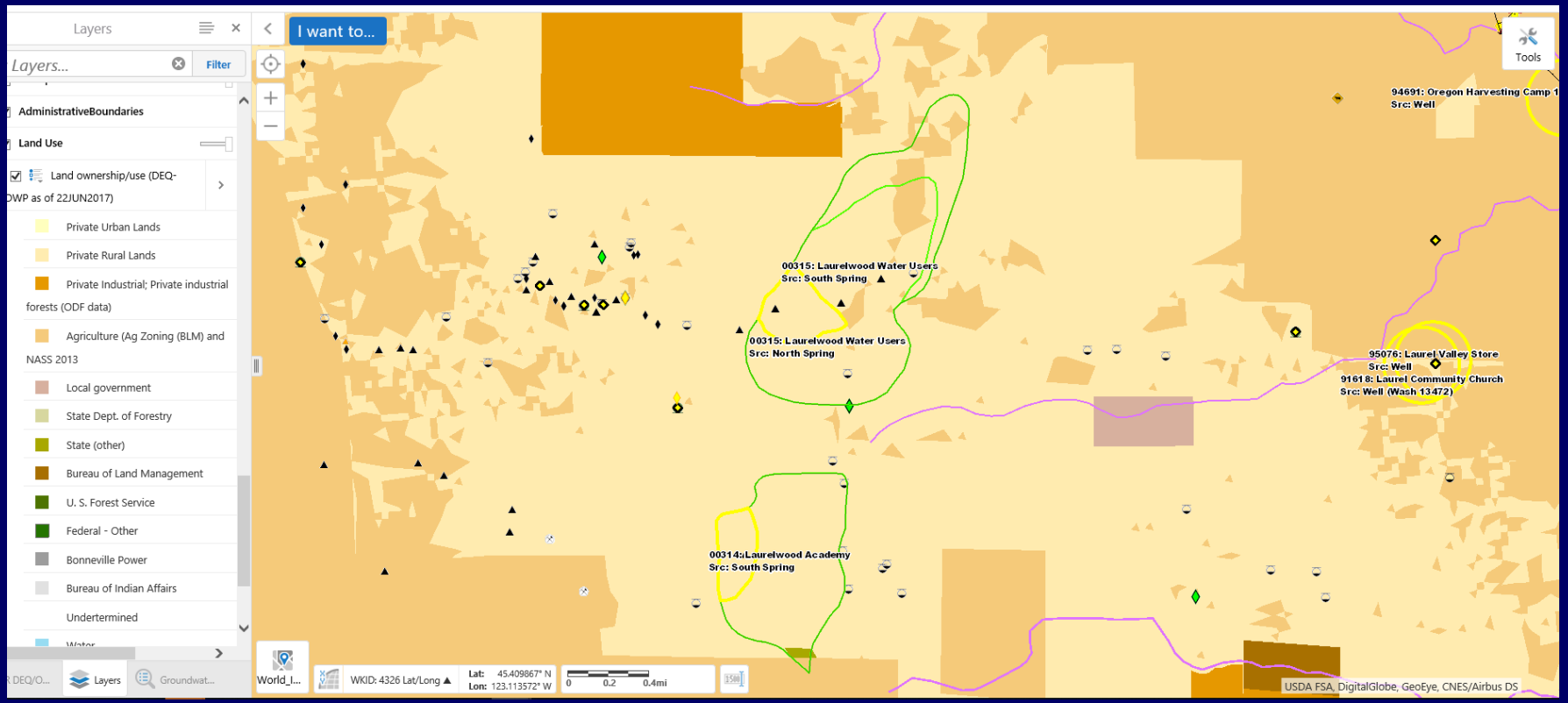
# Drinking Water Protection Interactive Map Viewer

## Potential Contaminate Source Layer



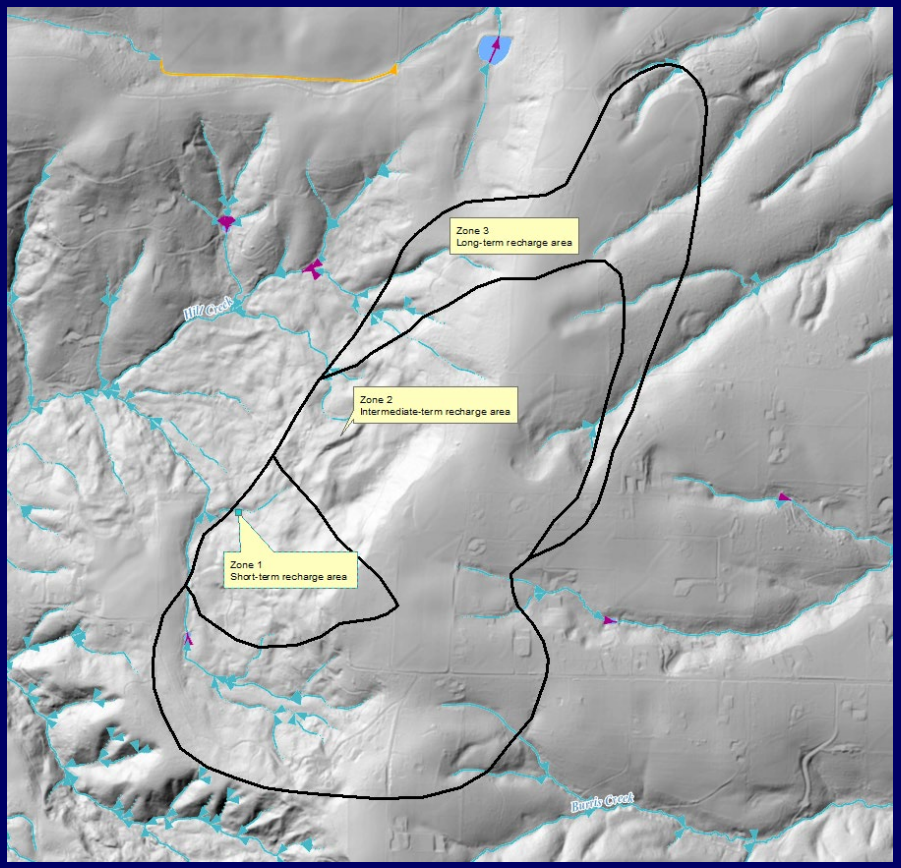
# Drinking Water Protection Interactive Map Viewer

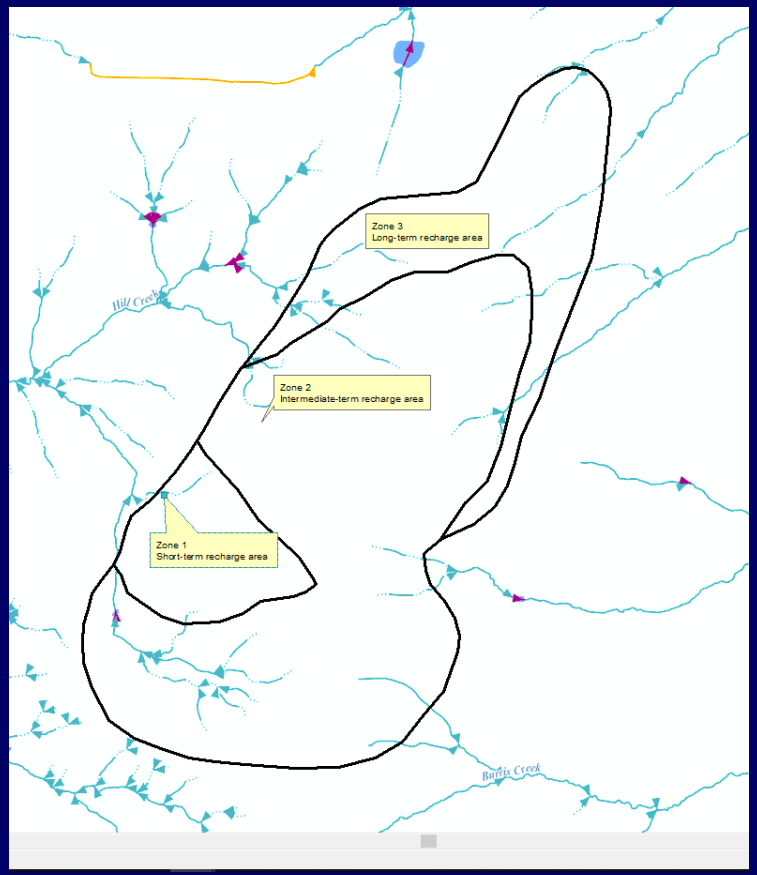
## Land Ownership/Use Layer



# Other GIS Data

## LIDAR and National Hydrography Dataset Layers



# Source Water Protection Grant Opportunities

- Apply with simple form to OHA (see DW-SRLF page )
- $50,000 per PWS, per year, maximum
- PWS can coordinate w/other PWS to increase grant amount
- Selection based on risks, reduction, etc.
- 2023 application period ends March 22nd
- Web Search: Oregon Source Water Protection Grants

Oregon Health Authority
Drinking Water Services
2023 Drinking Water Source Protection Fund

General:

- Accepting Letters of Interest January 23 through March 22, 2023
- Low interest loans of up to $100,000
- Grants of up to $50,000 per water system
- Water systems can collaborate on a regional (joint) project and combine funds
- Emergency grants are available for source water threats that arise outside the LOI submission deadline.
- Since 2007, ~$2,572,837 has been used to fund 80 completed projects

Public Water System Eligibility:

- Public and Privately owned Community water systems
- Nonprofit non-community water systems

Eligible Projects:

- Enhanced Source Water Area delineation
- Enhanced Assessment of source water risks
  - Inventory of potential contaminant sources within source water area
  - Evaluation of potential threats to water quality
- Development of source protection strategies or plans
- Implementation of protection strategies
- Security strategies targeting sensitive source areas (see General Info Doc)
- Note that Drinking Water Source Protection projects focused on Enhanced Assessments may provide insight or data that can also be used in Resiliency Assessments.

For more Information:

- See Drinking Water Source Protection Fund LOI form and General Information on Funding document at: https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/SRF/Pages/spf.aspx

For Questions/Assistance Regarding Projects and Project Eligibility:

- Groundwater systems can contact Tom Pattee or their Region Hydrogeologist:
  - Tom Pattee, (541) 684-2440
  - Russ Kazmierczak, (971) 599-0121
  - Shawn Stevenson, (541) 650-1640
- Surface water systems can contact Julie Harvey at DEQ, (503) 229-5664

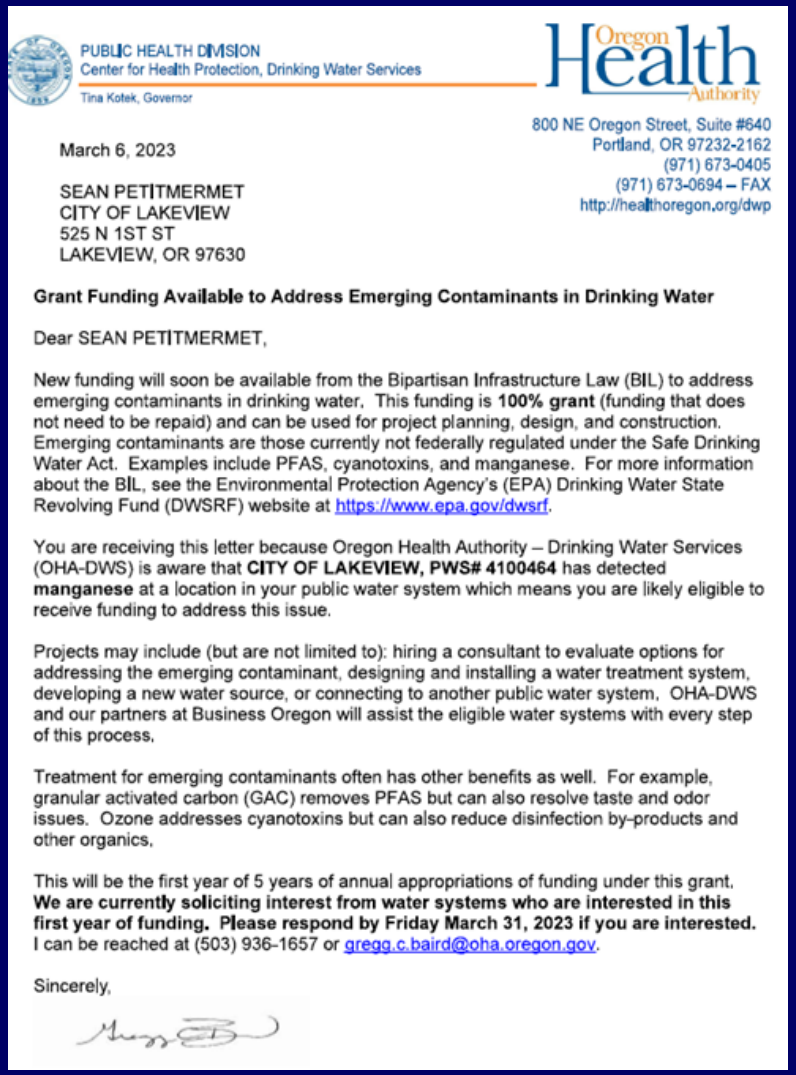
# Source Water Protection Grant Opportunities

## Source Area Project Examples

- Emergency/spill prevention planning
- Resiliency assessments
- Pesticide application rate and loading reduction projects
- Agricultural pesticide and household hazardous waste collection event
- Installation of fencing to protect sensitive source areas
- Installation of signs at boundaries of zones or protection areas
- Projects for reforestation or replanting in sensitive or riparian areas
- Purchase of lands within source areas (funded only via low interest loans)
- Management plans for easements or lands purchased within source areas
- Drug-take-back projects
- Closure of high-risk abandoned or unused (private or irrigation) wells
- Onsite septic system projects
- Secondary containment for high-risk ABOVE ground tanks
- Web Applications
- Implementation of a drinking water source protection ordinance

# Other Funding Sources

- See DEQ Groundwater Resource Guide for long list (see page 36)
  - https://www.oregon.gov/deq/FilterDocs/gwresguide.pdf
- Bipartisan Infrastructure Law (BIL) Funding
  - DWSRF (emerging contaminants) = up to $9.9 million
  - Announcement this week that Oregon will receive $18.9 million
- Emerging contaminate grant funding letters went out this week
  - Examples include PFAS, cyanotoxins, and manganese
- Stay tuned, more funding possible



PUBLIC HEALTH DIVISION
Center for Health Protection, Drinking Water Services
Tina Kotek, Governor

Oregon Health Authority

800 NE Oregon Street, Suite #640
Portland, OR 97232-2162
(971) 673-0405
(971) 673-0694 – FAX
http://healthoregon.org/dwp

March 6, 2023

SEAN PETITMERMET
CITY OF LAKEVIEW
525 N 1ST ST
LAKEVIEW, OR 97630

**Grant Funding Available to Address Emerging Contaminants in Drinking Water**

Dear SEAN PETITMERMET,

New funding will soon be available from the Bipartisan Infrastructure Law (BIL) to address emerging contaminants in drinking water. This funding is **100% grant** (funding that does not need to be repaid) and can be used for project planning, design, and construction. Emerging contaminants are those currently not federally regulated under the Safe Drinking Water Act. Examples include PFAS, cyanotoxins, and manganese. For more information about the BIL, see the Environmental Protection Agency's (EPA) Drinking Water State Revolving Fund (DWSRF) website at https://www.epa.gov/dwsrf.

You are receiving this letter because Oregon Health Authority – Drinking Water Services (OHA-DWS) is aware that **CITY OF LAKEVIEW, PWS# 4100464** has detected **manganese** at a location in your public water system which means you are likely eligible to receive funding to address this issue.

Projects may include (but are not limited to): hiring a consultant to evaluate options for addressing the emerging contaminant, designing and installing a water treatment system, developing a new water source, or connecting to another public water system. OHA-DWS and our partners at Business Oregon will assist the eligible water systems with every step of this process.

Treatment for emerging contaminants often has other benefits as well. For example, granular activated carbon (GAC) removes PFAS but can also resolve taste and odor issues. Ozone addresses cyanotoxins but can also reduce disinfection by-products and other organics.

This will be the first year of 5 years of annual appropriations of funding under this grant. **We are currently soliciting interest from water systems who are interested in this first year of funding. Please respond by Friday March 31, 2023 if you are interested.** I can be reached at (503) 936-1657 or gregg.c.baird@oha.oregon.gov.

Sincerely,

# East Palestine Train Derailment
# Example Spill Incident

This photo taken with a drone shows portions of a Norfolk and Southern freight train that derailed Friday night in East Palestine, Ohio are still on fire at mid-day Saturday, Feb. 4, 2023. (AP Photo/Gene J. Puskar)

*Gene J. Puskar*

- PWS Served by 5 wells
- Pump water from sand and gravel aquifer
- SWL 30 to 60 feet below ground surface
- Soils in the area are silty loams which are moderately well to poorly drained (little protection)
- Wells are upgradient from the spill and should not reach the source area
- Monitoring wells installed between the wells and spill
- No detections for contaminates in PWS drinking water
  - Does not apply to private wells or surface water
- Lack of public trust
- Significant decrease in property values

# East Palestine Source Water Assessment

**DRINKING WATER SOURCE ASSESSMENT**
**for the Village of East Palestine**
**PWS ID #OH1500912**

*Protecting* Ohio's Drinking Water Sources

**July 2002**
**Revised December 2019**

**INTRODUCTION.** The 1996 Amendments to the Safe Drinking Water Act establish a program for states to assess the drinking water source for all public water systems. Ohio's Source Water Assessment and Protection Program is designed to help public water systems protect their sources of drinking water from becoming contaminated. This assessment:

- identifies the drinking water source protection area, based on the area that supplies water to the well(s),
- inventories the potential contaminant sources in the area,
- evaluates the susceptibility of the drinking water source to contamination, and
- recommends protective strategies.

The purpose of the assessment is to provide information that the Village of East Palestine can use to help protect its source of drinking water from contamination.

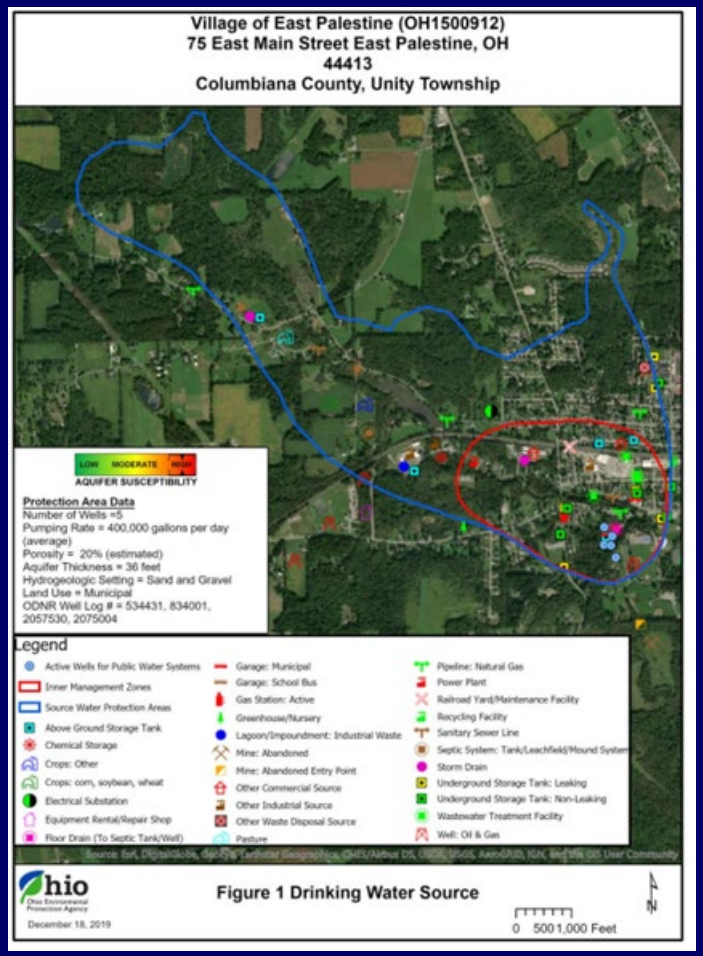
**SYSTEM DESCRIPTION & GEOLOGY.** The Village of East Palestine is a community public water system serving 4721 people in East Palestine, Ohio. This system operates 5 wells that pump approximately 400,000 gallons of water per day from a sand and gravel aquifer (water-rich zone) within the Little Beaver Creek Outwash/Kame aquifer system. Details on the drinking water wells is included in Table 1. The aquifer is covered by 0 feet of low-permeability material, which provides no protection from contamination. Depth to water in this aquifer is 30 to 62 feet below the ground surface

Soils in the area are silty loams which are moderately well to somewhat poorly drained, meaning that much of the rainfall and snowmelt will infiltrate into the soil, instead of running off or ponding. The topography is generally minimally sloping with an average relief of 0-2 percent. Ground water in this area is replenished by the gradual flow of water underground from higher to lower elevations and by approximately 7-10 inches per year of precipitation that infiltrates through the soil. At the Village of East Palestine wellfield, ground water flows generally toward the northeast towards the Leslie Run valley, based on a water table elevation map completed by the Ohio Department of Natural Resources.

