
Cyanotoxin Monitoring; Rule Overview and Sampling Logistics

Webinar

April 22, 2019

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Mike Mulvey, DEQ



DEQ

State of Oregon
Department of
Environmental
Quality



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Presentation Overview

- Introductions and webinar etiquette: Mike
- Cyanobacteria and HABs background: Mike
- HABs in Oregon and why regulate? Kari
- Overview of cyanotoxin rules: Kari
- Sample collection: Mike
- Questions: Kari and Mike
- 2018 Cyanotoxin monitoring results: Mike



Webinar Etiquette

- Let us know right away if you cannot hear, etc.
- Mute your phone
- Do not put the webinar on hold
- Questions in the chat box
- This presentation is being recorded



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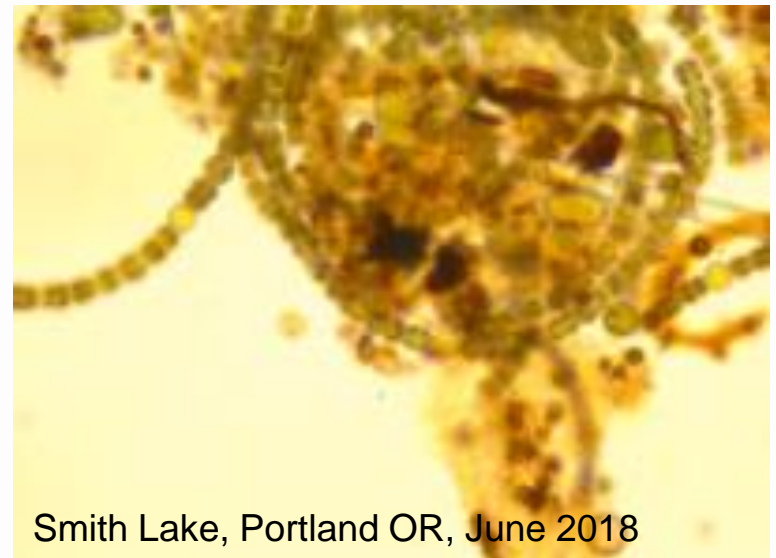
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Cyanobacteria: what are they and what do they do?

- Cyanobacteria, blue-green algae, or cyanophytes
- Photosynthetic bacteria, wet environments
- Very old, highly successful, found nearly every where
- Some species capable of nitrogen fixation, using N_2 to make proteins



3.5 billion year old fossil rock
(paleoprojectweebly.com)



Smith Lake, Portland OR, June 2018

Cyanobacteria

- Diverse forms. Single cells, filaments, colonial blobs.
- Diverse habitats. Sun light, wet, fresh water, marine.
- Some species sometimes make toxins.
- Toxins can be persistent downstream of the bloom.
- Toxins. Skin, liver, kidney, nervous system.
 - Human fatalities and illness have been rare in Oregon
 - Livestock and pet deaths in Oregon

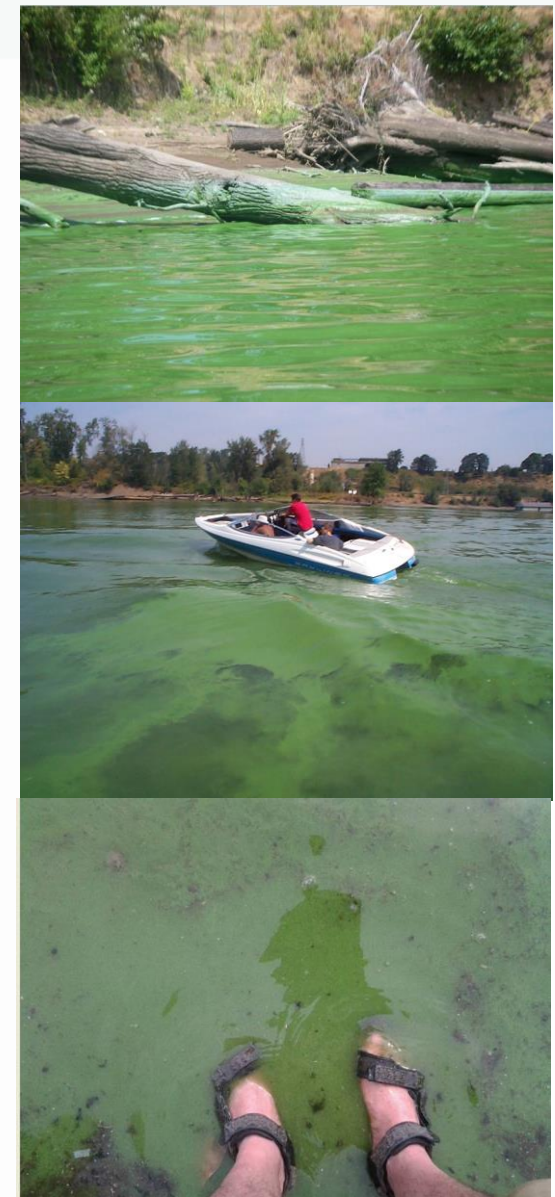


- USGS Open file report 2015-1164



Harmful Algal Blooms

- Not all HABs are cyanobacteria
- Rapid growth with the right conditions
- Population can double three times a day
- Sunny, warm water (>~25 C, 77 F)
- High nutrients, especially higher P to N
- Slow moving water
- Regulate buoyancy
- Less palatable to algae grazers
- Introduced fish species



Willamette River 2015

Are blooms occurring more frequently?



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Cyanobacteria and drinking water in Oregon

Oregon Health Authority

- Drinking water safety
- DW Rule OAR 333-061-0510
- Contact recreation safety
- Issues advisories

DEQ Laboratory

- Lab support for OHA rules
- Work with DW facility operators: training, supplies, shipping, analysis, reporting results



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HABs History in Oregon

- OHA: HABs program since 2008
- Best Management Practices based on EPA Guidance: water suppliers downstream of a recreational advisory would sample *voluntarily*
- Some detections have been found in raw water, but never in treated water above health advisory levels until 2018.
- To ensure public health protection, OHA developed regulations



Health Advisory Levels

- Established by EPA and adopted by Oregon for total microcystins and cylindrospermopsin
- 10-day values

Cyanotoxin	For Vulnerable People (ppb)	For Age 6 and Above (ppb)
Total Microcystins	0.3	1.6
Cylindrospermopsin	0.7	3



Health effects include upset stomach, diarrhea, vomiting, as well as long-term liver or kidney damage.

Source is deemed susceptibility if:

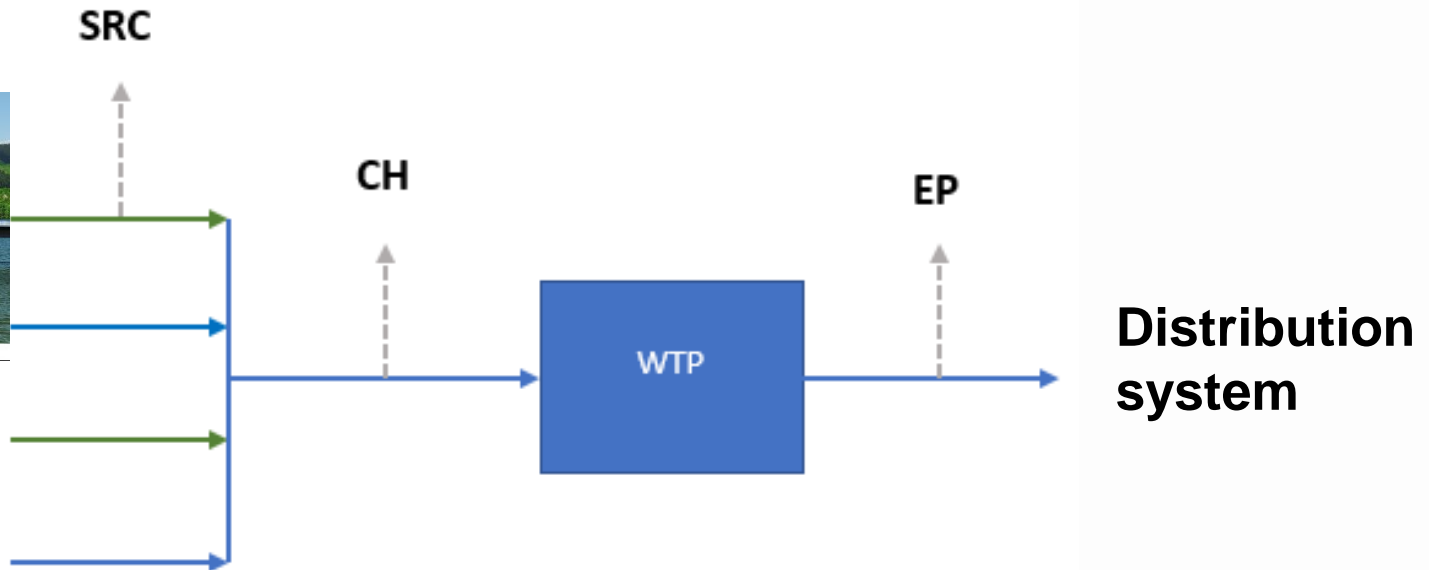
- A harmful algae bloom was documented in past, or a cyanotoxin was previously detected; or
- The intake is downstream of or influenced by another surface water source susceptible to harmful algae blooms or release of cyanotoxins; or
- The source is on a water quality limited listing in the Oregon DEQ Integrated Report and Clean Water Act Section 303(d) list for the limiting factors of algae and aquatic weeds.



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Sample locations



- SRC = Source, from intake prior to any treatment
- CH = Common header; after all sources combine, as it enters the treatment plant
- EP= Entry point to the distribution, representing treated or finished water
- Distribution: sample at representative locations



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Monitoring requirements

- Raw water sampling every 2 weeks
- If ≥ 0.3 ug/L, sample at raw and EP weekly
- If detected at EP, sample daily
- If \geq HAL*, confirmation asap
- If confirmed \geq HAL, issue advisory



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*HAL = Health Advisory Level

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Purchasing water systems

- No routine sampling is required
- If the seller has an initial sample over the HAL at their entry point, they must notify purchasers within 24 hours (heads up)
- If a confirmation sample at the EP is also over the HAL, they must notify purchasers within 8 hrs (joint advisory issued)