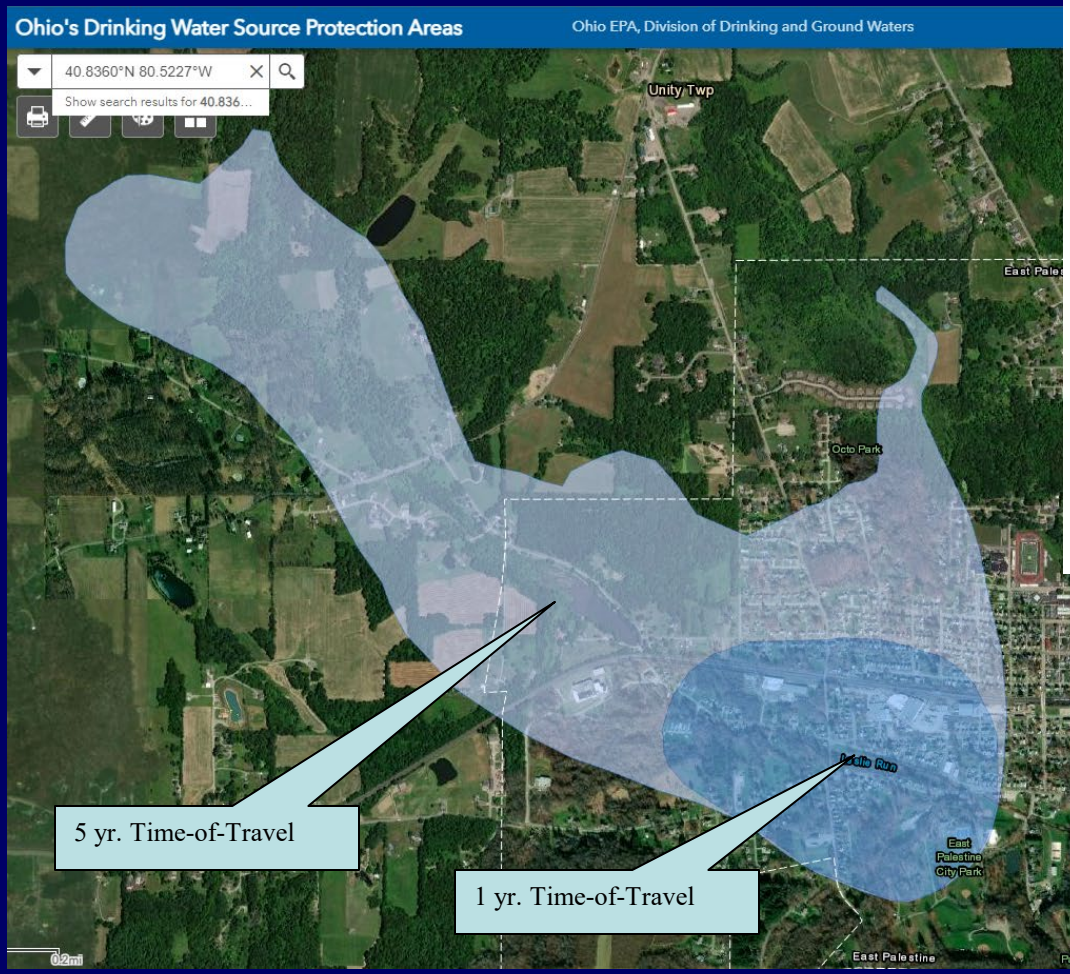
**PROTECTION AREA.** The drinking water source protection area for the Village of East Palestine wells is illustrated in Figure 1. This figure shows two areas, one inside the other. The "inner management zone" is the area that provides ground water to Village of East Palestine's wells within one year of pumping. A chemical spill in this zone poses a greater threat to the drinking water, so this area warrants more stringent protection. The "source water protection area" is the additional area that contributes water when the wells are pumped for five years. Together, they comprise the drinking water source protection area.

***Method Selection***

An analytic element model computer program called GFLOW (Ground water FLOW) was used to determine the areal extent of the protection area. Protection areas based on computer modeling can be significantly more credible than those produced by simpler methods, especially in areas with complex geology. The time and effort required to develop a computer model are warranted when the wellfield is located in a complex hydrogeologic setting, and the hydrogeologic data needed to run the program are available for the area. Both criteria were met for

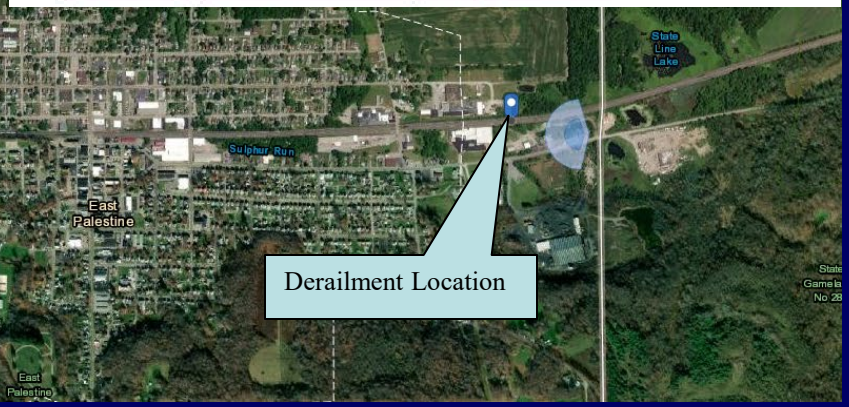


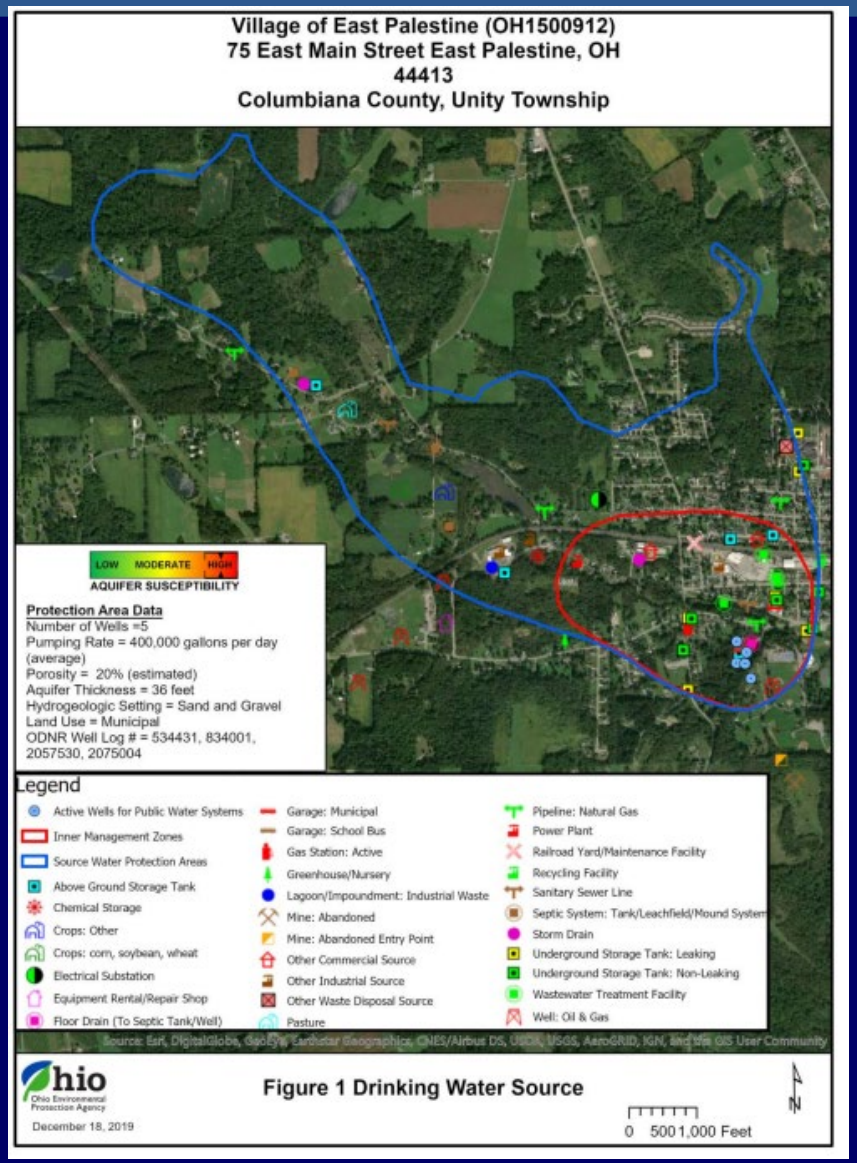
# East Palestine Source Water Assessment

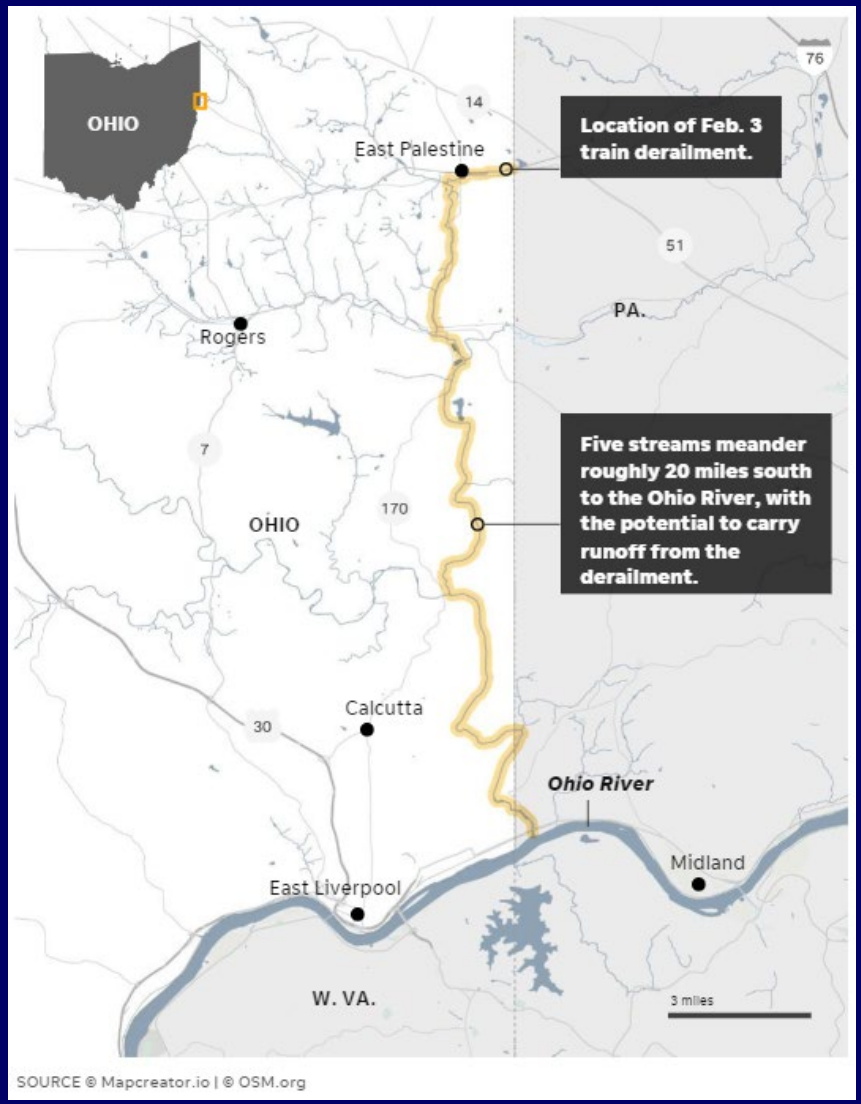




Ohio EPA, 2023, https://epa.ohio.gov/monitor-pollution/pollution-issues/east-palestine

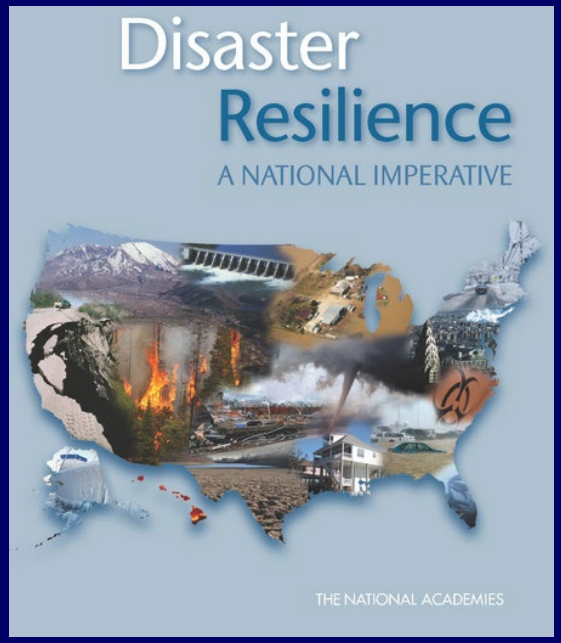



Village of East Palestine (OH1500912)
75 East Main Street East Palestine, OH
44413
Columbiana County, Unity Township
LOW MODERATE HIGH
AQUIFER SUSCEPTIBILITY
Protection Area Data
Number of Wells =5
Pumping Rate = 400,000 gallons per day (average)
Porosity = 20% (estimated)
Aquifer Thickness = 36 feet
Hydrogeologic Setting = Sand and Gravel
Land Use = Municipal
ODNR Well Log # = 534431, 834001, 2057530, 2075004
Legend
Active Wells for Public Water Systems
Inner Management Zones
Source Water Protection Areas
Above Ground Storage Tank
Chemical Storage
Crops: Other
Crops: corn, soybean, wheat
Electrical Substation
Equipment Rental/Repair Shop
Floor Drain (To Septic Tank/Well)
Garage: Municipal
Garage: School Bus
Gas Station: Active
Greenhouse/Nursery
Lagoon/Impoundment: Industrial Waste
Mine: Abandoned
Mine: Abandoned Entry Point
Other Commercial Source
Other Industrial Source
Other Waste Disposal Source
Pasture
Pipeline: Natural Gas
Power Plant
Railroad Yard/Maintenance Facility
Recycling Facility
Sanitary Sewer Line
Septic System: Tank/Leachfield/Mound System
Storm Drain
Underground Storage Tank: Leaking
Underground Storage Tank: Non-Leaking
Wastewater Treatment Facility
Well: Oil & Gas
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Ohio Environmental Protection Agency
December 18, 2019
Figure 1 Drinking Water Source
0 500 1,000 Feet


OHIO
East Palestine
Location of Feb. 3 train derailment.
Rogers
PA.
Five streams meander roughly 20 miles south to the Ohio River, with the potential to carry runoff from the derailment.
OHIO
Calcutta
Ohio River
Midland
East Liverpool
W. VA.
3 miles
14
76
51
7
170
30
SOURCE © Mapcreator.io | © OSM.org

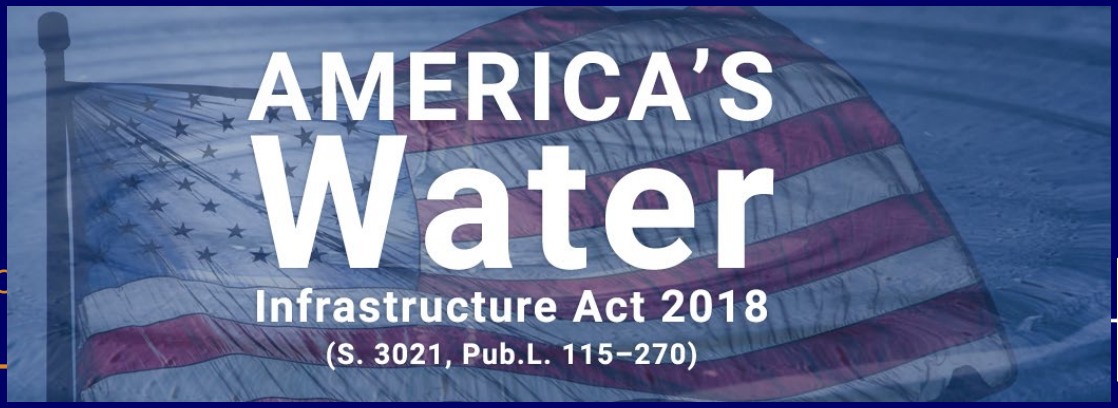
# Emergency Response Plans (ERP) and Resiliency

- Resiliency - “Water resiliency includes water security, preparedness, and emergency response. It means increasing capacity to prevent, mitigate, prepare for, respond to, and recover from all hazards. It means maintaining the capability of service to the community – the provision of safe, clean, wholesome potable water reliably and adequately.”



# Resiliency Regulatory Drivers

- Post 2001 - Terrorism was the primary previous driver for initial Emergency Response Plan (ERP) requirements
  - Required all systems to complete a Vulnerability Assessment and ERP
    - Community systems over 3,300 in pop. required to provide proof of completion to EPA
- 2018 - America's Water Infrastructure Act (AWIA)
  - Amended the 1986 Emergency Planning and Community Right-to-Know Act (EPCRA) requirements
  - Requires Community Water Systems (CWSs) serving >3,300 people to develop or update Risk and Resilience Assessments (RRAs) and Emergency Response Plans (ERPs)
  - EPA Web Site for AWIA: https://www.epa.gov/waterresilience/awia-section-2013



# Resiliency Regulatory Drivers

- 2022 – Oregon updated Emergency Response Plan Requirements (see OAR 333-061-0064)
  - Risk & resilience assessment
  - Communications
  - Emergency contacts
  - Emergency chemical suppliers
  - Cross coordination


- All CWS and NTNC must maintain an ERP
  - Water system staff must be instructed and trained in the use of the plan and the plan must be accessible at all times to all water system staff for use during emergencies
- Transient Non-Community (TNC) & Oregon Very Small (OVS) systems no longer required to maintain ERP plans, but still strongly encouraged

# Risk & Resiliency Assessment (RRA) and Emergency Response (ERP) for Pop. >3,300

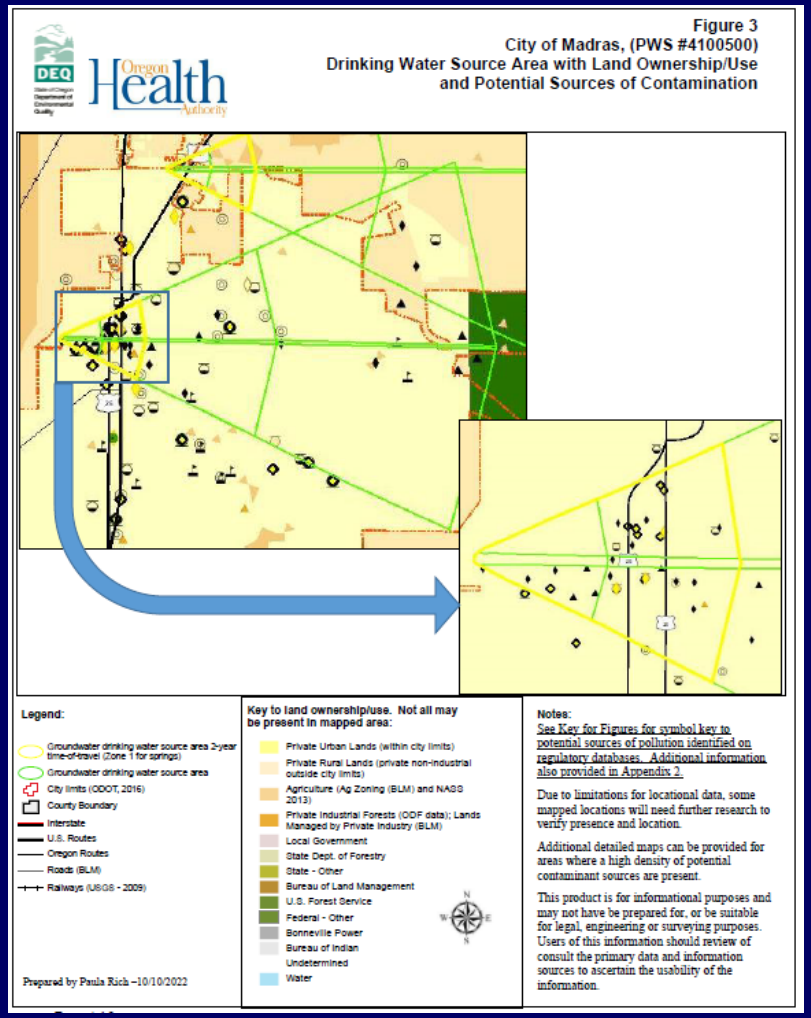
- CWS must complete a RRA in addition to maintaining an ERP
  - Both must be updated at least every 5 years
- RRA must include the following:
  - Natural and man-made risks (terrorism, vandalism, spills, etc..) to the water system
  - Resilience of the water system infrastructure, including pipes, physical barriers, water sources (wells, surface water), intake facilities, pretreatment or treatment facilities, storage and distribution facilities, and electronic, computer or other automated systems (including the security of such systems) which are utilized at the system
  - The water quality monitoring practices at the system
  - The financial infrastructure for the system, such as business continuity or rate setting
  - The use, storage, or handling of any chemicals by the system
  - The operation and maintenance of the water system

# RRA and ERP for Pop. >3,300

- The ERP must incorporate the findings of the RRA and include the following:
  - Strategies and resources to improve the resilience of the system
    - Physical security and cybersecurity of the system
  - Identify actions, plans, procedures, and equipment to be implemented and utilized during an emergency, such as:
    - Descriptions for isolating parts of the water system (if applicable)
    - Emergency disinfection procedures, process for issuing water advisories and process for responding to a waterborne disease outbreak
    - Make provisions for auxiliary power supply and redundant equipment for critical components
    - Develop plans for water rationing and emergency provision of water (bottled water, water hauling, mobile treatment, etc..)