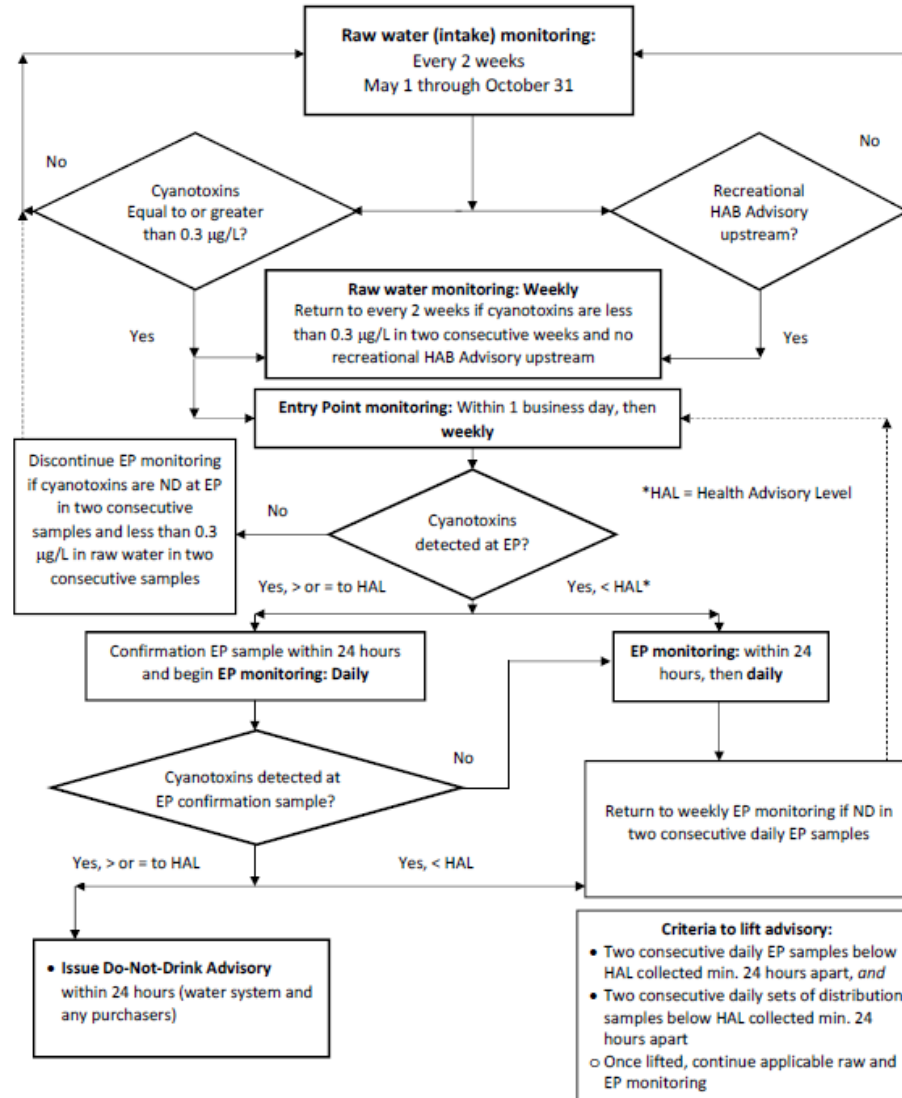
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* Advisory may be lifted at purchasing systems when two consecutive sample rounds at representative locations are $<$ HAL

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Flowchart

Cyanotoxin Monitoring Requirements
For Sources Determined to be Susceptible
 Oregon Health Authority
 December 2018



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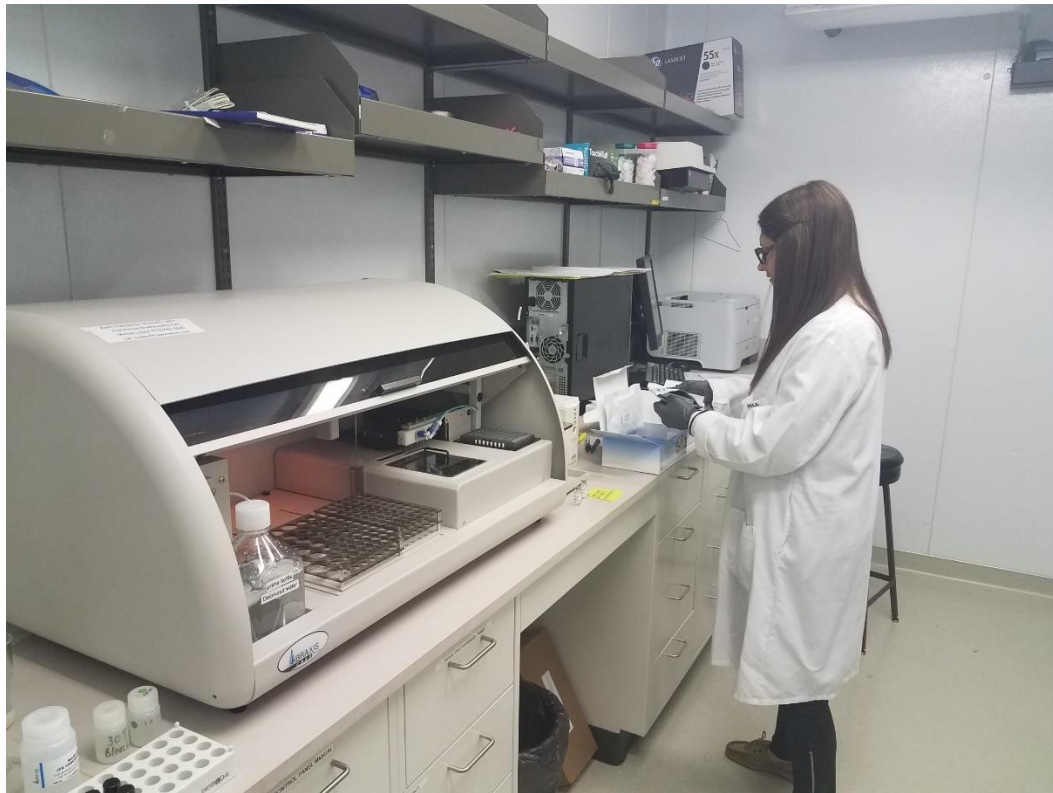


Analytical methods

- Samples must be analyzed by an accredited lab or the DEQ lab
- Total microcystins: EPA method 546 for total microcystins (ELISA)
- Cylindrospermopsin:
 - DEQ Analytical Method for Determination of Cylindrospermopsin in Raw and Finished Water by ELISA
 - EPA method 545 (LC MS/MS) if detected through ELISA in finished drinking water



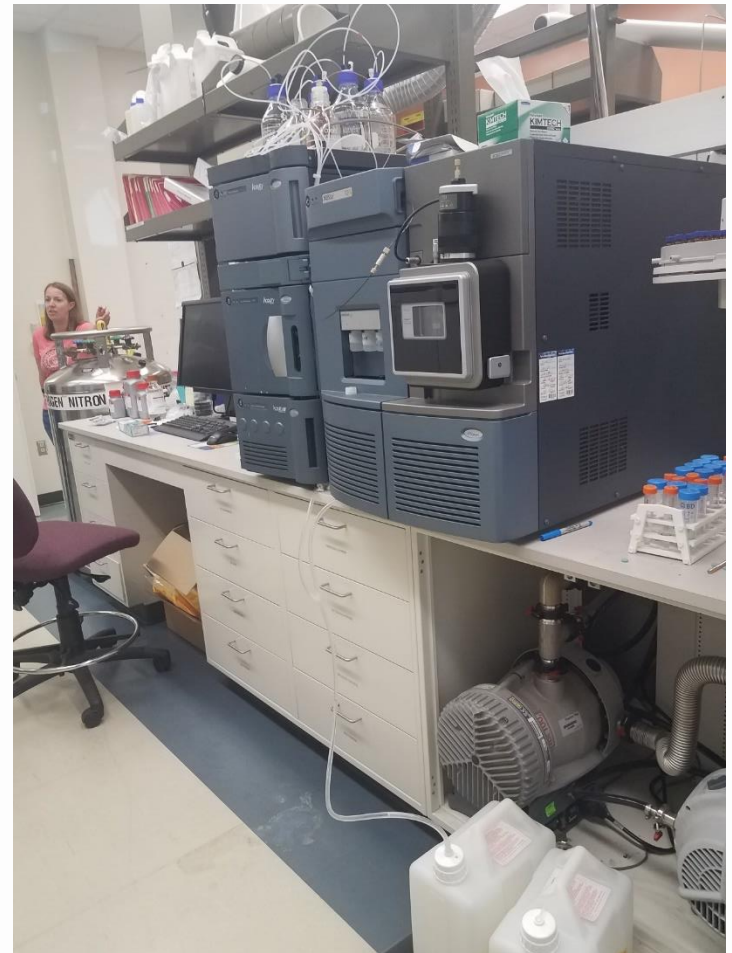
Lab methods



ELISA: Enzyme Linked Immunosorbent Assay



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**LC MS/MS: Liquid Chromatography
with tandem mass spectrometry**

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Public Notification

- Health Advisory if confirmed \geq HAL
 - PWS and any purchasers
 - Press release
 - If advisory is delayed with OHA approval (rare), PWS must issue press release stating results but no advisory
- Must publish EP detections in annual CCR
- To lift advisory:
 - 2 daily samples at EP $<$ HAL and
 - Distribution samples $<$ HAL for 2 days



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Reporting

- PWS must ensure labs analyze and report results > HAL within 2 business days
- Treated water samples > HAL must be reported to OHA within 24 hrs
- PWS must notify purchasers if EP result is > HAL within 8 hrs
- PWS to report any results to lift an advisory to OHA within one business day
- PWS to report all other results to OHA by 10th of following month



Web resources: healthoregon.org/DWP

Public Health Division > Environmental Public Health > Drinking Water > Water System Operations > Surface Water Treatment > Cyanotoxin Resources for Drinking Water

Cyanotoxin Resources for Drinking Water

[Drinking Water Services](#)

[Water System Operations](#)

[Surface Water Treatment](#)

[Capacity Development](#)

[Public Notice Resources & Templates](#)

[Fact Sheets & Best Management Practices](#)

[Water System Surveys & Outstanding Performance](#)

[Circuit Rider Program](#)

[Pipeline Newsletter](#)

[Contact Us](#)

Rules for Cyanotoxin Monitoring in Drinking Water

Oregon Health Authority has developed permanent rules that require drinking water systems in the state using certain surface water sources, such as those prone to harmful algae blooms, to routinely test for cyanotoxins that these blooms produce, and notify the public about the test results.

These rules are effective starting December 27, 2018 and replace temporary administrative rules adopted for cyanotoxin monitoring and testing that were effective July 1, 2018 through December 27, 2018.