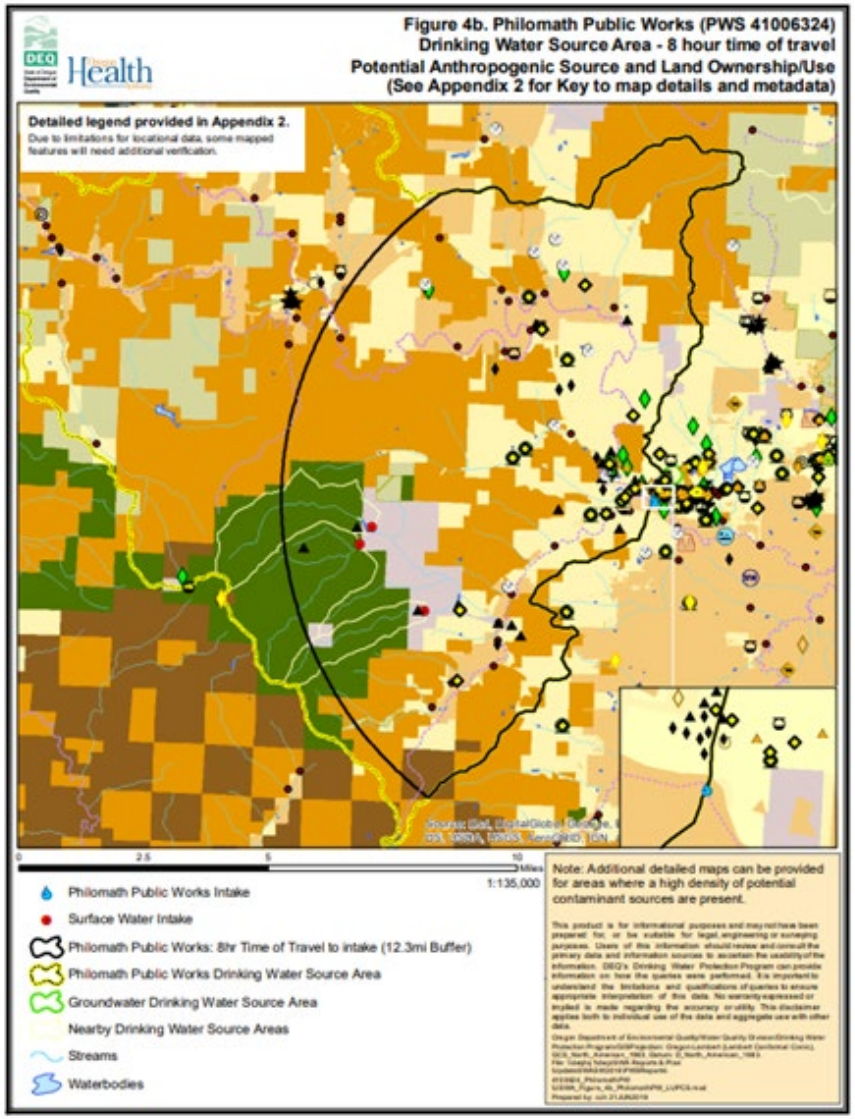
# RRA and ERP for Pop. >3,300

- Response procedures for events involving high-risk contaminant sources or activities as identified in the water system's source water assessment within the following areas
  - A one-year time-of-travel for wells or zone 1 for springs for groundwater sources with a delineated drinking water source area
  - Within a 500 ft. radius of a groundwater well, spring, or infiltration gallery without a delineated drinking water source area



# RRA and ERP for Pop. >3,300

  - An eight-hour time-of-travel or an area within the eight-hour time-of-travel that captures high risk sources based on sensitive area information in the source water assessment for surface water sources
- For assistance with GW Source Water Assessments contact OHA-DWS at 971-673-0405
- For assistance with SW contact the DEQ at 503-229-5664



# RRA and ERP for Pop. >3,300

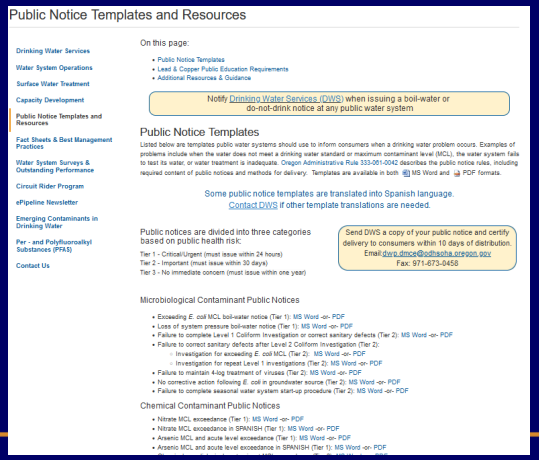
- Communications:
  - Coordinate with local emergency planning committees when preparing or revising the emergency response plan
    - Know and talk to your County Emergency Manager
      - Oregon's Local and Tribal Emergency Managers (https://www.oregon.gov/oem/Documents/locals_list.pdf)
  - Identify customers serving vulnerable populations (hospitals, medical, childcare, elder-care facilities)
  - Develop and maintain emergency contacts list for notification procedures
  - Identify decision-making authorities and responsibilities for water system staff
  - Procedure for notification of agencies, water users and local media during emergency situations

# RRA and ERP for Pop. ≤3,300

- The ERP for Community and NTNC water systems serving 3,300 or fewer people shall include procedures for reasonably anticipated emergencies and address the following:
  - Plan for physical security measures
  - If computer networks or automated control systems operate or monitor processes at the water system, cybersecurity measures must be implemented, including but not limited to:
    - Establishing a password policy based on current cybersecurity standards
    - Software update plan
    - monitoring for suspicious activity,
    - installing and updating anti-virus or anti-malware software

# RRA and ERP for Pop. ≤3,300

- Procedures for:
  - Isolating all parts of system
  - Emergency disinfection
  - Issuing boil water and "Do Not Drink" public advisories
  - Loss of electrical power
  - Loss of pressure in the water distribution system
  - Disruption or failure of disinfection or other treatment systems
  - Detection of E. coli bacteria or another contaminant exceeding the MCL
  - Coordination with local emergency management agencies in the event of an emergency event that overwhelms the water system staff's ability to respond
    - Oregon's Local and Tribal Emergency Managers (https://www.oregon.gov/oem/Documents/locals_list.pdf)


Public Notice Templates and Resources

Drinking Water Services
Water System Operations
Surface Water Treatment
Capacity Development
Public Notice Templates and Resources
Fact Sheets & Best Management Practices
Water System Surveys & Outstanding Performance
Circuit Rider Program
ePipeline Newsletter
Emerging Contaminants in Drinking Water
Per - and Polyfluoroalkyl Substances (PFAS)
Contact Us

On this page:
- Public Notice Templates
- Lead & Copper Public Education Requirements
- Additional Resources & Guidance

Notify Drinking Water Services (DWS) when issuing a boil-water or do-not-drink notice at any public water system

Public Notice Templates

Listed below are templates public water systems should use to inform consumers when a drinking water problem occurs. Examples of problems include when the water does not meet a drinking water standard or maximum contaminant level (MCL), the water system fails to test its water, or water treatment is inadequate. Oregon Administrative Rule 333-061-0042 describes the public notice rules, including required content of public notices and methods for delivery. Templates are available in both MS Word and PDF formats.

Some public notice templates are translated into Spanish language.
Contact DWS if other template translations are needed.

Public notices are divided into three categories based on public health risk:
Tier 1 - Critical/Urgent (must issue within 24 hours)
Tier 2 - Important (must issue within 30 days)
Tier 3 - No immediate concern (must issue within one year)

Send DWS a copy of your public notice and certify delivery to consumers within 10 days of distribution.
Email:dwg.dmce@odhsoha.oregon.gov
Fax: 971-673-0458

Microbiological Contaminant Public Notices
- Exceeding *E. coli* MCL boil-water notice (Tier 1): MS Word -or- PDF
- Loss of system pressure boil-water notice (Tier 1): MS Word -or- PDF
- Failure to complete Level 1 Coliform Investigation or correct sanitary defects (Tier 2): MS Word -or- PDF
- Failure to correct sanitary defects after Level 2 Coliform Investigation (Tier 2):
  - Investigation for exceeding *E. coli* MCL (Tier 2): MS Word -or- PDF
  - Investigation for repeat Level 1 investigations (Tier 2): MS Word -or- PDF
- Failure to maintain 4-log treatment of viruses (Tier 2): MS Word -or- PDF
- No corrective action following *E. coli* in groundwater source (Tier 2): MS Word -or- PDF
- Failure to complete seasonal water system start-up procedure (Tier 2): MS Word -or- PDF

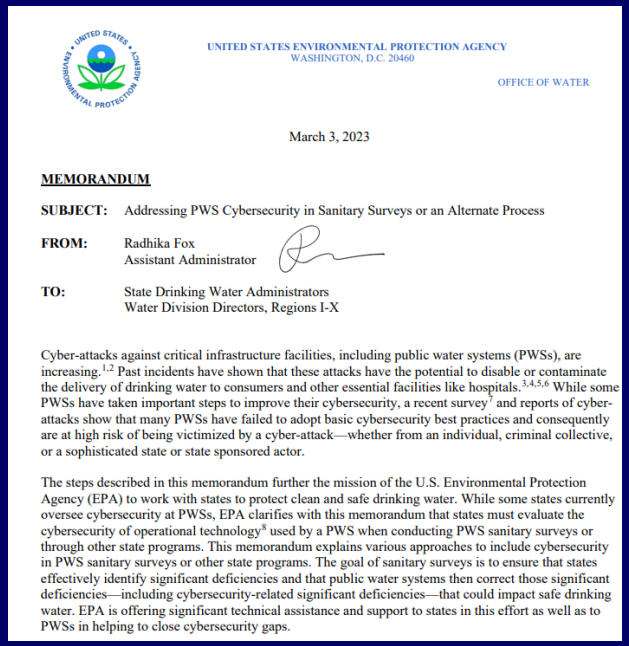
Chemical Contaminant Public Notices
- Nitrate MCL exceedance (Tier 1): MS Word -or- PDF
- Nitrate MCL exceedance in SPANISH (Tier 1): MS Word -or- PDF
- Arsenic MCL and acute level exceedance (Tier 1): MS Word -or- PDF
- Arsenic MCL and acute level exceedance in SPANISH (Tier 1): MS Word -or- PDF

# RRA and ERP for Pop. ≤3,300

- EPA Resources
  - RRA and ERP Primer for Very Small Drinking Water and Wastewater Systems (pdf) (1.06 MB, 10/14/2022, 810F22016)
  - Very Small Drinking Water and Wastewater System Resilience CEU Program - Standard Operating Procedures (pdf) (237.65 KB, 1/10/2023, 810F22015)
  - Very Small Drinking Water and Wastewater System Resilience CEU Program - Certificate of Completion (pdf) (2.28 MB, 1/10/2023, 810F22014)
- Working to see if CEUs can be granted for completion of program (development of ERP and RRA)
  - Possibly 1-10 CEUs per individual

# New EPA Interpretative Rule on Assessing Cybersecurity

- New as of March 3, 2023 - EPA released a memorandum stressing the need for states to assess cybersecurity risk at drinking water systems to protect our public drinking water
  - The memorandum conveys EPA's interpretation that states must include cybersecurity when they conduct Water System Surveys
  - Memo at https://www.epa.gov/system/files/documents/2023-03/Addressing%20PWS%20Cybersecurity%20in%20Sanitary%20Surveys%20Memo_March%202023.pdf
  - Cybersecurity 101 Training
    - Slides - https://www.epa.gov/system/files/documents/2023-03/Cybersecurity%20101%20Webinar.pdf
    - YouTube Video - https://youtu.be/e2QDbgrojb0



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

March 3, 2023

**MEMORANDUM**

**SUBJECT:** Addressing PWS Cybersecurity in Sanitary Surveys or an Alternate Process

**FROM:** Radhika Fox
Assistant Administrator

**TO:** State Drinking Water Administrators
Water Division Directors, Regions I-X

Cyber-attacks against critical infrastructure facilities, including public water systems (PWSs), are increasing.[1,2] Past incidents have shown that these attacks have the potential to disable or contaminate the delivery of drinking water to consumers and other essential facilities like hospitals.[3,4,5,6] While some PWSs have taken important steps to improve their cybersecurity, a recent survey[7] and reports of cyber-attacks show that many PWSs have failed to adopt basic cybersecurity best practices and consequently are at high risk of being victimized by a cyber-attack—whether from an individual, criminal collective, or a sophisticated state or state sponsored actor.

The steps described in this memorandum further the mission of the U.S. Environmental Protection Agency (EPA) to work with states to protect clean and safe drinking water. While some states currently oversee cybersecurity at PWSs, EPA clarifies with this memorandum that states must evaluate the cybersecurity of operational technology[8] used by a PWS when conducting PWS sanitary surveys or through other state programs. This memorandum explains various approaches to include cybersecurity in PWS sanitary surveys or other state programs. The goal of sanitary surveys is to ensure that states effectively identify significant deficiencies and that public water systems then correct those significant deficiencies—including cybersecurity-related significant deficiencies—that could impact safe drinking water. EPA is offering significant technical assistance and support to states in this effort as well as to PWSs in helping to close cybersecurity gaps.

# Cybersecurity Technical Support and Security

EPA: Cyber Technical Assistance Program for the Water Sector: The Cyber Technical Assistance Program will support primacy agencies and water systems in implementing cybersecurity measures. Users may submit questions or request to consult with a subject matter expert regarding cybersecurity in PWS sanitary surveys or other cybersecurity matters.

https://www.epa.gov/waterriskassessment/forms/cybersecurity-technical-assistance-water-utilities

EPA: Water Sector Cybersecurity Evaluation Program: EPA's Cyber Evaluation Program will conduct a cybersecurity assessment for PWSs. The assessment will follow the checklist in the guidance on Evaluating Cybersecurity in PWS Sanitary Surveys which will then generate a report that will highlight gaps in cybersecurity, including potential significant deficiencies.

https://www.epa.gov/waterriskassessment/forms/epas-water-sector-cybersecurity-evaluation-program

## Training (Register Here links below are active)

| Date | Title & Registration Link | Description |
|---|---|---|
| Part 1: March 7, 2023, 12:00 - 3:00pm<br>Part 2: March 9, 2023, 12:00 – 3:00pm | Cybersecurity Assessment Training for Public Water Systems Webinar<br>Register Here | This two-part webinar series for Public Water Systems (PWS) will demonstrate how to use the cybersecurity checklist to assess their program, information on how to address vulnerabilities, and available resources. **Attendees are encouraged to attend both Part One and Part Two of the series.** |
| Part 1: March 21, 2023, 12:00 – 3:00pm<br>Part 2: March 23, 2023, 12:00 – 3:00pm | Cybersecurity Assessment Training for Public Water Systems Webinar<br>Register Here | This two-part webinar series for Public Water Systems (PWS) will demonstrate how to use the cybersecurity checklist to assess their program, information on how to address vulnerabilities, and available resources. **Attendees are encouraged to attend both Part One and Part Two of the series.** |

# Cybersecurity Funding

- Systems under 10K can use USDA Rural Development funds to have SCADA systems evaluated
- Sustainable Infrastructure Planning Projects
  - Security Risk and Vulnerability Studies – Studies or assessments to evaluate infrastructure and information security, including cybersecurity
    - Studies must assess risk and potential impacts and include identification of needed security improvements
    - Studies may also include identification of critical information technology assets, process controls, communications and personnel, and the development of security procedures and protocols
  - **SIPP applications accepted: March 15 and September 15**
    - $20,000 per project. Priority is given to systems that serve fewer than 300 service connections
    - https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/SRF/Pages/sipp.aspx

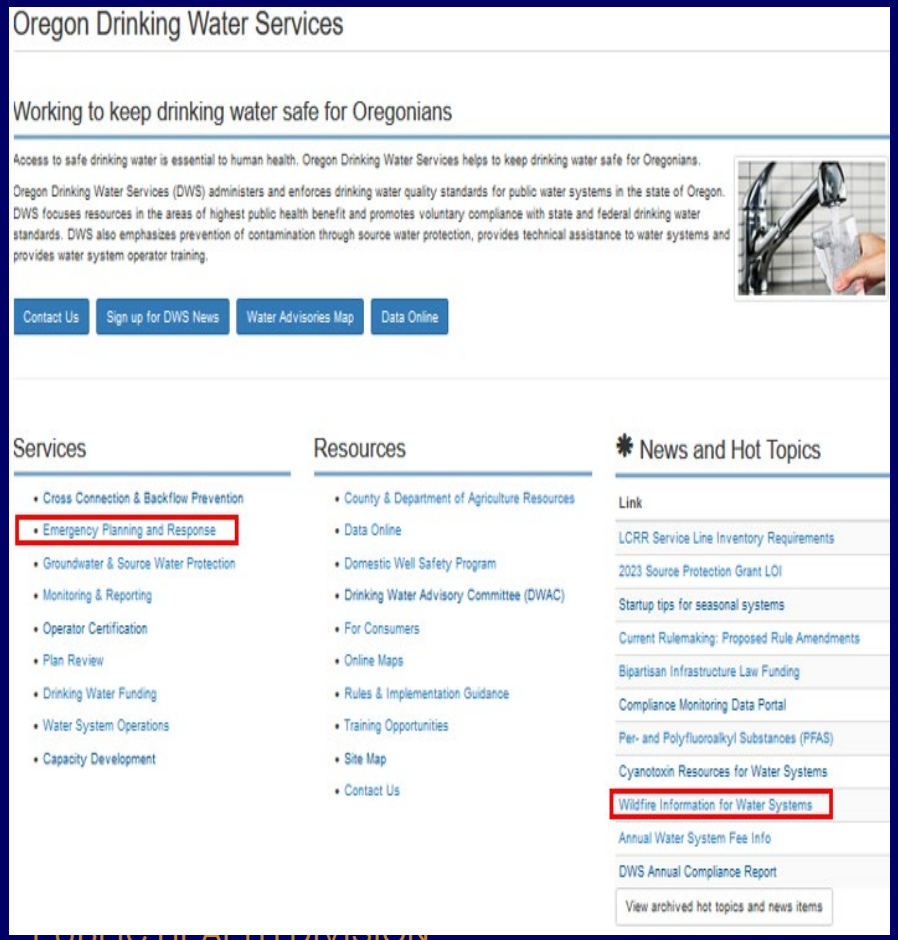
– MS Word or – PDF

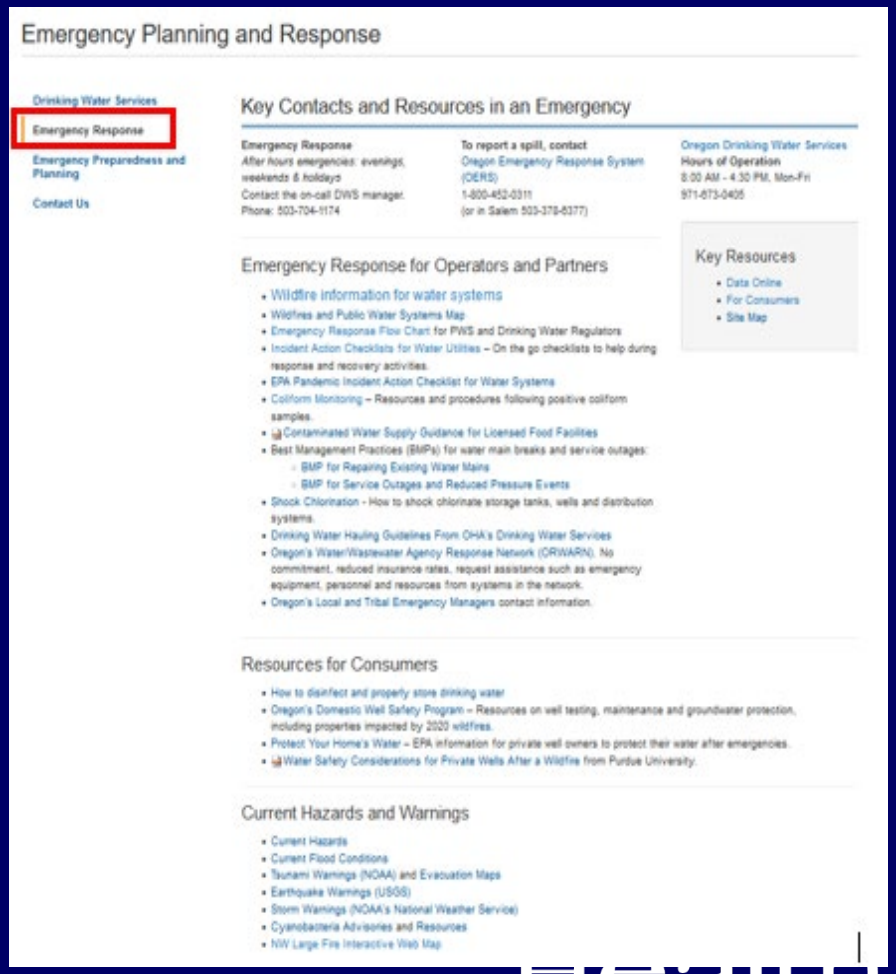
# ERP Templates and Checklist

- ERP Support Documents
  - Emergency Response and Planning Guidance for Water Systems
    - https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/PREPAREDNESS/Documents/ERP-guidance-2022.docx
  - CWS (serving >3,300 people) Supplemental ERP Template
    - https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/PREPAREDNESS/Documents/CWS-NTNC-ERP-template-2022.docx
  - CWS NTNC (<3,300 people or fewer) ERP Template
    - https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/PREPAREDNESS/Documents/CWS-ERP-supp-template-2022.docx
  - Emergency Response and Planning Checklist for Water Systems
    - https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/PREPAREDNESS/Documents/ERP-checklist-2022.docx

# Emergency Planning and Response

## Emergency Response



# Emergency Preparedness and Planning

## Emergency Response and Planning

**Templates for water systems**

- Emergency Response and Planning Guidance for Water Systems MS Word or PDF
- CWS NTNC (serving 3,300 people or fewer) ERP Template MS Word or PDF
- CWS (serving over 3.300 people) Supplemental ERP Template MS Word or PDF
- Emergency Response and Planning Checklist for Water Systems MS Word or PDF

OAR 333-061-0064 became effective February 1, 2023.