OHA is encouraging water systems not subject to the cyanotoxin monitoring rules that serve surface water and have the past to voluntarily test for cyanotoxins and notify the public about the results.

Rules Resources

- [Permanent Rules for Cyanotoxin Monitoring at Public Water Systems \(final\)](#)
- [Cyanotoxin Monitoring Flowchart](#)

Recommended Reading

- [EPA Recommendations for Public Water Systems to Manage Cyanotoxins in Drinking Water](#)
- [EPA Fact Sheet on Cyanobacteria and Cyanotoxins: Information for Drinking Water Systems](#)
- [EPA Drinking Water Cyanotoxin Risk Communications Tool Box](#)
- [EPA Cyanotoxin Management Plan Template and Example Plans](#)

Treatment Information

- [EPA Water Treatment Optimization for Cyanotoxins](#)
- [American Water Works Association CyanoTOX Spreadsheet for Cyanotoxin Removal Rate Calculation](#)

Other Resources

- [EPA UCMR4 Fact Sheet on Cyanotoxins](#)
- [Toxic cyanobacteria in water: A guide to their public health consequences, monitoring and management \(WHO\)](#)



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What you can do now

- Monitoring plan, including if detections are found
- Consider contract with DEQ or other accredited lab for additional sampling
- Evaluate best treatment optimization steps if needed
- Update contact lists (internal, purchasers, state)
- Know where to get public notice templates and resources

* Determine representative distribution sampling sites



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Take away messaging

- Public demands to know if they are at risk, even in absence of a federal regulation
- Testing the water is the only way to know for sure
- Tell people what you know when you know it
- Establish relationships with local stakeholders & agencies to prepare
 - How to reach vulnerable populations
 - Where to obtain water hauling trucks
 - Messaging plans

Consider treatment options if your system is at risk



How to collect and submit cyanotoxin samples to the DEQ Laboratory



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Resources to pay for laboratory analysis

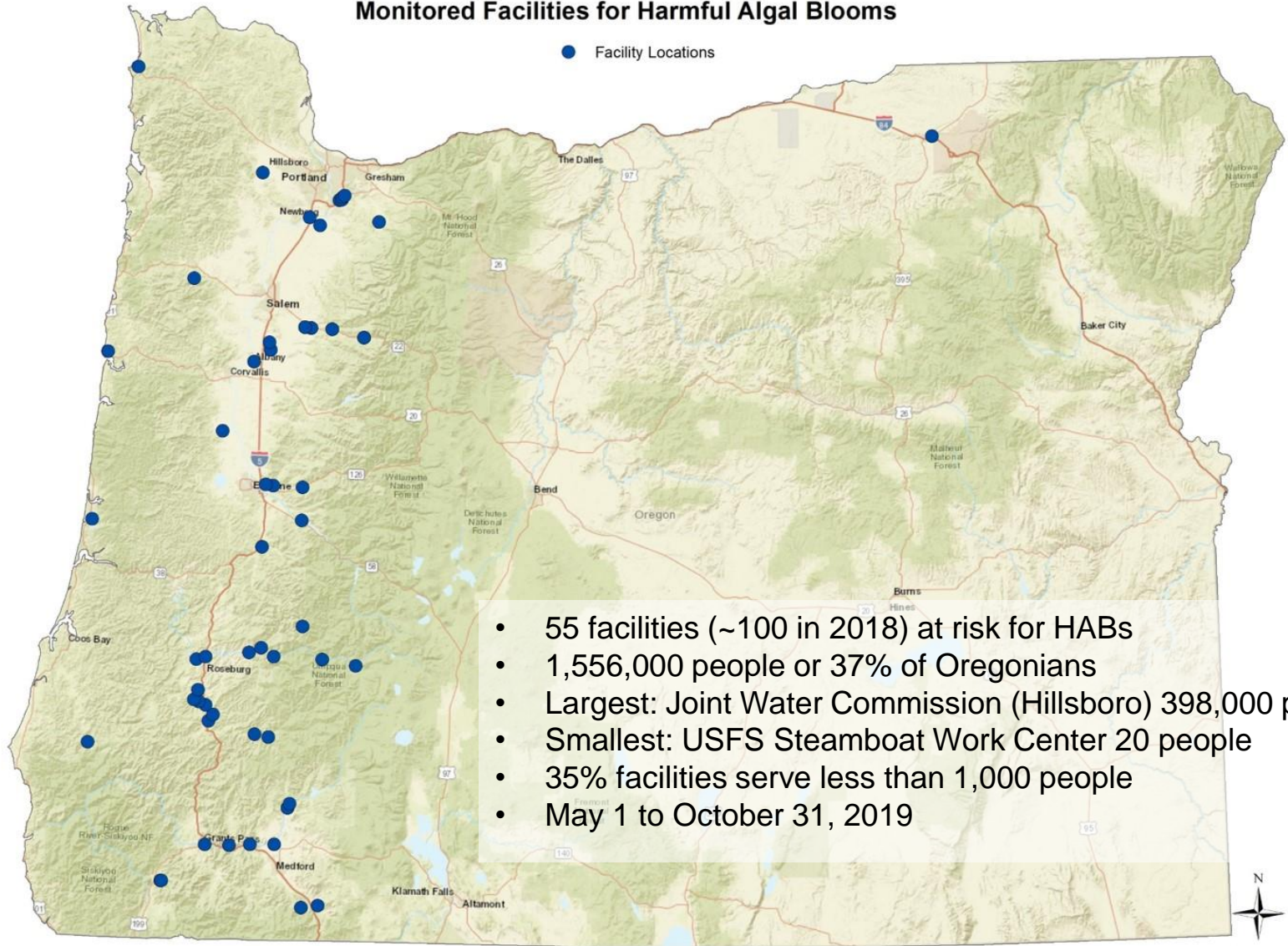
- In 2018, the Oregon Legislature paid for cyanotoxin sample analysis by DEQ with the emergency rule funding.
- Current funding ends June 30, 2019.
- The Legislature has not yet approved funding for analysis after June 30.
- [House Bill 3326](#)
- I assume the Legislature will approve funding and the state will continue to pay for analysis, but....



2019

Monitored Facilities for Harmful Algal Blooms

● Facility Locations



- 55 facilities (~100 in 2018) at risk for HABs
- 1,556,000 people or 37% of Oregonians
- Largest: Joint Water Commission (Hillsboro) 398,000 people
- Smallest: USFS Steamboat Work Center 20 people
- 35% facilities serve less than 1,000 people
- May 1 to October 31, 2019



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Map by Dan Brown, DEQ, April 2019



Biweekly Raw Water Sample Collection Schedule

First Half, Weeks # 1 to 13

Week #	Week Schedule	Sample collection day	Notes
1	A	6-May	
2	B	13-May	
3	A	20-May	
4	B	28-May	Memorial Day Weekend. Sample on Tuesday.
5	A	3-Jun	
6	B	10-Jun	
7	A	17-Jun	
8	B	24-Jun	
9	A	1-Jul	
10	B	8-Jul	
11	A	15-Jul	
12	B	22-Jul	
13	A	29-Jul	



Unpack your box, check the contents



Sampling Kit Checklist:

First 8 out of 13 sampling kits

- 8 coolers
- 32 bags of gel ice. ***Put the gel ice in the freezer.***
- 8+ Amber Glass 125 mL sample bottle with Sodium Thiosulfate tablet inside. ***Check for broken bottles.***
- 8+ Bubble bags (For wrapping the 125 ml sample bottle for shipping)
- 8 Large Ziploc Bags (For putting the chain of custody in)
- 8 UPS return labels with self-adhesive envelopes
- Paper work packet: Laboratory chain of custody forms, bottle labels

Upon receipt check that all items are included, contact DEQ laboratory if you are missing something



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DEQ Laboratory Chain of Custody Form

Oregon Department of Environmental Quality Chain of Custody Record

Facility: City of Albany - OR4100012

Address: 33883 Berry Drive, NE

Albany OR 97322

Facility Contact: Karen Kelley

Facility Phone: (541) 791-0175

Office use Only
Affix Work Order Barcode Here

Qtime: _____ Survey: _____

Sample Collector (s): _____

Sampling Agency: _____

DEQ Contact: Michael Mulvey

Sample Information						
Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
	PWS00012:SRC-BA	Not Applicable	Source Water		SANTIAM RIVER	
			S F			
			S F			
			S F			

Relinquished By:	Agency/Company	Date/Time	Received By:	Agency/Company	Date/Time

Sample Receipt Checklist *Office Use Only*

- | | | | | |
|-----|----|---|--|----|
| Yes | No | Sampled Same Day? | Temperature Check (IR/Sample): _____ C | |
| Yes | No | Cooler Contained Ice? | Yes | No |
| Yes | No | Samples collected in the appropriate containers? | Yes | No |
| Yes | No | Sample containers clearly and properly labeled? | Yes | No |
| Yes | No | Samples received intact and without damage? | Sample Receipt Comments | |
| Yes | No | Sample volumes sufficient for requested analyses? | _____ | |
| Yes | No | All samples received within their holding times? | _____ | |

Please check this over carefully. Cross out changes with a single line, write in correction.

Oregon Department of Environmental Quality Chain of Custody Receipt

Facility: City of Albany - OR4100012

Address: 33883 Berry Drive, NE

Albany OR 97322

Facility Contact: Karen Kelley

Facility Phone: (541) 791-0175

Office use Only

Affix Work Order Barcode Here

Qtime: _____

Survey: _____

Sample Collector(s): _____

Sampling Agency: _____

DEQ Contact: Michael Mulvey

Sample Information

Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
	PWS00012:SRC-BA	Not Applicable	Source Water		SANTIAM RIVER	
			S F			
			S F			
			S F			

New format for Sample ID. Unique sampling point code. Match what is on the bottle label

Circle:
S= source water (SRC or CH locations)
F= finished drinking water (EP, Distribution)

Relinquished By:	Agency/Company	Date/Time

Sample Receipt Checklist *Office Use Only*

- Yes No Sampled Same Day?
- Yes No Cooler Contained Ice?
- Yes No Samples collected in the appropriate containers?
- Yes No Sample containers clearly and properly labeled?
- Yes No Samples received intact and without damage?
- Yes No Sample volumes sufficient for requested analyses?

Temperature Check (IR/Samp)

- Yes No Sample preservation checked at _____
- Yes No If yes were all samples properly _____
- Yes No COC form properly signed?

Leave Blank. For lab sample receiving.

Sample Receipt Comments

Filled out by the person who packs up the cooler. Date and time when the cooler is packed.