**Community and Non-transient, Non-community (NTNC) water systems serving 3,300 people or fewer:**
These systems are required to develop and maintain an emergency response plan (ERP) that can be accessed by water system staff during emergencies. DWS has developed an emergency response plan template for Community and NTNC water systems serving 3,300 people or fewer.

**Community Water Systems serving more than 3,300 people:**
Emergency response and planning requirements have been updated to align with America's Water Infrastructure Act (AWIA) which requires Community Water Systems (CWS) serving more than 3,300 people to conduct a risk and resilience assessment (RRA) and develop and maintain an ERP based on the findings from the assessment.

There are additional requirements for CWS serving more than 3,300 people and DWS has developed a supplemental template for these systems to add to their current AWIA compliant ERP. Additional requirements include:

- developing procedures for emergency events involving high-risk contaminant sources or activities,
- identifying institutional customers serving vulnerable populations,
- developing, and maintaining an emergency contact list,
- identifying decision making authorities, and
- developing procedures for notifying agencies, customers, and local media during emergencies.

Note: Water systems are not required to certify to DWS that their plans are complete and should not send documents with critical information to DWS. These documents must be made available for review during the water system's sanitary survey.

- DEQ's Source Water Assessment website
- EPA's Vulnerability Self-Assessment Tool (free, downloadable tool applies to both small and large water systems)
- How to certify completion of RRA or ERP to the EPA – for systems serving over 3,300 people

### Power outages

- EPA's power resilience guide provides information on how to use generators, fuel supply planning and other methods to increase water system resiliency.
- Quick facts about auxiliary power for water systems

### Earthquakes

- 2001 earthquake risk evaluation pilot study for hospitals and water systems in Oregon from the Oregon Department of Geology and Mineral Industries.
- EPA's earthquake resilience guide describes strategies that water systems can take to prepare for and lessen the effects of earthquakes.
- Guidance from FEMA on how to install seismic restraints for mechanical equipment

### Flooding

- How water systems can increase their flood resiliency is an EPA guide for flooding preparation, response and recovery.
- What to do when your well has flooded offers guidance for private well owners. Developed by OHA Drinking Water Services.

## Drought and Water Conservation

- Current drought conditions in Oregon from the U.S. Drought Portal
- Incident Action Checklist on how to prepare, respond and recover from a drought from the EPA.
- Drought Response and Recovery Guide for water systems including case studies from around the U.S. Developed by the EPA.
- Saving water in Oregon factsheet, an introduction to Oregon's water source and water issues from the EPA.
- Water saving tips and considerations for water providers by the Oregon Water Resources Department.
- Guidebook designed to assist water suppliers in preparing a Water Management Conservation Plan from the Oregon Water Resources Department.
- EPA's Water Conservation Resources for Small Drinking Water Systems includes water audits & water loss control, water efficiency, water availability strategies & controlling water loss in distribution systems.
- Local Water Supply Emergency Planning Guidance for Emergency Managers includes drought and water considerations for local emergency management agencies from the Oregon Department of Emergency Management
- AWWA's Designing and Evaluating Effective and Ongoing Drought Communication includes best practices, language and messaging, traditional and modern drought communication tools and other information

## Cybersecurity

- EPA Cybersecurity Best Practices for Water Systems
- 15 Cybersecurity Fundamentals for Water and Wastewater Utilities from the from Water Information Sharing and Analysis Center (WaterISAC).
- Water Sector Cybersecurity Risk Management Guidance from the American Water Works Association (AWWA).
- Cybersecurity Guidance For Oregon Water Systems: MS Word or PDF
- Cybersecurity Risk & Responsibility in the Water Sector from AWWA
- Cybersecurity & Infrastructure Security Agency (CISA) - Ongoing Cyber Threats to U.S. Water & Wastewater Systems
- Cyber Risks & Resources for the Water & Wastewater Systems Sector from CISA
- Free services from the Cybersecurity & Infrastructure Security Agency (CISA): vulnerability scanning, remote penetration, testing, phishing, cyber risk and vulnerability assessments
- Cyber Security Evaluation Tool: a free desktop software tool that includes ransomware assessment and provides recommendations based on findings

## Wildfires

- Wildfires and Public Water Systems Map

**Response:**

- Addressing Contamination of Drinking Water Distribution Systems from VOCs After Wildfires from the EPA
- Post-wildfire VOC sampling guidance for water systems that were burned by fire
- Customer Guidance Regarding Water Quality in Buildings Located in Areas Damaged by Wildfire
- Guidance for post-fire source monitoring
- Wildfire public advisory templates for loss of pressure and do not drink unsafe water alert
- Well tips during a fire emergency from Oregon Water Resources Department (OWRD)

- **Resources:**
  - **2020 Wildfires — Impacts on Drinking Water Systems and Water Quality**
    - **Technical Report:** Detailed methods and findings from the 2020 Oregon VOC sampling effort and key takeaways from conversations with impacted water system operators and emergency response staff.
    - **Key Findings:** Bulleted list of key findings for each major section of the technical report.
    - **Esri ArcGIS StoryMap:** Shorter, less technical version of the larger report. Includes photos of damaged water systems and a basic map.
    - **Esri ArcGIS Web Map:** Robust online map of sampled and impacted drinking water systems and individual sample locations.
    - **Esri ArcGIS Web Experience:** Quick VOC statistics and a basic map of sampled and wildfire-impacted drinking water systems.
  - Wildfire Preparedness Guidance for Oregon Water Systems: MS Word or PDF
  - Post-Fire Water Right Considerations from OWRD
  - Wildfires: How Do They Affect Our Water Supplies? An EPA article on how wildfires have an impact on drinking water supplies.
  - Oregon Post-Wildfire and Flood Playbook
  - EPA Wildfire Incident Action Checklist
  - Drinking Water State Revolving Fund (DWSRF) provides financial assistance for infrastructure and planning projects. Most projects qualify for some level of subsidy (i.e., loan forgiveness). Planning projects can receive funding up to $20,000 per project in loan forgiveness.
  - Source Water Protection grants up to $30,000 per system are also available.
  - Circuit Rider Program is available to help prepare funding program Letter of Interest (LOI) documents and to provide short-term technical assistance with operational issues.
  - Domestic Well Owner Wildfire Resources - Free domestic well testing for wildfire-impacted properties and resources to assess fire damage to private wells.
  - Response & Recovery to Wildfire Caused Drinking Water Contamination from Purdue University
  - Optimizing Water Treatment Plants After a Wildfire

# Emergency Preparedness and Planning

## Source Water Protection

Protecting your system's water source whether it's groundwater, surface water or GWUDI is vital to improving resiliency and ability to prepare and respond to emergencies and natural disasters. Planning for emergencies such as a contaminant spill near your source should be tailored to hazards identified in your source area.

Water system personnel can develop source water protection strategies by identifying hazards, potential contaminants or land use practices that could impact their drinking water source. Examples of source water protection include reducing runoff pollution and sedimentation by restoring riparian zones and stabilizing stream banks, land protection or easements, limiting risky human activities in source water or wellhead protection areas and public education. For additional resources, visit Drinking Water Service's source water protection page.

## Chemical Storage

- The do's and don'ts of chemical storage in a water treatment plant provided by EPA.

## Hauling Water During an Emergency

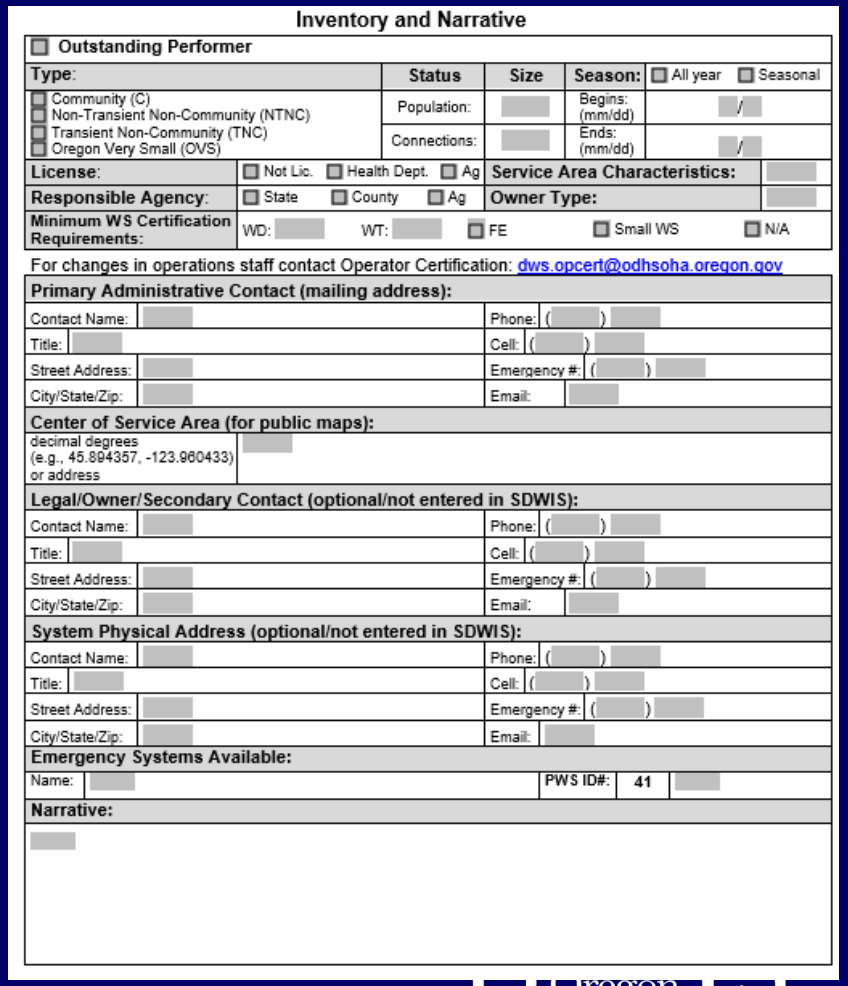
- Drinking water hauling guidelines from Oregon Health Authority Drinking Water Services

## Emergency Response and Preparedness Trainings

- Strategies from the EPA on how to create resilient water systems
- Past webinars on water system security and critical infrastructure protection from the Association of State Drinking Water Administrators (ASDWA).
- The Incident Command System (ICS), National Incident Management System (NIMS) and the National Response Framework (NRF) are national standards for preparing for and managing emergency situations. These ICS and NIMS training videos made by the EPA can be useful for operators and staff in how to manage emergencies.
- EPA resilience training tools for water and wastewater utilities, includes how to plan for trainings, how to develop table top exercises, etc.
- Resilience Assessments Webinar. Introduction on conducting a Risk and Vulnerability Assessment from the Water Information Sharing and Analysis Center (WaterISAC).
- To help save human lives, hold regular earthquake drills in your water system with resources from The Great Oregon Shakeout.
- FEMA IS-553.A: Coordination between Water Utilities and Emergency Management Agencies. This course seeks to enhance the knowledge and skills of emergency management agencies and drinking water utilities to enable more effective cross-sector relationships.

# Water System Surveys

- Responsibility of the Water Supplier
- Survey requirements
- Preparing for the survey
- Tips for success
- Survey follow-up
- Additional information
- Questions and answers



**Inventory and Narrative**

☐ **Outstanding Performer**

| **Type:** | **Status** | **Size** | **Season:** ☐ All year ☐ Seasonal |
|---|---|---|---|
| ☐ Community (C)<br>☐ Non-Transient Non-Community (NTNC)<br>☐ Transient Non-Community (TNC)<br>☐ Oregon Very Small (OVS) | Population: | | Begins: (mm/dd) / |
| | Connections: | | Ends: (mm/dd) / |

| | | | |
|---|---|---|---|
| **License:** | ☐ Not Lic. ☐ Health Dept. ☐ Ag | **Service Area Characteristics:** | |
| **Responsible Agency:** | ☐ State ☐ County ☐ Ag | **Owner Type:** | |
| **Minimum WS Certification Requirements:** | WD: WT: ☐ FE ☐ Small WS ☐ N/A | | |

For changes in operations staff contact Operator Certification: dws.opcert@odhsoha.oregon.gov

| **Primary Administrative Contact (mailing address):** | | | |
|---|---|---|---|
| Contact Name: | | Phone: ( ) | |
| Title: | | Cell: ( ) | |
| Street Address: | | Emergency #: ( ) | |
| City/State/Zip: | | Email: | |
| **Center of Service Area (for public maps):** | | | |
| decimal degrees (e.g., 45.894357, -123.960433) or address | | | |
| **Legal/Owner/Secondary Contact (optional/not entered in SDWIS):** | | | |
| Contact Name: | | Phone: ( ) | |
| Title: | | Cell: ( ) | |
| Street Address: | | Emergency #: ( ) | |
| City/State/Zip: | | Email: | |
| **System Physical Address (optional/not entered in SDWIS):** | | | |
| Contact Name: | | Phone: ( ) | |
| Title: | | Cell: ( ) | |
| Street Address: | | Emergency #: ( ) | |
| City/State/Zip: | | Email: | |
| **Emergency Systems Available:** | | | |
| Name: | | PWS ID#: | 41 |

**Narrative:**

# Responsibility of the Water Supplier

OAR 333-061-0025

- Water suppliers are responsible for:
  - Taking all reasonable actions to assure that the water delivered to water users does not exceed maximum contaminant levels
  - Assure that water system facilities are free of public health hazards
  - Assure that water system operation and maintenance are performed as required by these rules
- Actions include, but are not limited to:
  1) Routinely collecting and submitting water samples for laboratory analyses at the frequencies prescribed by OAR 333-061-0036;
  2) Taking immediate corrective action when the results of analyses or measurements indicate that maximum contaminant levels have been exceeded and report the results of these analyses as prescribed by OAR 333-061-0040;
  3) Reporting as prescribed by OAR 333-061-0040, the results of analyses or measurements which indicate that maximum contaminant levels have not been exceeded;

# Responsibility of the Water Supplier

4) Notifying all customers of the water system and the general public in the service area, as prescribed by OAR 333-061-0042, when the maximum contaminant levels have been exceeded;
5) Notifying all customers served by the water system, as prescribed by OAR 333-061-0042, when reporting requirements are not being met, when public health hazards are found to exist in the system, or when the operation of the system is subject to a permit or a variance;
6) Maintaining monitoring and operating records and making these records available for review when the system is inspected;
7) Maintaining a pressure of at least 20 pounds per square inch (psi) at all service connections at all times;

# Responsibility of the Water Supplier

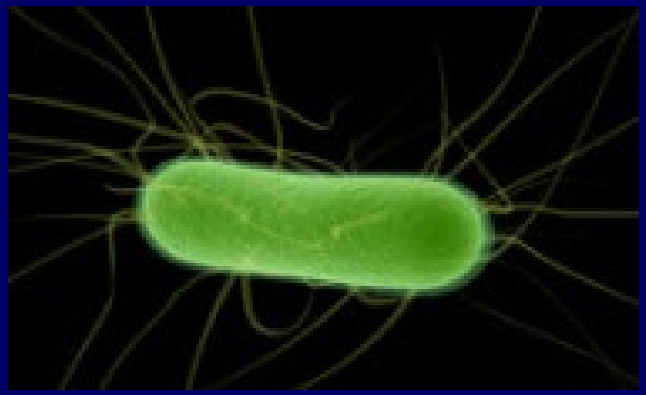
8) Following-up on complaints relating to water quality from users and maintaining records and reports on actions undertaken;
9) Conducting an active program for systematically identifying and controlling cross connections;
10) Submitting, to the Authority, plans prepared by a professional engineer registered in Oregon for review and approval before undertaking the construction of new water systems or major modifications to existing water systems, unless exempted from this requirement;
11) Assuring that the water system is in compliance with OAR 333-061-0032 relating to water treatment;
12) Assuring that the water system is in compliance with OAR 333-061-0210 through OAR 333-061-0272 relating to certification of water system operators; and
13) Assuring that Transient Non-Community water systems utilizing surface water sources or groundwater sources under the influence of surface water are in compliance with OAR 333-061-0065(2)(c) relating to required special training


# Survey Requirements

- An on-site review of source, treatment, distribution system, storage, monitoring and reporting, management and operations, and operator certification, to determine system's ability to deliver safe drinking water.
- Conducted every 3 to 5 years depending on the water system classification
- Required under Oregon Administrative Rule –(OAR) 333-061-0076

# Eight Survey Elements

- Water sources
- Treatment
- Distribution systems
- Finished water storage
- *Pumping facilities & controls*
- Monitoring & reporting
- Management & operations
- Operator certification



# Notification

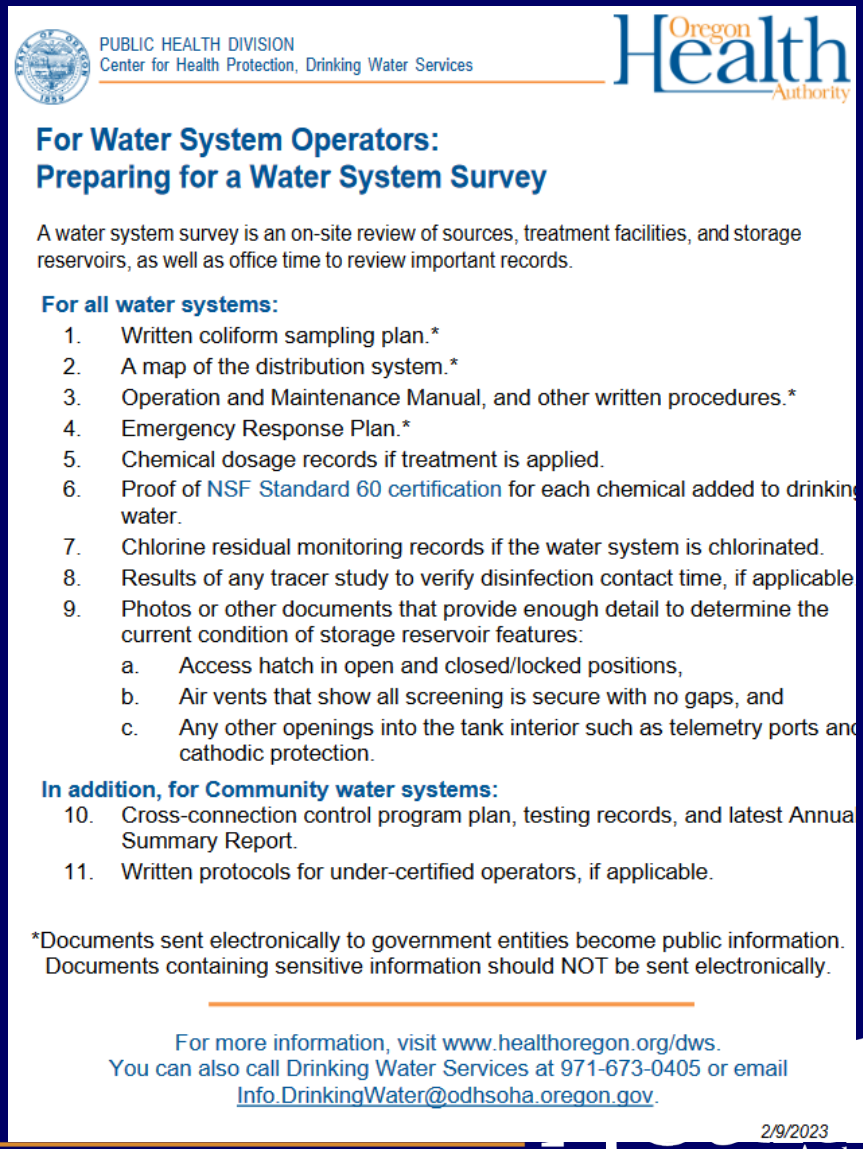
- DWS will notify you by letter that the survey will be scheduled sometime in the calendar year
- DWS, or local partner (County Health, Department of Department of Agriculture) will contact you to schedule the site visit
- Access to all facilities is required

# Frequent deficiencies-2019

| Deficiency Category | Deficiency | # Surveys | % Surveys |
|---|---|---|---|
| No Deficiencies | No deficiencies identified | 204 | 35% |
| Management & Operations Violations | Emergency response plan not completed | 97 | 16% |
| Management & Operations Violations | No operations and maintenance manual | 85 | 14% |
| Monitoring & Reporting Violations | No coliform sampling plan | 64 | 11% |
| Monitoring & Reporting Violations | Monitoring not current | 58 | 10% |
| Distribution System Violations (Cross Connection) | Annual summary report not issued (CWS) | 57 | 10% |
| Source Deficiencies (Well Construction Deficiencies) | Does not meet setbacks from hazards | 49 | 8% |
| Treatment Deficiencies/Violations (Disinfection Defic | Chlorine not measured & recorded as required | 46 | 8% |
| Management & Operations Violations | Annual CCR not submitted (CWS) | 44 | 7% |
| Operator Certification Violations | No certified operator at required level | 44 | 7% |
| Other Rule Violations | Other | 39 | 7% |
| Distribution System Violations (Cross Connection) | Testing records not current (CWS, NTNC, TNC) | 34 | 6% |
| Management & Operations Violations | Major modifications not approved (plan review) | 32 | 5% |
| Finished Water Storage Deficiencies | No flap valve, screen, or equivalent on overflow | 29 | 5% |
| Source Deficiencies (Well Construction Deficiencies) | Sanitary seal and casing not watertight | 28 | 5% |
| Source Deficiencies (Well Construction Deficiencies) | No screen on existing well vent | 22 | 4% |
| Operator Certification Violations | No protocol for under-certified operator | 21 | 4% |
| Finished Water Storage Deficiencies | No screened vent | 18 | 3% |
| Finished Water Storage Deficiencies | Roof and access hatch not watertight | 17 | 3% |
| Treatment Deficiencies/Violations (Other Treatment V | Non-NSF approved chemicals | 16 | 3% |
| Finished Water Storage Deficiencies | Hatch not locked or adequately secured | 15 | 3% |

# Preparing for a Water System Survey (WSS)

- Review the last survey conducted
  - Note previous significant deficiencies, rule violations and recommendations



PUBLIC HEALTH DIVISION
Center for Health Protection, Drinking Water Services

Oregon Health Authority

## For Water System Operators: Preparing for a Water System Survey

A water system survey is an on-site review of sources, treatment facilities, and storage reservoirs, as well as office time to review important records.