Sample ID

Oregon Department of Environmental Quality Chain of Custody Record

Facility: City of Albany - OR4100012

Address: 33883 Berry Drive, NE

Albany OR 97322

Facility Contact: Karen Kelley

Facility Phone: (541) 791-0175

Office use Only
Affix Work Order Barcode Here

Qtime: _____ Survey: _____

Sample Collector (s): _____

Sampling Agency: _____

DEQ Contact: Michael Mulvey

Sample Information						
Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
	PWS00012:SRC-BA	Not Applicable	Source Water		SANTIAM RIVER	
			S F			
			S F			
			S F			

Relinquished By:	Agency/Company	Date/Time	Received By:	Agency/Company	Date/Time

Sample Receipt Checklist *Office Use Only*

Yes	No	Sampled Same Day?	Temperature Check (IR/Sample): _____ C	
Yes	No	Cooler Contained Ice?	Yes	No
Yes	No	Samples collected in the appropriate containers?	Yes	No
Yes	No	Sample containers clearly and properly labeled?	Yes	No
Yes	No	Samples received intact and without damage?	Sample Receipt Comments	
Yes	No	Sample volumes sufficient for requested analyses?	_____	
Yes	No	All samples received within their holding times?	_____	

New Sample ID format

Oregon Department of Environmental Quality Chain of Custody Form

Facility: City of Albany - OR4100012

Address: 33883 Berry Drive, NE

Albany OR 97322

Facility Contact: Karen Kelley

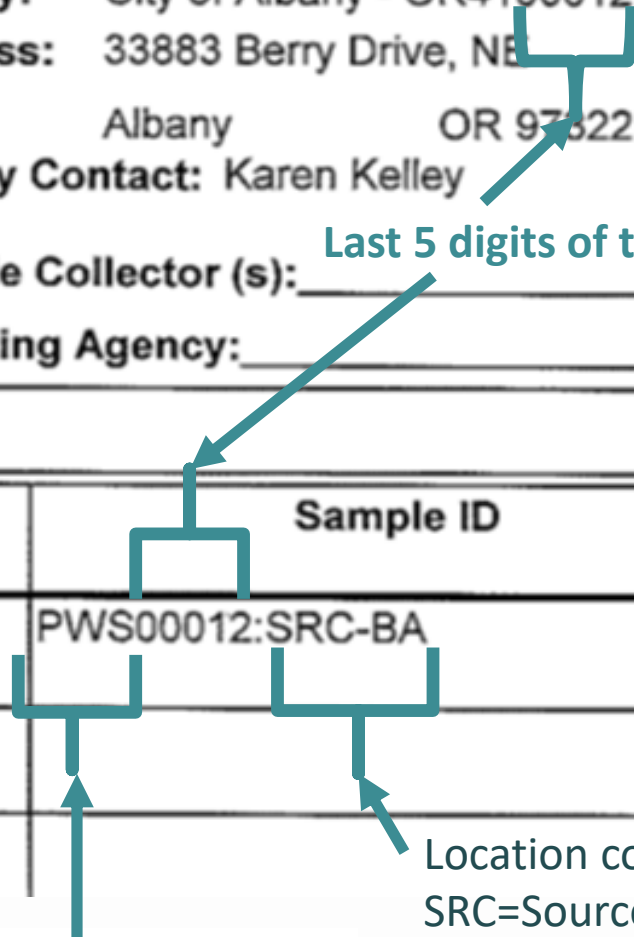
Facility Phone: (541) 791

Sample Collector (s): _____

Sampling Agency: _____

Last 5 digits of the facility ID

Item	Sample ID	Water Facility State Code	Source or Facility Code
	PWS00012:SRC-BA	Not Applicable	Source V
			S
			S