**For all water systems:**

1. Written coliform sampling plan.*
2. A map of the distribution system.*
3. Operation and Maintenance Manual, and other written procedures.*
4. Emergency Response Plan.*
5. Chemical dosage records if treatment is applied.
6. Proof of NSF Standard 60 certification for each chemical added to drinking water.
7. Chlorine residual monitoring records if the water system is chlorinated.
8. Results of any tracer study to verify disinfection contact time, if applicable
9. Photos or other documents that provide enough detail to determine the current condition of storage reservoir features:
   a. Access hatch in open and closed/locked positions,
   b. Air vents that show all screening is secure with no gaps, and
   c. Any other openings into the tank interior such as telemetry ports and cathodic protection.

**In addition, for Community water systems:**

10. Cross-connection control program plan, testing records, and latest Annual Summary Report.
11. Written protocols for under-certified operators, if applicable.

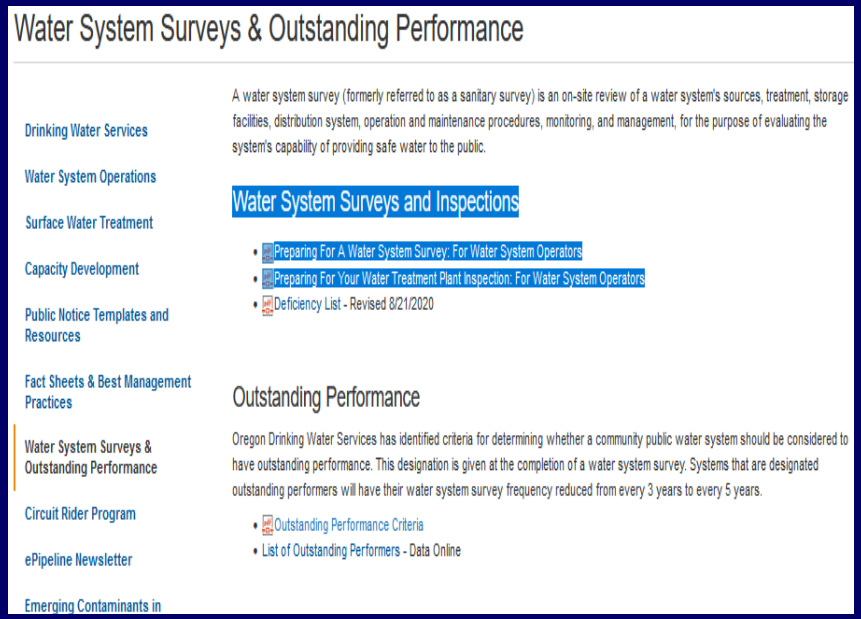
*Documents sent electronically to government entities become public information. Documents containing sensitive information should NOT be sent electronically.

For more information, visit www.healthoregon.org/dws.
You can also call Drinking Water Services at 971-673-0405 or email Info.DrinkingWater@odhsoha.oregon.gov.

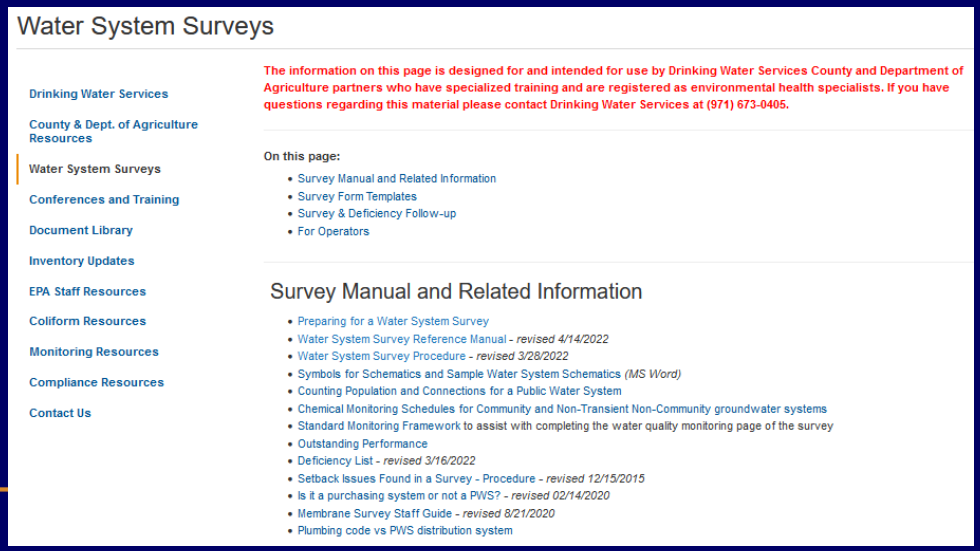
2/9/2023

# Preparing for a Water System Survey (WSS)

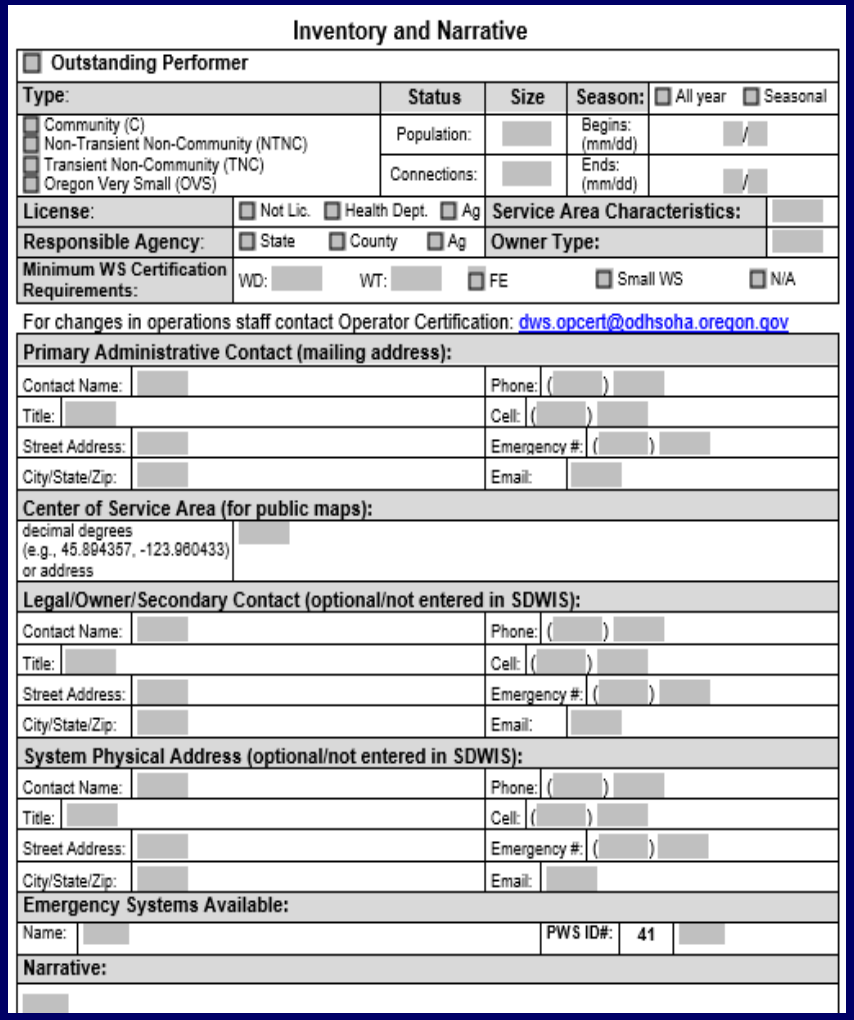
- Water System Surveys and Inspections
  - Preparing For A Water System Survey: For Water System Operators
  - Preparing For Your Water Treatment Plant Inspection: For Surface Water System Operators
- Advanced WSS Prep
  - Water System Survey Reference Manual
  - EPA Sanitary Survey Page







# Inventory and Narrative



**Inventory and Narrative**

☐ Outstanding Performer

| Type: | Status | Size | Season: ☐ All year ☐ Seasonal |
|---|---|---|---|
| ☐ Community (C)<br>☐ Non-Transient Non-Community (NTNC)<br>☐ Transient Non-Community (TNC)<br>☐ Oregon Very Small (OVS) | Population: | | Begins: (mm/dd) / |
| | Connections: | | Ends: (mm/dd) / |

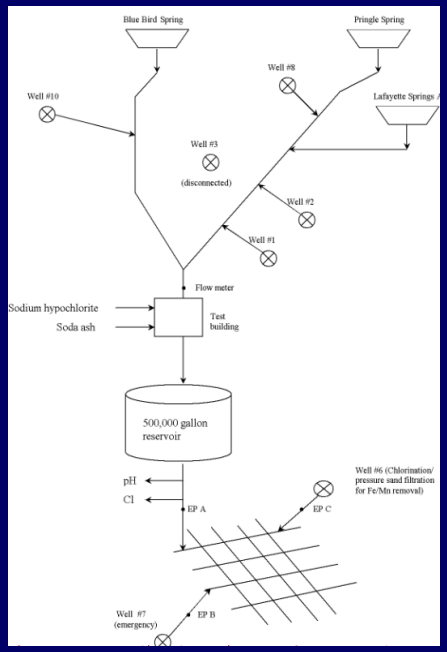
| License: | ☐ Not Lic. ☐ Health Dept. ☐ Ag | Service Area Characteristics: | |
|---|---|---|---|
| Responsible Agency: | ☐ State ☐ County ☐ Ag | Owner Type: | |
| Minimum WS Certification Requirements: | WD: WT: ☐ FE ☐ Small WS ☐ N/A | | |

For changes in operations staff contact Operator Certification: dws.opcert@odhsoha.oregon.gov

| Primary Administrative Contact (mailing address): | | | |
|---|---|---|---|
| Contact Name: | | Phone: ( ) | |
| Title: | | Cell: ( ) | |
| Street Address: | | Emergency #: ( ) | |
| City/State/Zip: | | Email: | |
| **Center of Service Area (for public maps):** | | | |
| decimal degrees (e.g., 45.894357, -123.960433) or address | | | |
| **Legal/Owner/Secondary Contact (optional/not entered in SDWIS):** | | | |
| Contact Name: | | Phone: ( ) | |
| Title: | | Cell: ( ) | |
| Street Address: | | Emergency #: ( ) | |
| City/State/Zip: | | Email: | |
| **System Physical Address (optional/not entered in SDWIS):** | | | |
| Contact Name: | | Phone: ( ) | |
| Title: | | Cell: ( ) | |
| Street Address: | | Emergency #: ( ) | |
| City/State/Zip: | | Email: | |
| **Emergency Systems Available:** | | | |
| Name: | | PWS ID#: | 41 |
| **Narrative:** | | | |

- Have your current population and number of connections ready
- Think about who you want listed for contacts, phone numbers and email addresses
- Do you have interties (Emergency Systems Available) with other systems

# Water System Schematic and Source Information




**Source Information**

| ID | Entry Points (Location where water enters distribution and is sampled) | Source Type (Ground, Surface, GWUDI, Purchased ground, Purchased surface) | Availability (Permanent, Seasonal*, Emergency) *If seasonal, indicate begin/end dates* | Begin (M/D) | End (M/D) |
|---|---|---|---|---|---|
| A | | | | | |
| | | | | | |
| | | | | | |

| ID | Sources (Contributing to Entry Point) | Land Use* | Capacity (GPM) | Source Type (Ground, Surface, GWUDI, Purchased ground, Purchased surface) | Availability (Permanent, Seasonal, Emergency, Abandoned, Disconnected) |
|---|---|---|---|---|---|
| AA | | | | | |
| | | | | | |
| | | | | | |

*Land Use Codes: (A) **Pristine Forest** (B) **Irrigated Crops** (C) **Non-irrigated Crops** (D) **Pasture** (E) **Light Industry** (F) **Heavy Industry** (G) **Urban-Sewered Area** (H) **Rural On-Site Sewage Disposal** (I) **Urban On-Site Sewage Disposal** (J) **Rangeland** (K) **Managed Forest** (L) **Commercial** (M) **Recreational Use**

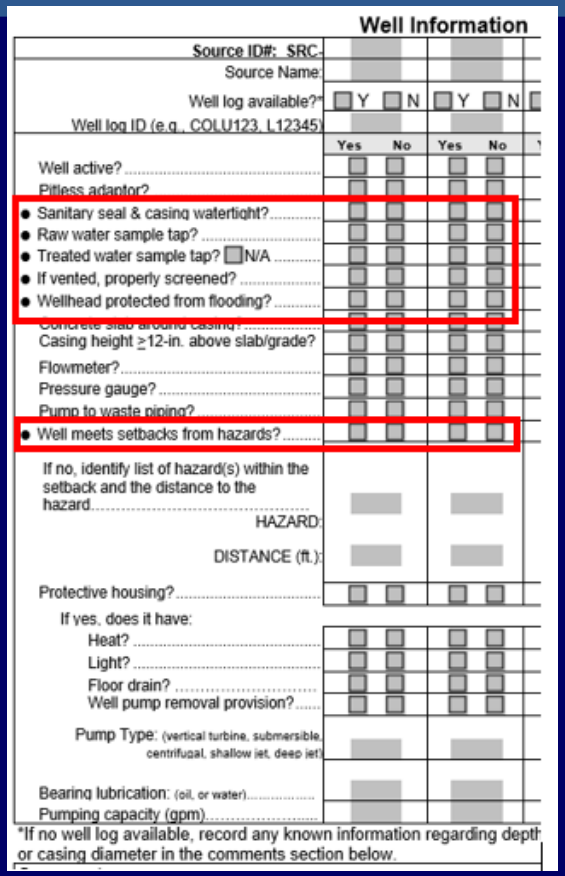
| Yes | No | |
|---|---|---|
| ☐ | ☐ | Has the water system implemented strategies to protect their drinking water sources? (e.g., posting source area signs, notifying residents of hazardous waste collection events, provide residents information about maintaining their septic systems, abandoning unused wells, etc.) |
| ☐ | ☐ | Is the water system interested in protecting their drinking water sources from contamination? If yes, contact regional geologist at 971-673-0405. |

**Comments:**

- Provide copy of the water system map and/or schematic
- Make sure to have information on any new sources added since the last survey
- Provide a list of any strategies you have implemented to protect your drinking sources
  - Depending on the type of strategies implemented, system can be granted credit for initial or substantial implementation of source water protection
- Indicating interest in protecting drinking water sources is the first step in the implementation of protection

Oregon Health Authority

# Well Information

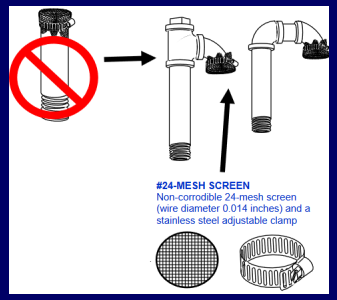


Well Information

| | Yes | No | Yes | No |
|---|---|---|---|---|
| Source ID#: SRC- | | | | |
| Source Name: | | | | |
| Well log available?* | ☐ Y | ☐ N | ☐ Y | ☐ N |
| Well log ID (e.g., COLU123, L12345) | | | | |
| Well active? | ☐ | ☐ | ☐ | ☐ |
| Pitless adaptor? | ☐ | ☐ | ☐ | ☐ |
| • Sanitary seal & casing watertight? | ☐ | ☐ | ☐ | ☐ |
| • Raw water sample tap? | ☐ | ☐ | ☐ | ☐ |
| • Treated water sample tap? ☐ N/A | ☐ | ☐ | ☐ | ☐ |
| • If vented, properly screened? | ☐ | ☐ | ☐ | ☐ |
| • Wellhead protected from flooding? | ☐ | ☐ | ☐ | ☐ |
| Concrete slab around casing? | ☐ | ☐ | ☐ | ☐ |
| Casing height ≥12-in. above slab/grade? | ☐ | ☐ | ☐ | ☐ |
| Flowmeter? | ☐ | ☐ | ☐ | ☐ |
| Pressure gauge? | ☐ | ☐ | ☐ | ☐ |
| Pump to waste piping? | ☐ | ☐ | ☐ | ☐ |
| • Well meets setbacks from hazards? | ☐ | ☐ | ☐ | ☐ |
| If no, identify list of hazard(s) within the setback and the distance to the hazard. HAZARD: | | | | |
| DISTANCE (ft.): | | | | |
| Protective housing? | ☐ | ☐ | ☐ | ☐ |
| If yes, does it have: | | | | |
| Heat? | ☐ | ☐ | ☐ | ☐ |
| Light? | ☐ | ☐ | ☐ | ☐ |
| Floor drain? | ☐ | ☐ | ☐ | ☐ |
| Well pump removal provision? | ☐ | ☐ | ☐ | ☐ |
| Pump Type: (vertical turbine, submersible, centrifugal, shallow jet, deep jet) | | | | |
| Bearing lubrication: (oil, or water) | | | | |
| Pumping capacity (gpm) | | | | |

*If no well log available, record any known information regarding depth or casing diameter in the comments section below.

- Sanitary seal & casing watertight?
- Raw water tap?
- Treated water tap?
- If vented, properly screened?
- Well head protected from flooding?
- Well meets setbacks from hazards?






# Potential Sanitary Setback Hazards

**Potential Sanitary Hazards**
(From OAR 333-061-0050(2)(a)(E))

The following sanitary hazards are not allowed within 100 feet of a well or spring:

- Any existing or proposed pit privy
- Subsurface sewage disposal drain field
- Cesspool
- Solid Waste disposal site
- Pressure sewer line
- Buried fuel storage tank
- Animal yard, feedlot, or animal waste storage
- Untreated storm water or gray water disposal
- Chemical (including solvent, pesticides, and fertilizers)storage, usage, or application)
- Fuel transfer or storage
- Mineral resource extraction
- Vehicle or machinery maintenance or long term storage
- Junk / auto / scrap yard
- Cemetery
- Unapproved well
- Well that has not been properly abandoned or of unknown or suspect construction
- Source of pathogenic organisms
- Any other similar public health hazards

The following are not allowed within 50 feet of a well or spring:

- Gravity sewer line
- Septic Tank

Exemptions to these setbacks must be listed and documented within the plan approval letter and in an approved construction waiver standard.

surface water source is located within 500 feet of a well or spring, please note the water body name d the distance to the well or spring. All groundwater sources within 500 feet to a surface water source ould be considered for potential surface water influence. Check the file for correspondence. If a review s been done indicate results in comment section. If not, contact DWS at 971-673-0405.

# Spring Survey Form

- **Impervious Durable Material**
  - Springbox needs to be constructed of durable material, such as concrete or steel (not galvanized) pipe. Filter fabric is not impervious
- **Access Watertight**
  - Springbox hatch needs to be a watertight, shoebox/overlapping, type lid with gaskets that locks. Manhole covers are not water tight
- **Raw water sample tap**
  - Dipping samples out of the springbox not recommended since it is a high risk sample collection method
- **Treated sample tap (if treating)**
  - Used for tracer studies, validation of treatment
- **Overflow Screened**
  - Overflow prevents over pressurization of the spring box and the screen keeps out small animals
  - No overflow is indication the source is a well
- **Bottom drain & shutoff valve**
  - Bottom drain allows the springbox to be drained , inspected for leaks and “spring “cleaning
- **Intercepting Ditch**
  - A ditch intercepts surface water flow and redirects the water away from the spring collection area and spring box
- **Fencing around spring area**
  - Spring areas typically provide ideal habitat (grass and water) for animals

## Surface water intrusion

## Spring / Other Source

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source ID#: SRC- | | | | | | | | | |
| Source Name: | | | | | | | | | |
| Type: (Spring, Infiltration Gallery, Radial (e.g., Ranney) Well, Dug Well, Other) | | | | | | | | | |
| | Yes / No | Yes / No | Yes / No | Yes / No | Yes / No |
| Collection box? ☐N/A | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| Source construction material: | | | | | |
| • Impervious durable material? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| Does collection box have a hatch? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| Hatch locked? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| Overlapping lid? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| • Access watertight? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| • Raw water sample tap? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| • Treated water sample tap? ☐N/A | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| • Overflow screened? ☐N/A | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| Bottom drain and shut off valve? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| Intercepting ditch above source? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| Fencing around collection area? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| Turbidity monitored? ☐N/A | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| • Meets setback from hazards? | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ | ☐ ☐ |
| If no, identify the hazard(s) within the setback and the distance to the hazard.....HAZARD: DISTANCE (ft.): | | | | | |

Attach drawings/photos of source construction showing details of access hatch, drain, overflow, description of collec diversion ditch, placement of perforated pipe, etc.

| Yes | No | |
|---|---|---|
| ☐ | ☐ | Is there evidence of infiltration of surface water run off? |
| ☐ | ☐ | Has source been evaluated by DWS for direct influence of surface water? |
| ☐ | ☐ | Does water quality vary seasonally? Explain: |
| | | Is source considered: groundwater (G), surface water (S), or groundwater under the direct influence (I)? |

Additional information specific to:

**Infiltration Gallery/Radial (e.g., Ranney) Well**
Number of laterals:
Average depth (ft.):

**Dug Well**
Depth of well (ft.):
Construction material:

Comments:

# Spring Survey Form

- **Turbidity monitored**
  - Req. for I.G., GW Collectors (Ranney) and Dug Wells determined GW
- **Meets setback from hazards (see Sanitary Hazard list)**
  - Evidence of animal feces is a source of pathogenic organisms
  - Remove all listed hazards within setback
- **Surface Water (SW) type and infiltration of SW runoff**
  - If a SW body or infiltration of SW (i.e., creek goes subsurface or french drain) is less than 500 feet away and upgradient from the spring then source is at risk for Groundwater Under the Direct Influence of Surface Water (GWUDI/GU)
- **Has the Source been evaluated for GWUDI**
  - If SW is flowing/entering into the springbox (hole in the springbox) then the source is SW and not GU. System should immediately issue a boil water notice unless system is providing SW treatment. Source to remain SW until construction issue is corrected. Consult with State contact for assistance.
- **Does WQ (temp., conductivity, turbidity, etc.) vary seasonally**
  - If so, indication of rapid infiltration and/or SW influence
- **Have copies of construction plans ready for review during WSS**

Roots inside of springbox

Deer droppings

## Spring / Other Source

| Source ID#: SRC- | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Source Name: | | | | | | | | | |
| Type: (Spring, Infiltration Gallery, Radial (e.g., Ranney) Well, Dug Well, Other) | | | | | | | | | |
| | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| Collection box? ☐N/A | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Source construction material: | | | | | | | | | | |
| • Impervious durable material? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Does collection box have a hatch? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Hatch locked? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Overlapping lid? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| • Access watertight? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| • Raw water sample tap? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| • Treated water sample tap? ☐N/A | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| • Overflow screened? ☐N/A | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Bottom drain and shut off valve? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Intercepting ditch above source? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Fencing around collection area? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Turbidity monitored? ☐N/A | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| • Meets setback from hazards? | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| If no, identify the hazard(s) within the setback and the distance to the hazard.....HAZARD: | | | | | | | | | | |
| DISTANCE (ft.): | | | | | | | | | | |

Attach drawings/photos of source construction showing details of access hatch, drain, overflow, description of collec diversion ditch, placement of perforated pipe, etc.

| Yes | No | |
|---|---|---|
| ☐ | ☐ | Is there evidence of infiltration of surface water run off? |
| ☐ | ☐ | Has source been evaluated by DWS for direct influence of surface water? |
| ☐ | ☐ | Does water quality vary seasonally? Explain: |
| | | Is source considered: groundwater (G), surface water (S), or groundwater under the direct influence (I)? |

Additional information specific to:

**Infiltration Gallery/Radial (e.g., Ranney) Well**
Number of laterals:
Average depth (ft.):

**Dug Well**
Depth of well (ft.):
Construction material:

Comments:

# Twenty Common mistakes made on spring catchments

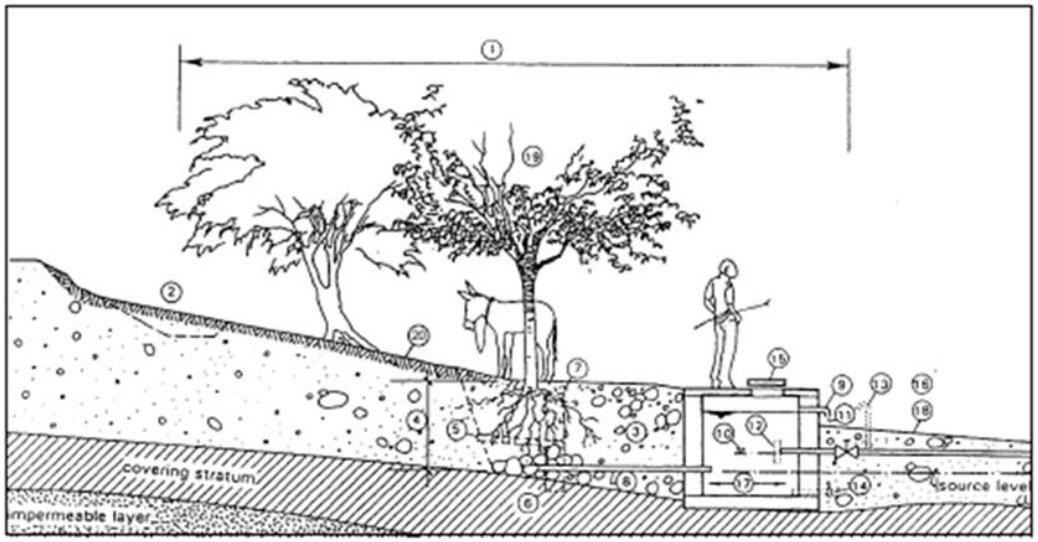



Fig. 58

1 no protection zone and no fence

2 no surface water drainage

3 loose, permeable material used for backfilling; backfilling too high, surface water can flood the spring chamber (chamber entrance too low)

4 thickness of the earth cover over the spring is inadequate

5 no concrete protection cover (5cm)

6 no barrage has been built to prevent water from bypassing the supply pipe.

7 In cases where a barrage wall has been constructed, it may well have been built too high. If the top of the wall is significantly higher than the normal level of the source, infiltrated surface water may be re-directed into the catchment.

8 supply pipe diameter is too small; gradient is too flat

9 the position of the overflow too high (it should lie below the source level)

10 the position of the outlet is too high (it should be below the source level)

11 no wire-mesh covering the overflow

12 no strainer used (danger of blockage!)

13 no aeration after valve (vacuum!)

14 no wash out

15 chamber entrance should preferably be above ground level (danger of contamination by infiltration and seepage) and not directly above the water resevoir (danger of contamination by droppings when entering)

16 no combined chamber for maintenance and valve operation. No baffle plate between inlet and outlet.

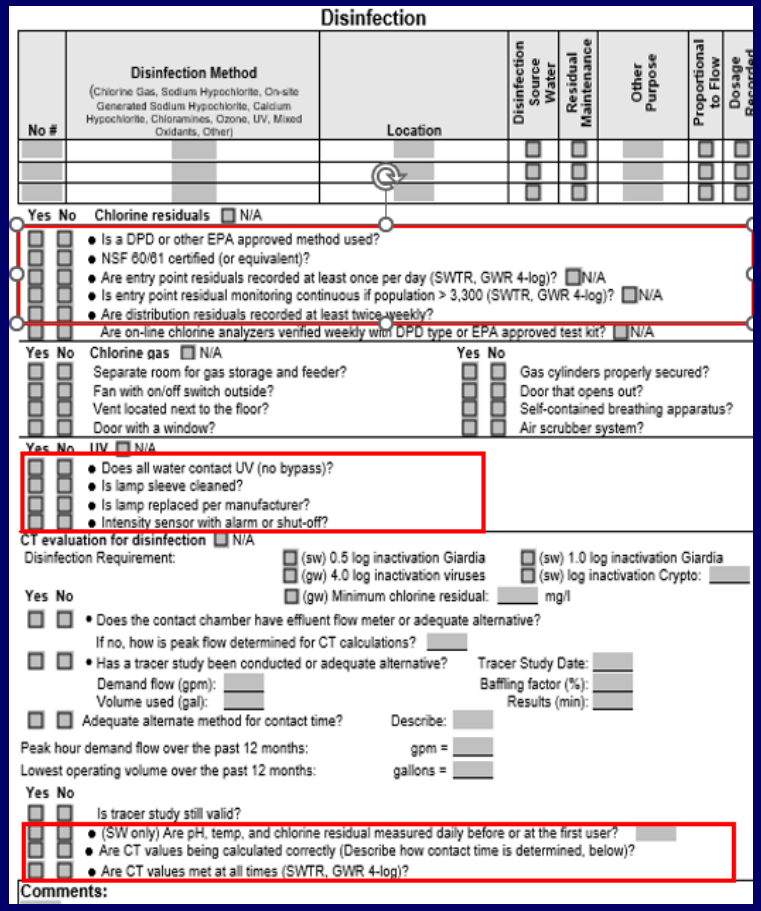
17 no plastering (water seal)

18 overflow water not drained

19 trees planted too close to catchment

20 no grass planted to prevent erosion

# Disinfection



Disinfection

| No # | Disinfection Method (Chlorine Gas, Sodium Hypochlorite, On-site Generated Sodium Hypochlorite, Calcium Hypochlorite, Chloramines, Ozone, UV, Mixed Oxidants, Other) | Location | Disinfection Source Water | Residual Maintenance | Other Purpose | Proportional to Flow | Dosage Recorded |
|---|---|---|---|---|---|---|---|
| | | | ☐ | ☐ | | ☐ | ☐ |
| | | | ☐ | ☐ | | ☐ | ☐ |
| | | | ☐ | ☐ | | ☐ | ☐ |

Yes No Chlorine residuals ☐ N/A

- Is a DPD or other EPA approved method used?
- NSF 60/61 certified (or equivalent)?
- Are entry point residuals recorded at least once per day (SWTR, GWR 4-log)? ☐N/A
- Is entry point residual monitoring continuous if population > 3,300 (SWTR, GWR 4-log)? ☐N/A
- Are distribution residuals recorded at least twice weekly?
- Are on-line chlorine analyzers verified weekly with DPD type or EPA approved test kit? ☐N/A

Yes No Chlorine gas ☐ N/A

- Separate room for gas storage and feeder?
- Fan with on/off switch outside?
- Vent located next to the floor?
- Door with a window?

Yes No

- Gas cylinders properly secured?
- Door that opens out?
- Self-contained breathing apparatus?
- Air scrubber system?

Yes No UV ☐ N/A

- Does all water contact UV (no bypass)?
- Is lamp sleeve cleaned?
- Is lamp replaced per manufacturer?
- Intensity sensor with alarm or shut-off?

CT evaluation for disinfection ☐ N/A

Disinfection Requirement: ☐ (sw) 0.5 log inactivation Giardia ☐ (sw) 1.0 log inactivation Giardia ☐ (gw) 4.0 log inactivation viruses ☐ (sw) log inactivation Crypto: ☐ (gw) Minimum chlorine residual: ____ mg/l

Yes No

- Does the contact chamber have effluent flow meter or adequate alternative?

If no, how is peak flow determined for CT calculations? ____

- Has a tracer study been conducted or adequate alternative? Tracer Study Date: ____

Demand flow (gpm): ____ Baffling factor (%): ____

Volume used (gal): ____ Results (min): ____

☐ ☐ Adequate alternate method for contact time? Describe: ____

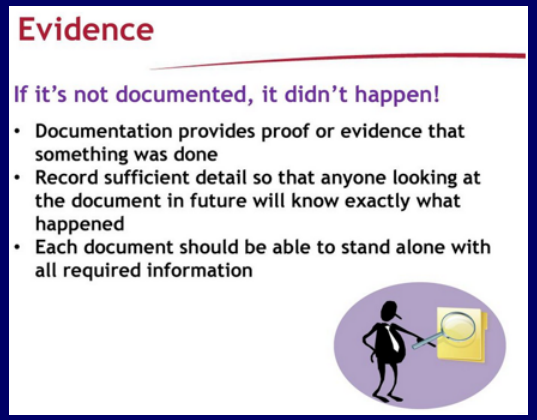
Peak hour demand flow over the past 12 months: gpm = ____

Lowest operating volume over the past 12 months: gallons = ____

Yes No

- Is tracer study still valid?
- (SW only) Are pH, temp, and chlorine residual measured daily before or at the first user? ____
- Are CT values being calculated correctly (Describe how contact time is determined, below)?
- Are CT values met at all times (SWTR, GWR 4-log)?

Comments:



## Evidence

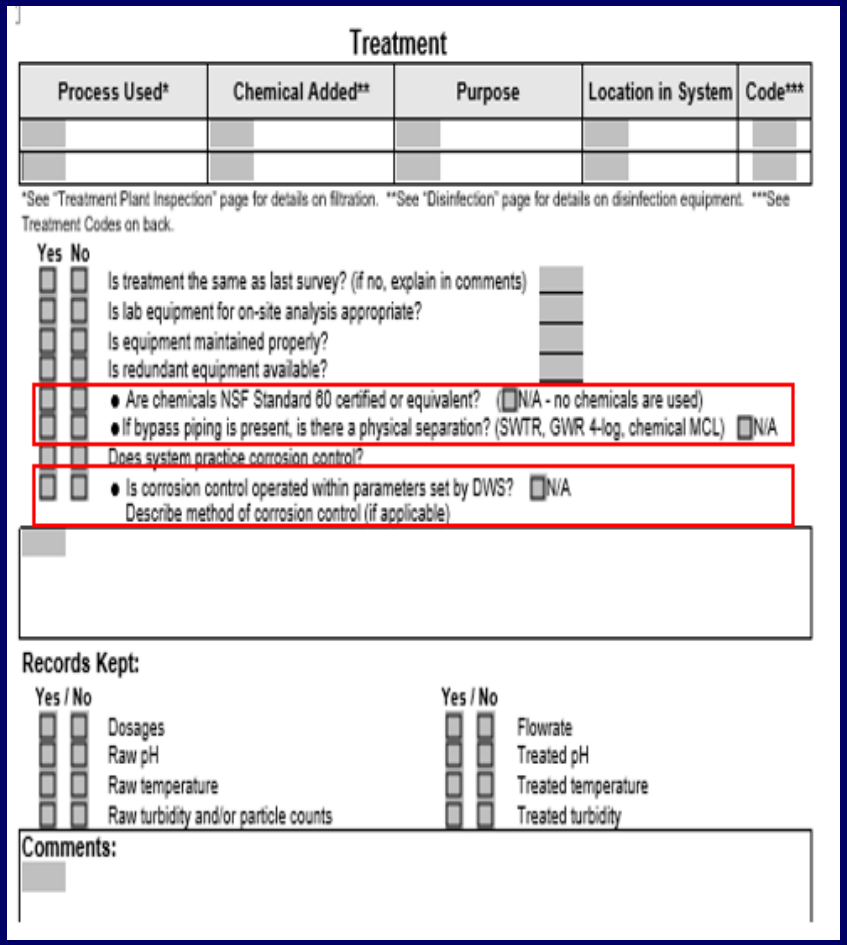
If it's not documented, it didn't happen!

- Documentation provides proof or evidence that something was done
- Record sufficient detail so that anyone looking at the document in future will know exactly what happened
- Each document should be able to stand alone with all required information



- Use an accurate and approved chlorine method (DPD/other)
  - Colorwheel not accurate and most pool kits not approved
  - Manganese interference/phantom residual
    - https://www.iowaruralwater.org/presentations/2018/SponChlorineArticle.pdf
- Make sure disinfection chemical NSF 60/61 cert. or equivalent
- Entry point residual location determined during plan review or during 4-log determination
- Continuous entry point residual monitoring required if pop. >3,300
- Dist. residuals need to be measured at least 2 times/week in the distribution
- No piped bypass allowed on req. treatment (SW, UV, As, etc..). Physical removable spool, no valves
- UV maintenance (cleaning, replacement, repairs, etc) include in O&M manual and document
- SW systems need to measure pH, temp., and Cl before or at the 1st User
  - Is the plant the 1st user?
- SW & GW 4-log need to demonstrate CT being calculated correctly
- SWTR (online) will be reviewed for compliance

# Treatment



Treatment

| Process Used* | Chemical Added** | Purpose | Location in System | Code*** |
|---|---|---|---|---|
| | | | | |
| | | | | |

*See "Treatment Plant Inspection" page for details on filtration. **See "Disinfection" page for details on disinfection equipment. ***See Treatment Codes on back.

Yes No

- Is treatment the same as last survey? (if no, explain in comments)
- Is lab equipment for on-site analysis appropriate?
- Is equipment maintained properly?
- Is redundant equipment available?
- Are chemicals NSF Standard 60 certified or equivalent? (N/A - no chemicals are used)
- If bypass piping is present, is there a physical separation? (SWTR, GWR 4-log, chemical MCL) N/A
- Does system practice corrosion control?
- Is corrosion control operated within parameters set by DWS? N/A

Describe method of corrosion control (if applicable)

Records Kept:

| Yes / No | | Yes / No | |
|---|---|---|---|
| | Dosages | | Flowrate |
| | Raw pH | | Treated pH |
| | Raw temperature | | Treated temperature |
| | Raw turbidity and/or particle counts | | Treated turbidity |

Comments:

- Have a list of new/changed chemicals ready for survey
  - Including NSF 60 certification (paper work or stamp on packaging)

https://info.nsf.org/Certified/PwsChemicals/

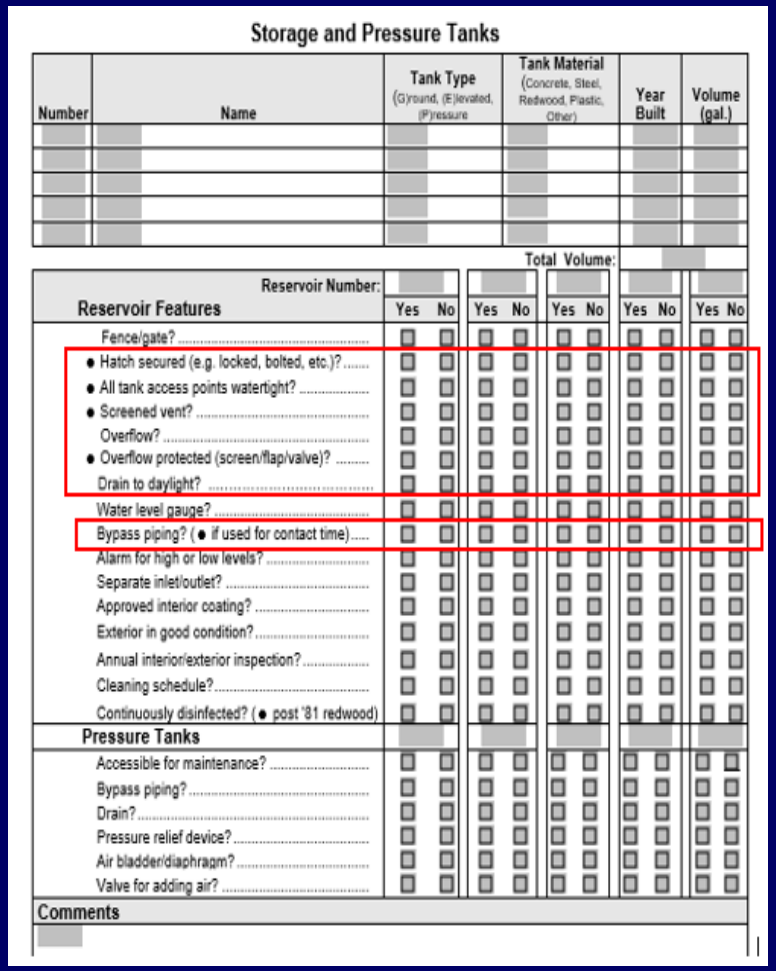
- Determine (review plans, treatment piping, etc.) if your treatment has bypass prior to the survey
  - If present, physical separation required (cut and capped pipe with a removable pipe spool)
- Records and pH meter used for corrosion control will be reviewed
- Document and maintain records for all treatment
  - If you didn't document, you didn't do it!

H D
Services



Oregon Health Authority

# Storage and Pressure Tanks



Storage and Pressure Tanks

| Number | Name | Tank Type (G)round, (E)levated, (P)ressure | Tank Material (Concrete, Steel, Redwood, Plastic, Other) | Year Built | Volume (gal.) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Total Volume:

| Reservoir Number: | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Reservoir Features** | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| Fence/gate? | | | | | | | | | |
| • Hatch secured (e.g. locked, bolted, etc.)? | | | | | | | | | |
| • All tank access points watertight? | | | | | | | | | |
| • Screened vent? | | | | | | | | | |
| Overflow? | | | | | | | | | |
| • Overflow protected (screen/flap/valve)? | | | | | | | | | |
| Drain to daylight? | | | | | | | | | |
| Water level gauge? | | | | | | | | | |
| Bypass piping? (• if used for contact time) | | | | | | | | | |
| Alarm for high or low levels? | | | | | | | | | |
| Separate inlet/outlet? | | | | | | | | | |
| Approved interior coating? | | | | | | | | | |
| Exterior in good condition? | | | | | | | | | |
| Annual interior/exterior inspection? | | | | | | | | | |
| Cleaning schedule? | | | | | | | | | |
| Continuously disinfected? (• post '81 redwood) | | | | | | | | | |
| **Pressure Tanks** | | | | | | | | | |
| Accessible for maintenance? | | | | | | | | | |
| Bypass piping? | | | | | | | | | |
| Drain? | | | | | | | | | |
| Pressure relief device? | | | | | | | | | |
| Air bladder/diaphragm? | | | | | | | | | |
| Valve for adding air? | | | | | | | | | |

Comments

- Storage includes clearwells
- Photos/recent inspection showing:
  - Access hatch in open and closed/locked positions
  - Air vents that show all screening is secure with no gaps, and
  - Other elevated openings into the tank interior such as overflow, telemetry ports and cathodic protection
- Locate overflow/drains before the survey (GPS location, photos, etc.)
- No bypass piping if used for required (SW or 4-log) disinfection contact time

# Tank Cleaning, Inspection and Repair

## LVT Competitors

**Inland Potable Services, INC** – 13780 E Rice Pl, Suite 201, Aurora, CO 80015, Phone: (303) 400-4220, Website: www.inlandpotableservices.com Works in: Website states they have inspected, cleaned and/or repaired 4000+ tanks in 23 western United States.

**Midco Diving & Marine Services** – 3111 Lien St., Rapid City, SD 57702, Phone: (605) 791-3030, Website: www.midcodiving.com Works in: They perform professional dive services worldwide.

**Liquid Engineering Corporation** – 7 East Airport Road, Billings, MT 59108, Phone: (800) 438-2187, Website: www.liquidengineering.com Works in: Nationwide according to website.

**Advanced Diving Services** - 946 E 400 S, New Harmony, UT 84757, Phone: (866) 237-3483, Website: www.advanceddiving.com Works in: Has contracts from Washington State to Florida.

**Associated Underwater Services, Inc.** - 6706 NE 175th St D, Kenmore, WA 98028, Phone: (206) 948-3942, Website: www.ausdiving.com Works in: Offers services on a global scale.

**Potable Divers Inc.** - 2188 Cassidy Way, Eagle Mountain, UT 84005, Phone: (866) 789-3483, Website: www.potabledivers.com Works in: The 12 western states.

**Crux Diving, Inc.** - 6805 NE 175th St, Kenmore, WA 98028, Phone: (206) 949-1663, Website: www.cruxdiving.com Works in: Licensed in Washington, Oregon, Idaho, California

**Blue Locker Commercial Diving Services** - No street address or zip code listed) Las Vegas, NV, Phone: (702) 586-3145, Website: www.bluelockerdiving.com Works in: Nevada, Arizona, California, however their website states they are available to travel all over the country for work.

**MIT Diving Coating** - 1500 Standiford Ave. Building C, Modesto, CA 95350, Phone: (209) 382-9155, Website: www.mitdivingcoating.com Works in: Goal to extend services to all state and public water providers.

**Marine Diving Solutions (MDS)** - 7006 S Alton Way Suite C1, Centennial CO 80112, Phone: (303) 309-0091, Website: www.marinedivingsolutions.com Works in: Nationwide

**H2O Diving Solutions** – Field Office 9030 W. Sahara Ave., Suite 208, Las Vegas, NV 89117, Phone: (206) 491-4007, Website: www.h2odivingsolutions.com Works in: The Blue Book Network lists their service area as Nevada, however we compete with them mostly in Washington State.

**US Underwater Services** – 123 Sentry Dr. Mansfield, TX 76063, Phone: (800) 860-2178, Website: www.usunderwaterservices.com Works in: We mainly compete with them in Texas.

**SE Diving Services, LLC** – 126 N Washington Ave, Greenville, SC 29611, Phone: (864) 220-3481, Website: www.sedivingservices.com Works in: southeastern United States

**Underwater Solutions, Inc.** – P. O. Box 208, Mattapoisett, MA 02739, Phone: (877) 821-6138, Website: www.underwatersolutions.com Works in: Their website indicates they are national, however, we mainly compete with them in eastern states.

**Hunt Underwater Specialties, LLC** – P. O. Box 832, Watertown, NY 13601, Phone: (315) 778-5243, Website: www.huntuwspec.com Works in: Northeast United States.

**CorrTech Inc.** – 25 South St. Unit E, Hopkinton, MA 01748, Phone: (508) 435-0090, Website: www.cortech-inc.com Works in: We compete with them in eastern states. They offer ROV cleaning and inspection.

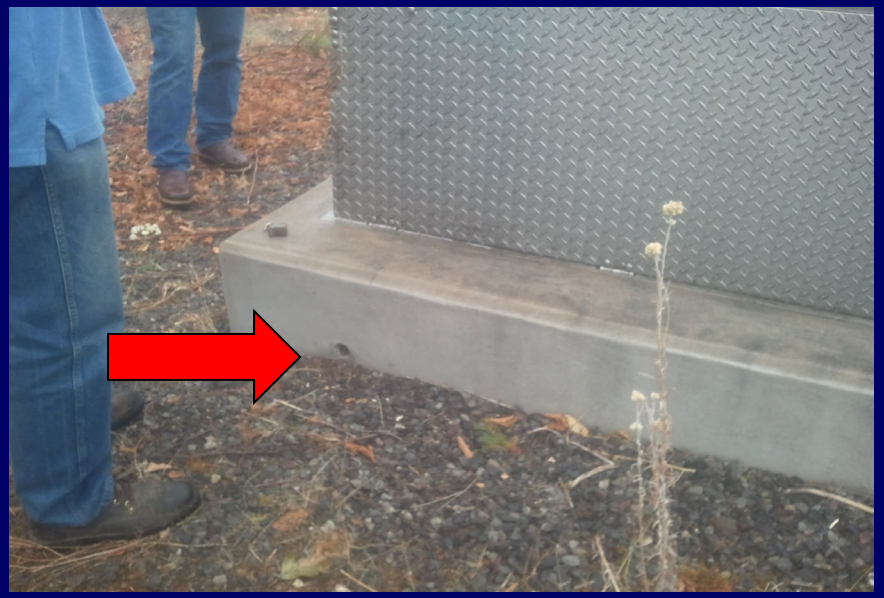
**Tank Industry Consultants** – 7740 West New York St, Indianapolis, IN 46214, Phone: (317) 271-3100, Website: www.tankindustry.com Works in: Nationwide, however we mainly compete with them in the central and eastern states. They use a 4-man dive team.

- Imbedded files with info:

TankCleaning

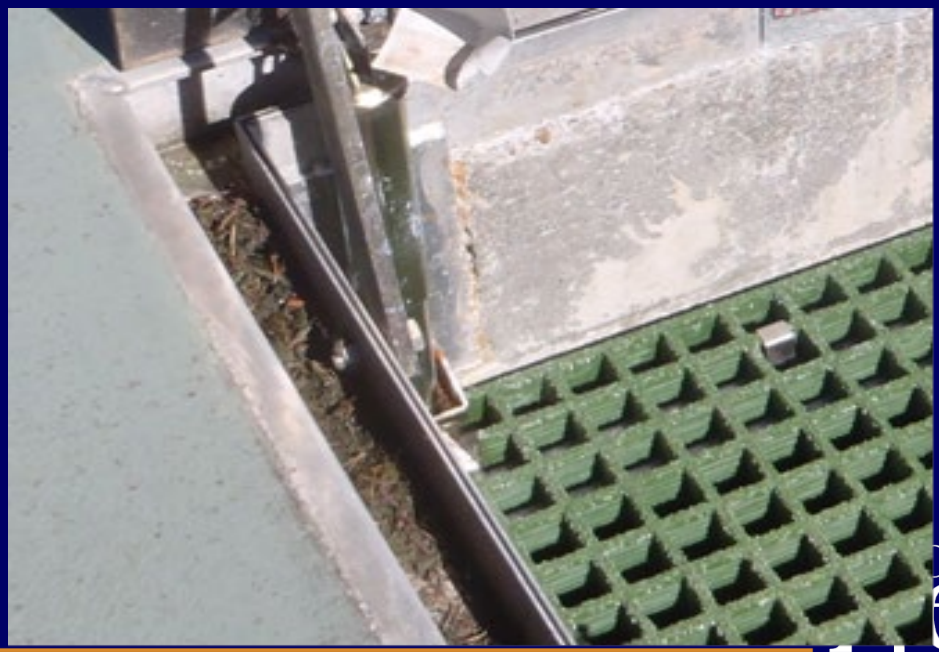
TankCleaners

# Gutter Style Hatch and Drain



# Contamination?

- Gutter-drain style hatch with debris in the internal gutters. Recommend that the gutters be routinely cleaned. If debris is causing an overflow into the storage tank it may be a significant deficiency.



- Clean internal gutters and make sure gutters drain and holes screened to prevent critters from entering storage tank

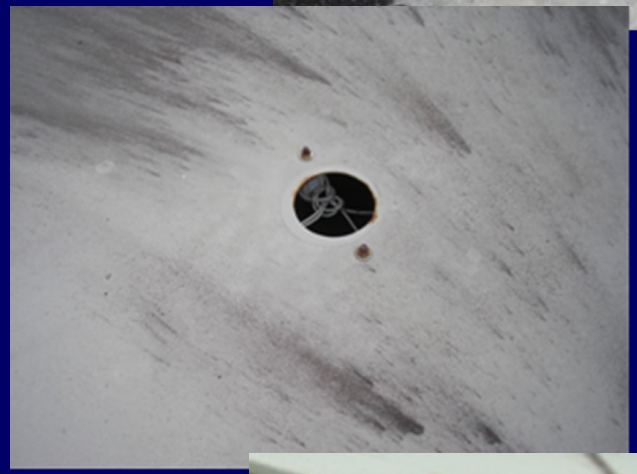
# Storage Tank Photos

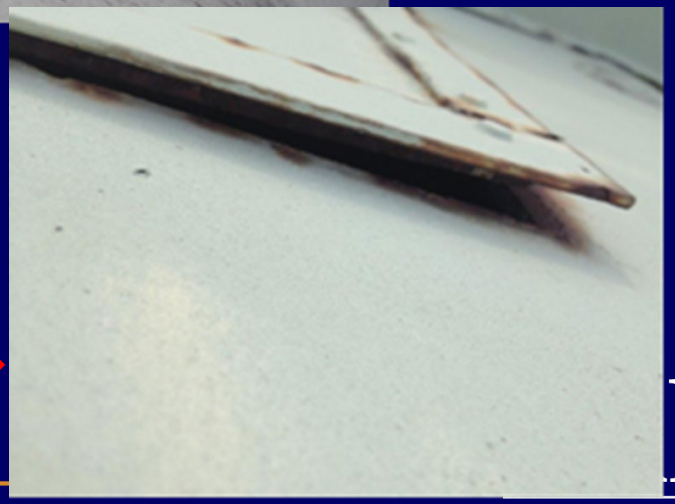
- Vent is not completely screened

- Hole in cement

# Storage Tank Photos

- Manhole access into reservoir is not watertight
- Missing cathodic plate on top of reservoir
- Access port that is not watertight





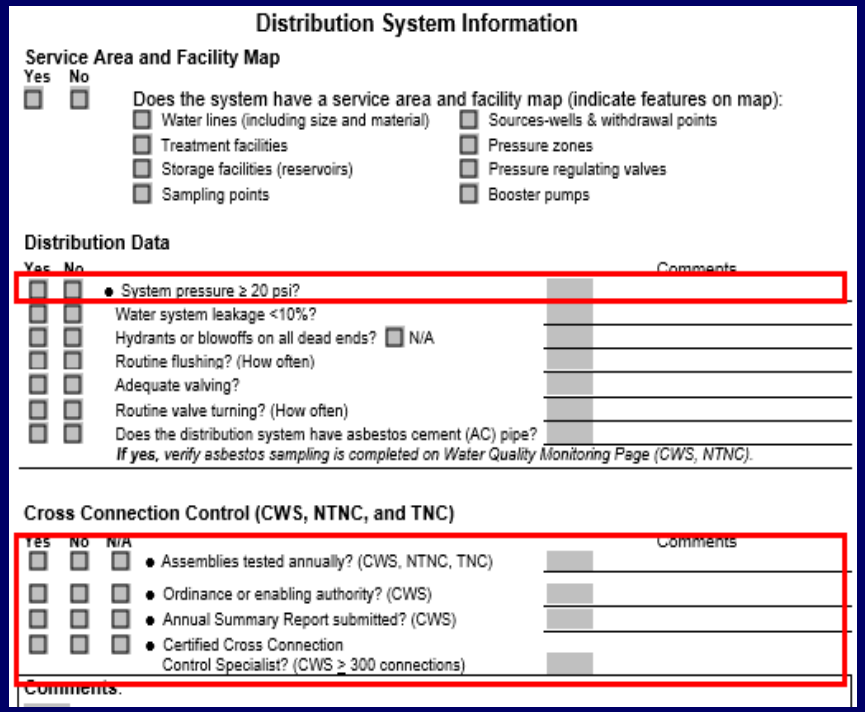
# General maintenance, repair and/or replacement

- Plywood patch outside and inside

# Um…I wonder what's in there…

# Four Legged Floaters

# Distribution System Information



**Distribution System Information**

**Service Area and Facility Map**

Yes ☐ No ☐ Does the system have a service area and facility map (indicate features on map):

- ☐ Water lines (including size and material)
- ☐ Treatment facilities
- ☐ Storage facilities (reservoirs)
- ☐ Sampling points
- ☐ Sources-wells & withdrawal points
- ☐ Pressure zones
- ☐ Pressure regulating valves
- ☐ Booster pumps

**Distribution Data**

| Yes | No | | Comments |
|---|---|---|---|
| ☐ | ☐ | • System pressure ≥ 20 psi? | |
| ☐ | ☐ | Water system leakage <10%? | |
| ☐ | ☐ | Hydrants or blowoffs on all dead ends? ☐ N/A | |
| ☐ | ☐ | Routine flushing? (How often) | |
| ☐ | ☐ | Adequate valving? | |
| ☐ | ☐ | Routine valve turning? (How often) | |
| ☐ | ☐ | Does the distribution system have asbestos cement (AC) pipe? | |

*If yes, verify asbestos sampling is completed on Water Quality Monitoring Page (CWS, NTNC).*

**Cross Connection Control (CWS, NTNC, and TNC)**

| Yes | No | N/A | | Comments |
|---|---|---|---|---|
| ☐ | ☐ | ☐ | • Assemblies tested annually? (CWS, NTNC, TNC) | |
| ☐ | ☐ | ☐ | • Ordinance or enabling authority? (CWS) | |
| ☐ | ☐ | ☐ | • Annual Summary Report submitted? (CWS) | |
| ☐ | ☐ | ☐ | • Certified Cross Connection Control Specialist? (CWS ≥ 300 connections) | |

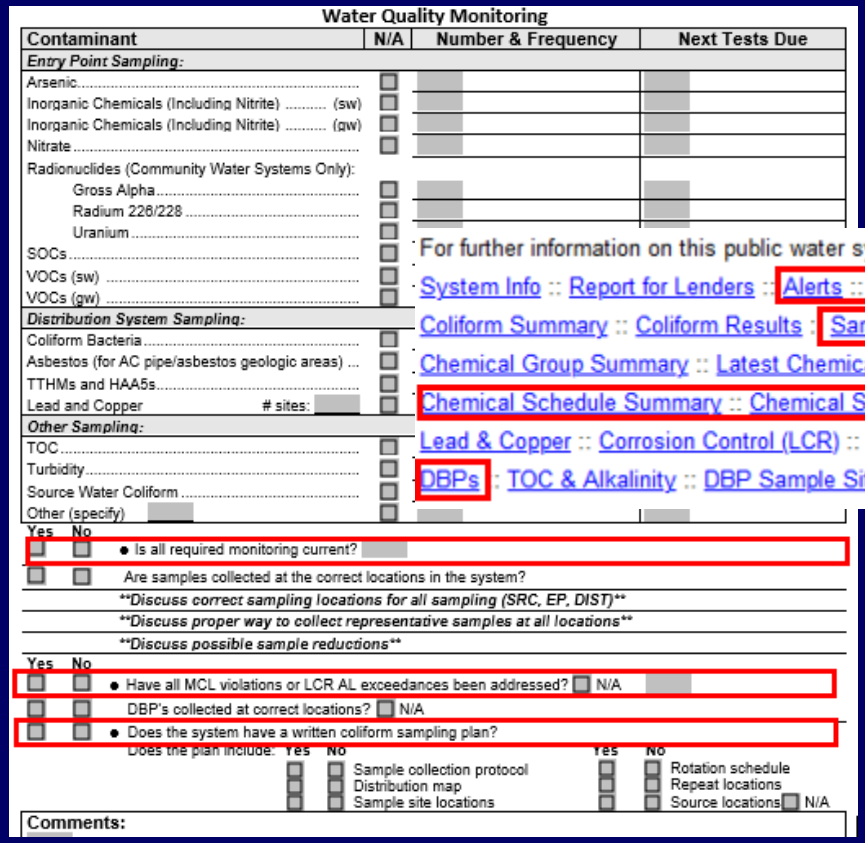
Comments:

- Recommend using ArcGIS mapping technology for mapping
- System pressure must be ≥20 psi at all times
  - May review complaint records
- Cross Connection Control
  - Review data online for compliance
  - All assemblies required to be tested annually

**Cross Connection/Backflow Prevention Information (Last 3 Records)**

| Enabling Authority Received | Annual Summary Report Received | Fee Invoice Paid |
|---|---|---|
| Yes (PDF) | 2022 (PDF) | 2023 |
| | 2021 (PDF) | 2022 |
| | 2020 (PDF) | 2021 |

# Water Quality Monitoring



**Water Quality Monitoring**

| Contaminant | N/A | Number & Frequency | Next Tests Due |
|---|---|---|---|
| *Entry Point Sampling:* | | | |
| Arsenic | ☐ | | |
| Inorganic Chemicals (Including Nitrite) ..... (sw) | ☐ | | |
| Inorganic Chemicals (Including Nitrite) ..... (gw) | ☐ | | |
| Nitrate | ☐ | | |
| Radionuclides (Community Water Systems Only): | | | |
| Gross Alpha | ☐ | | |
| Radium 226/228 | ☐ | | |
| Uranium | ☐ | | |
| SOCs | ☐ | | |
| VOCs (sw) | ☐ | | |
| VOCs (gw) | ☐ | | |
| *Distribution System Sampling:* | | | |
| Coliform Bacteria | ☐ | | |
| Asbestos (for AC pipe/asbestos geologic areas) ... | ☐ | | |
| TTHMs and HAA5s | ☐ | | |
| Lead and Copper # sites: | ☐ | | |
| *Other Sampling:* | | | |
| TOC | ☐ | | |
| Turbidity | ☐ | | |
| Source Water Coliform | ☐ | | |
| Other (specify) | ☐ | | |

Yes No
- ☐ ☐ • Is all required monitoring current?
- ☐ ☐ Are samples collected at the correct locations in the system?

***Discuss correct sampling locations for all sampling (SRC, EP, DIST)****
***Discuss proper way to collect representative samples at all locations****
***Discuss possible sample reductions****

Yes No
- ☐ ☐ • Have all MCL violations or LCR AL exceedances been addressed? ☐ N/A
- ☐ ☐ DBP's collected at correct locations? ☐ N/A
- ☐ ☐ • Does the system have a written coliform sampling plan?

Does the plan include: Yes No — Sample collection protocol; Distribution map; Sample site locations. Yes No — Rotation schedule; Repeat locations; Source locations ☐ N/A

**Comments:**

For further information on this public water system, click on the area of interest below:

System Info :: Report for Lenders :: Alerts :: Violations :: Compliance & Enforcement :: Contacts & Advisories :: Site Visits :: Public Notice

Coliform Summary :: Coliform Results :: Sampling Schedule for Coliform :: Groundwater/GWUDI Source Details :: Plan Review :: Annual Fee

Chemical Group Summary :: Latest Chemical Results :: Entry Point Detects :: Single Analyte Results

Chemical Schedule Summary :: Chemical Schedule Details

Lead & Copper :: Corrosion Control (LCR) :: Nitrate :: Arsenic :: Radionuclides :: GWR 4-Log :: LT2 :: Cyanotoxins :: PFAS

DBPs :: TOC & Alkalinity :: DBP Sample Sites :: FANLs :: MRDL :: Turbidity :: SWTR :: RAA :: LRAA

- Review monitoring on data online for current schedule
- Coliform sampling plan template
- https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/RULES/Documents/revisedcoliform/revised-csp-template.pdf

# For All Water Systems

- Written coliform sampling plan (Required under OAR 333-061-0036(6)(a)(I):
  - Brief narrative
  - Identify sample sites
  - Distribution map with sample sites labeled
  - Rotation schedule
  - Identify repeat locations
  - Source sampling location

# Revised Coliform Sampling Plan Template

Oregon Health Authority

## *Revised* COLIFORM SAMPLING PLAN

**For public water systems serving up to 1,000 persons**

1. **System Name:** ____ **PWS ID #:** 41 ____
   Contact Person: ____ Phone #: (____) ____ - ____
   Date: ____ / ____ / ____

2. Distribution System Sampling: Collect ____ routine sample(s) every Month / Quarter.
   (Add Number) (Circle One)
   Source Water Assessment Sampling Required? Yes / No every Month / Year.
   (Circle One) (Circle One)

3. Sampling Sites and Collection Rotation Schedule (Include additional sites if necessary):

| Distribution Routine Sites (Address/Locations) | Distribution Repeat & Source Sampling | Distribution Repeat & Source Sites (Address/Locations) |
|---|---|---|
| Routine Site 1 ____ | Repeat Site 1A | Same as Routine Site 1 |
| | Repeat Site 1B | ____ |
| | Repeat Site 1C | ____ |
| | Triggered Source* | ____ |
| Routine Site 2 ____ | Repeat Site 2A | Same as Routine Site 2 |
| | Repeat Site 2B | ____ |
| | Repeat Site 2C | ____ |
| | Triggered Source* | ____ |
| Routine Site 3 ____ | Repeat Site 3A | Same as Routine Site 3 |
| | Repeat Site 3B | ____ |
| | Repeat Site 3C | ____ |
| | Triggered Source* | ____ |

See Section 3 of instructions on other side.

4. Sampling Technique:
   Sample at a non-swivel faucet, removing aerator, screen, hose, or other attachments. Flush tap for 3-5 minutes. While flushing, label sample bottle with all pertinent information: System name and PWS ID; date, time and sample location; sample collector; sample type (distribution routine or repeat, triggered source). Measure and record free chlorine residual if system is chlorinated. Use only sample bottles provided by the lab specifically for bacteriological sampling. Sample bottle should not be opened until the moment of filling. Avoid touching the inside of lid or bottle. Reduce water flow to a steady stream and gently fill the bottle leaving an air space of at least ½ inch at the top. Replace lid immediately. **If the sampling technique is not followed, collect another sample using an unopened bottle.**

5. Refer to map showing locations of coliform sampling sites.

Oregon Health Authority

## *Revised* COLIFORM SAMPLING PLAN

**For public water systems serving up to 1000 persons**

*INSTRUCTIONS*

*(Required under OAR 333-061-0036(5)(a)(I))*

1. Fill in system name, public water system (PWS) ID, contact information and date completed.
2. Fill in number of routine distribution samples and circle sampling frequency. Indicate if source water assessment sampling is required and if so circle how often.
3. Check the box below that best describes your water system. Sampling requirements correspond to treatment if applicable.
   a) ☐ Groundwater system adding chlorine to maintain a detectable residual, applying ultraviolet light or with no treatment. **Must collect 3 repeat samples in distribution system and source sample.***
   b) ☐ Surface water system or groundwater system applying treatment to inactivate viruses (4-log). These systems adding a chemical disinfectant are required to measure/record residual levels daily at or before the first customer and report to Drinking Water Services. **All 3 repeat samples are collected in distribution system with no source sample required.**

   Write sampling sites in Section 3 table on other side. Select sites and sample according to table below:

| | |
|---|---|
| **Distribution System Routine & Repeat Sampling**: Select routine sampling sites that best represent the entire distribution system and rotate sampling between sites. Routine and repeat samples may be collected at customers' premises, dedicated sampling stations, or other locations determined by the water system. | |
| **Repeat Site A** | Collect sample at the **same** location as the routine coliform-positive sample. |
| **Repeat Site B** | Collect sample at a location within 5 service connections **upstream** from routine site or other approved location. |
| **Repeat Site C** | Collect sample at a location within 5 service connections **downstream** from routine site or other approved location. |
| ***Source Water Sampling:** If checkbox **3a** above applies, sample each groundwater source in use when routine coliform positive occurred. Source water samples must be labeled as **Triggered** or TG for compliance. | |

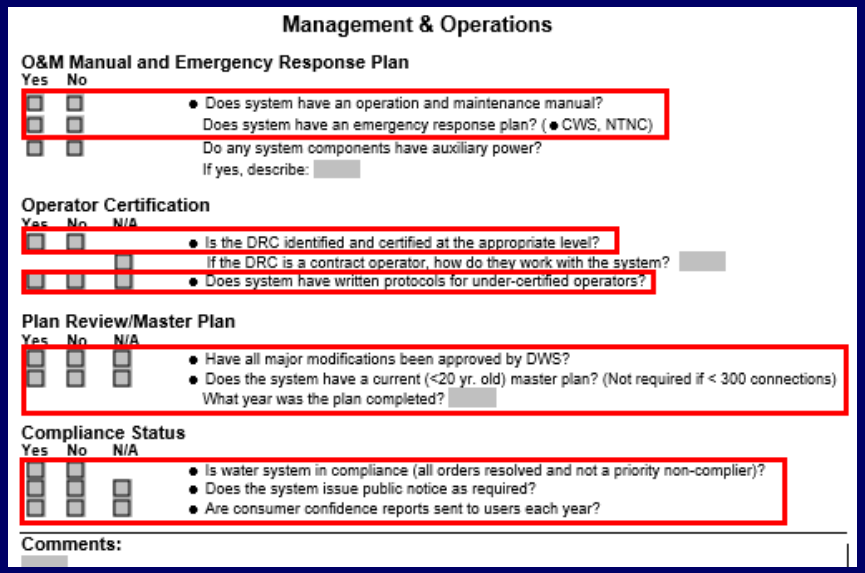
**Repeat samples must be collected within 24 hours of being notified of routine coliform positive.** Collect all repeat samples on the same day at different sites. Systems with a single connection may be allowed to collect repeat samples over three (3) day period from laboratory notification date. If no repeat samples are collected after a routine coliform positive sample, the water system must conduct a coliform investigation.

4. Use the sampling technique provided. Attach laboratory instructions or sampling technique developed by the water system.
5. Have a map showing locations of water source(s), treatment if applicable and routine and repeat sampling sites. Be sure sites selected are representative of entire distribution system.

*Contact your county Environmental Health Program, Department of Agriculture or OHA Drinking Water Services at (971) 673-0405 with questions about the coliform sampling plan or sampling requirements.*

# Management & Operations

- Operation & Maintenance Manual



**Management & Operations**

**O&M Manual and Emergency Response Plan**

| Yes | No | |
|---|---|---|
| ☐ | ☐ | ● Does system have an operation and maintenance manual? |
| ☐ | ☐ | Does system have an emergency response plan? ( ● CWS, NTNC) |
| ☐ | ☐ | Do any system components have auxiliary power? |
| | | If yes, describe: |

**Operator Certification**

| Yes | No | N/A | |
|---|---|---|---|
| ☐ | ☐ | | ● Is the DRC identified and certified at the appropriate level? |
| | | ☐ | If the DRC is a contract operator, how do they work with the system? |
| ☐ | ☐ | ☐ | ● Does system have written protocols for under-certified operators? |

**Plan Review/Master Plan**

| Yes | No | N/A | |
|---|---|---|---|
| ☐ | ☐ | ☐ | ● Have all major modifications been approved by DWS? |
| ☐ | ☐ | ☐ | ● Does the system have a current (<20 yr. old) master plan? (Not required if < 300 connections) |
| | | | What year was the plan completed? |

**Compliance Status**

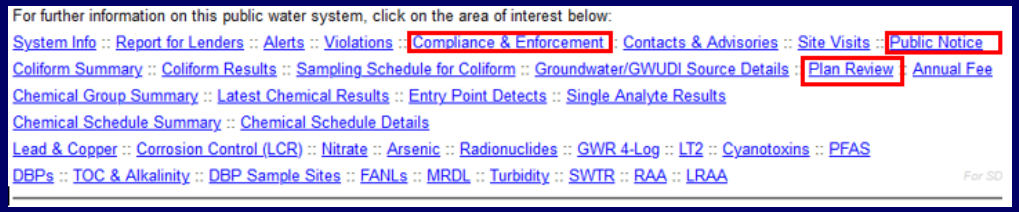
| Yes | No | N/A | |
|---|---|---|---|
| ☐ | ☐ | | ● Is water system in compliance (all orders resolved and not a priority non-complier)? |
| ☐ | ☐ | ☐ | ● Does the system issue public notice as required? |
| ☐ | ☐ | ☐ | ● Are consumer confidence reports sent to users each year? |

**Comments:**

Documenting Water System Operations

- Creating a Water System Operations Manual (pdf)
- Written Protocol for Operators: MS Word -or- PDF
- Standard Operating Procedures Needed at Surface Water Treatment Plants - PDF
- From the Basics for Small Water Systems in Oregon course manual - Fact Sheet 3.2 - Developing and Maintaining an Operations & Maintenance Manual

- See ERP section of the presentation for templates
- Check Certified Operators section on Data Online for DRC
- Make sure to have a copy of written protocols for under-certified operators
- https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/DRINKINGWATER/OPERATIONS/Documents/ProtocolforOperators.doc



For further information on this public water system, click on the area of interest below:

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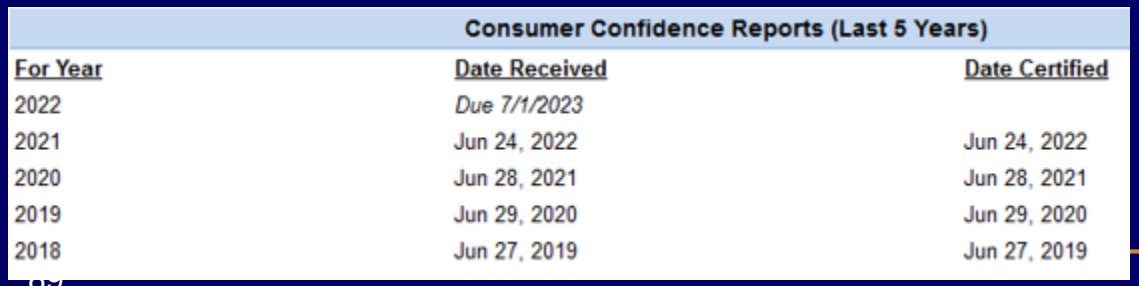
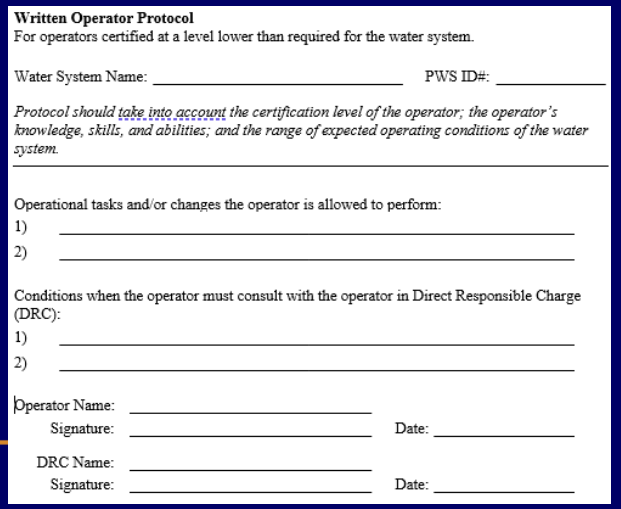


**Consumer Confidence Reports (Last 5 Years)**

| For Year | Date Received | Date Certified |
|---|---|---|
| 2022 | *Due 7/1/2023* | |
| 2021 | Jun 24, 2022 | Jun 24, 2022 |
| 2020 | Jun 28, 2021 | Jun 28, 2021 |
| 2019 | Jun 29, 2020 | Jun 29, 2020 |
| 2018 | Jun 27, 2019 | Jun 27, 2019 |



**Written Operator Protocol**

For operators certified at a level lower than required for the water system.

Water System Name: _____ PWS ID#: _____

*Protocol should take into account the certification level of the operator; the operator's knowledge, skills, and abilities; and the range of expected operating conditions of the water system.*

Operational tasks and/or changes the operator is allowed to perform:

1) _____

2) _____

Conditions when the operator must consult with the operator in Direct Responsible Charge (DRC):

1) _____

2) _____

Operator Name: _____

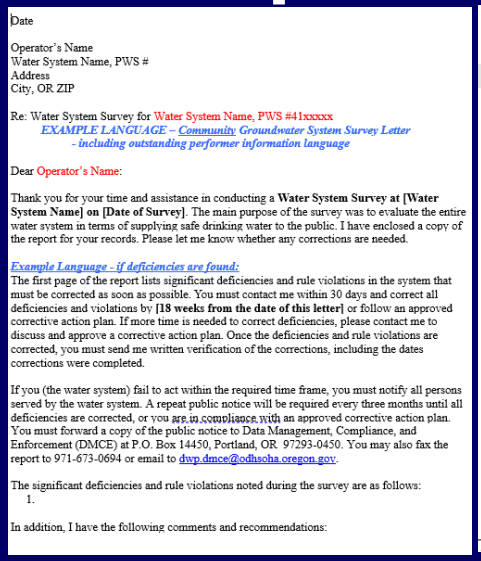
Signature: _____ Date: _____

DRC Name: _____

Signature: _____ Date: _____

# Survey follow-up

- After on-site visit you will receive a cover letter with a list of significant deficiencies, rule violations, recommendations and water system survey forms
  - Hopefully, in the future we will move to electronic WSS (ESRI Survey 123).
- Groundwater Systems
  - 30 days to contact DWS or Regulating Agency
  - 120 days to correct all deficiencies and rule violations or be on an approved schedule
- Surface Water Systems:
  - 45 days to submit Corrective Action Plan outlining how and when deficiencies and rule violations will be addressed
- Written Documentation of Correction Required/pictures of corrections



Date

Operator's Name
Water System Name, PWS #
Address
City, OR ZIP

Re: Water System Survey for Water System Name, PWS #41xxxxx
*EXAMPLE LANGUAGE – Community Groundwater System Survey Letter – including outstanding performer information language*

Dear Operator's Name:

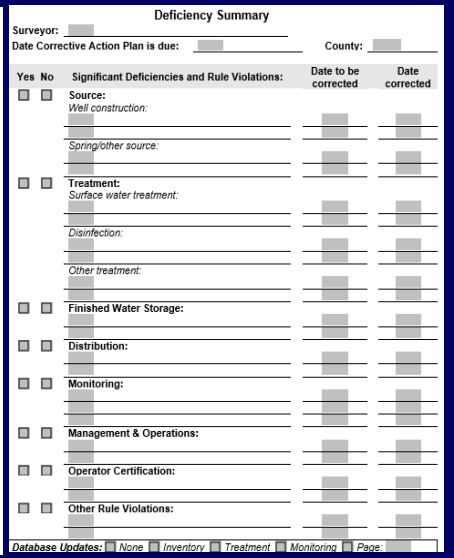
Thank you for your time and assistance in conducting a **Water System Survey at [Water System Name] on [Date of Survey]**. The main purpose of the survey was to evaluate the entire water system in terms of supplying safe drinking water to the public. I have enclosed a copy of the report for your records. Please let me know whether any corrections are needed.

*Example Language - if deficiencies are found:*
The first page of the report lists significant deficiencies and rule violations in the system that must be corrected as soon as possible. You must contact me within 30 days and correct all deficiencies and violations by **[18 weeks from the date of this letter]** or follow an approved corrective action plan. If more time is needed to correct deficiencies, please contact me to discuss and approve a corrective action plan. Once the deficiencies and rule violations are corrected, you must send me written verification of the corrections, including the dates corrections were completed.

If you (the water system) fail to act within the required time frame, you must notify all persons served by the water system. A repeat public notice will be required every three months until all deficiencies are corrected, or you are in compliance with an approved corrective action plan. You must forward a copy of the public notice to Data Management, Compliance, and Enforcement (DMCE) at P.O. Box 14450, Portland, OR 97293-0450. You may also fax the report to 971-673-0694 or email to dwp.dmce@odhsoha.oregon.gov.

The significant deficiencies and rule violations noted during the survey are as follows:
1.

In addition, I have the following comments and recommendations:

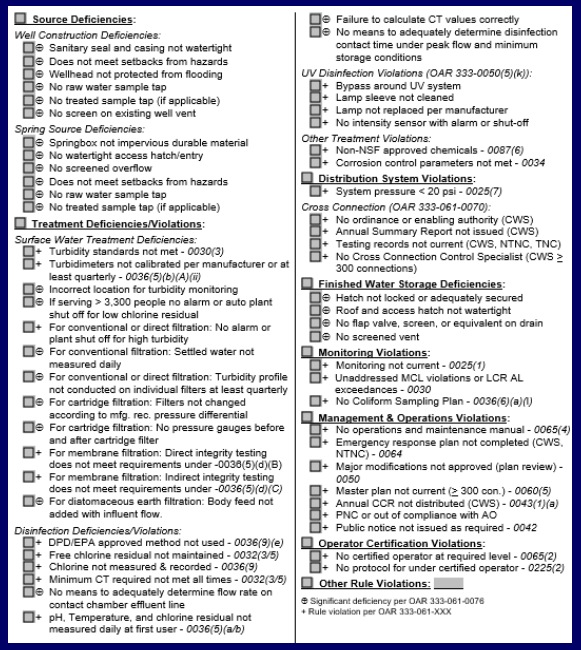


**Deficiency Summary**

Surveyor:
Date Corrective Action Plan is due: County:

| Yes | No | Significant Deficiencies and Rule Violations: | Date to be corrected | Date corrected |
|---|---|---|---|---|
| ☐ | ☐ | **Source:** | | |
| | | *Well construction:* | | |
| | | *Spring/other source:* | | |
| ☐ | ☐ | **Treatment:** | | |
| | | *Surface water treatment:* | | |
| | | *Disinfection:* | | |
| | | *Other treatment:* | | |
| ☐ | ☐ | **Finished Water Storage:** | | |
| ☐ | ☐ | **Distribution:** | | |
| ☐ | ☐ | **Monitoring:** | | |
| ☐ | ☐ | **Management & Operations:** | | |
| ☐ | ☐ | **Operator Certification:** | | |
| ☐ | ☐ | **Other Rule Violations:** | | |

*Database Updates:* ☐ None ☐ Inventory ☐ Treatment ☐ Monitoring ☐ Page:



☐ **Source Deficiencies**:
*Well Construction Deficiencies:*
☐ ⊖ Sanitary seal and casing not watertight
☐ ⊖ Does not meet setbacks from hazards
☐ ⊖ Wellhead not protected from flooding
☐ ⊖ No raw water sample tap
☐ ⊖ No treated sample tap (if applicable)
☐ ⊖ No screen on existing well vent
*Spring Source Deficiencies:*
☐ ⊖ Springbox not impervious durable material
☐ ⊖ No watertight access hatch/entry
☐ ⊖ No screened overflow
☐ ⊖ Does not meet setbacks from hazards
☐ ⊖ No raw water sample tap
☐ ⊖ No treated sample tap (if applicable)
☐ **Treatment Deficiencies/Violations**:
*Surface Water Treatment Deficiencies:*
☐ + Turbidity standards not met - *0030(3)*
☐ + Turbidimeters not calibrated per manufacturer or at least quarterly - *0036(5)(b)(A)(ii)*
☐ ⊖ Incorrect location for turbidity monitoring
☐ ⊖ If serving > 3,300 people no alarm or auto plant shut off for low chlorine residual
☐ + For conventional or direct filtration: No alarm or plant shut off for high turbidity
☐ ⊖ For conventional filtration: Settled water not measured daily
☐ ⊖ For conventional or direct filtration: Turbidity profile not conducted on individual filters at least quarterly
☐ ⊖ For cartridge filtration: Filters not changed according to mfg. rec. pressure differential
☐ ⊖ For cartridge filtration: No pressure gauges before and after cartridge filter
☐ + For membrane filtration: Direct integrity testing does not meet requirements under -0038(5)(d)(B)
☐ + For membrane filtration: Indirect integrity testing does not meet requirements under -*0036(5)(d)(C)*
☐ ⊖ For diatomaceous earth filtration: Body feed not added with influent flow.
*Disinfection Deficiencies/Violations:*
☐ + DPD/EPA approved method not used - *0036(9)(e)*
☐ + Free chlorine residual not maintained - *0032(3/5)*
☐ + Chlorine not measured & recorded - *0036(9)*
☐ + Minimum CT required not met all times - *0032(3/5)*
☐ ⊖ No means to adequately determine flow rate on contact chamber effluent line
☐ + pH, Temperature, and chlorine residual not measured daily at first user - *0036(5)(a/b)*
☐ ⊖ Failure to calculate CT values correctly
☐ ⊖ No means to adequately determine disinfection contact time under peak flow and minimum storage conditions
*UV Disinfection Violations (OAR 333-0050(5)(k)):*
☐ + Bypass around UV system
☐ + Lamp sleeve not cleaned
☐ + Lamp not replaced per manufacturer
☐ + No intensity sensor with alarm or shut-off
*Other Treatment Violations:*
☐ + Non-NSF approved chemicals - *0087(6)*
☐ + Corrosion control parameters not met - *0034*
☐ **Distribution System Violations**:
☐ + System pressure < 20 psi - *0025(7)*
*Cross Connection (OAR 333-061-0070):*
☐ + No ordinance or enabling authority (CWS)
☐ + Annual Summary Report not issued (CWS)
☐ + Testing records not current (CWS, NTNC, TNC)
☐ + No Cross Connection Control Specialist (CWS ≥ 300 connections)
☐ **Finished Water Storage Deficiencies**:
☐ ⊖ Hatch not locked or adequately secured
☐ ⊖ Roof and access hatch not watertight
☐ ⊖ No flap valve, screen, or equivalent on drain
☐ ⊖ No screened vent
☐ **Monitoring Violations**:
☐ + Monitoring not current - *0025(1)*
☐ + Unaddressed MCL violations or LCR AL exceedances - *0030*
☐ + No Coliform Sampling Plan - *0036(6)(a)(I)*
☐ **Management & Operations Violations**:
☐ + No operations and maintenance manual - *0065(4)*
☐ + Emergency response plan not completed (CWS, NTNC) - *0064*
☐ + Major modifications not approved (plan review) - *0050*
☐ + Master plan not current (≥ 300 con.) - *0060(5)*
☐ + Annual CCR not distributed (CWS) - *0043(1)(a)*
☐ + PNC or out of compliance with AO
☐ + Public notice not issued as required - *0042*
☐ **Operator Certification Violations**:
☐ + No certified operator at required level - *0065(2)*
☐ + No protocol for under certified operator - *0225(2)*
☐ **Other Rule Violations**:
⊖ Significant deficiency per OAR 333-061-0076
+ Rule violation per OAR 333-061-XXX

# Comments and Questions


Russ Kazmierczak

Eastern Oregon Geologist

Source Water Protection Specialist

Well Construction Plan Review

P: 971-599-0121

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