Location code

SRC=Source

CH=Common Header

EP=Entry Point

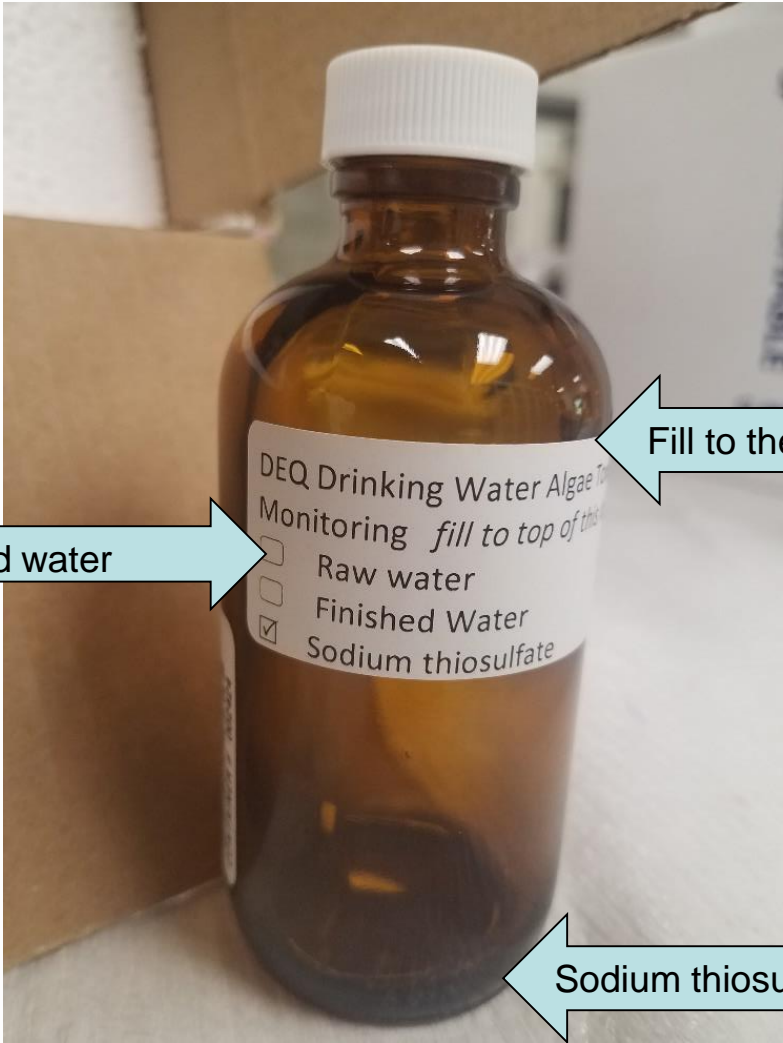
PWS=Public Water Supply



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Sample bottle for ELISA: 125 mL amber glass bottle



Check raw or finished water

Fill to the 100 mL fill line at top of label

Sodium thiosulfate tablet



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Fill the bottle carefully so as not to flush the preservative tablet out.
The sodium thiosulfate tablet is not toxic but don't eat it any way.



Second Bottle Label

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

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Sampling Point: _____
Date: _____ Time: _____

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Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____

OR4101174
Buell-Red Prairie Water Association
Sampling Point: _____
Date: _____ Time: _____



Second sample bottle label

Please check that the PWS number and facility name are correct

State location code for the sampling point. Matches Lab form.

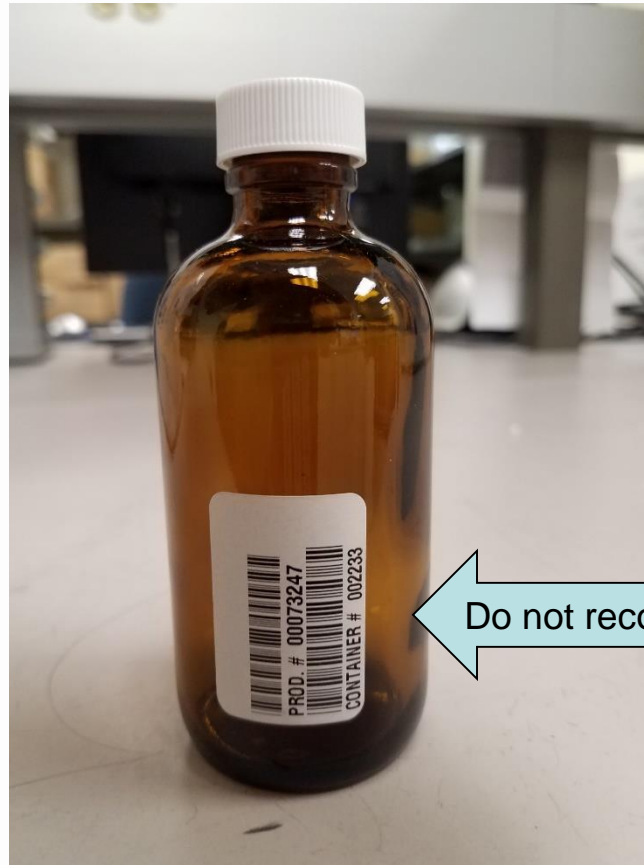
OR4101174
Buell-Red Prairie Water Association
Sampling Point: **PWS01174:SRC-AA**
Date: **May 6, 2019** Time: **10:15 AM**



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Ignore the Manufacturer's Product and Container Numbers



Do not record on the COC form

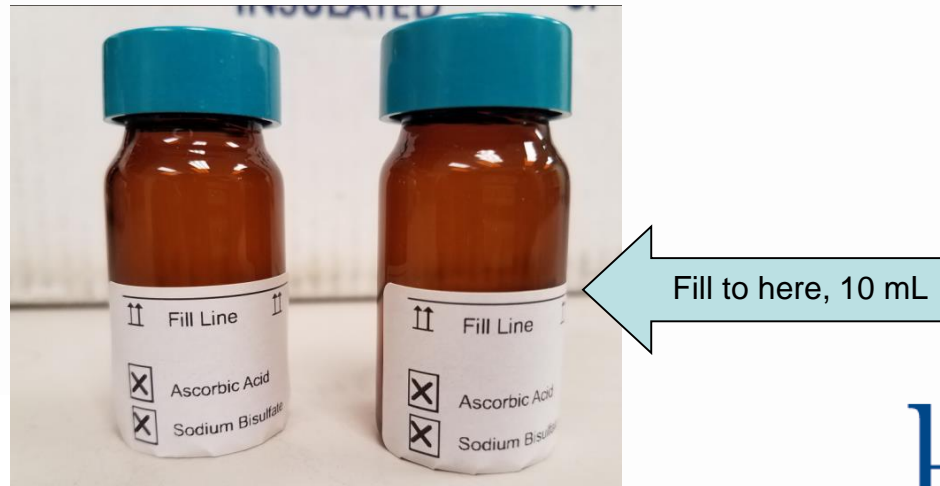


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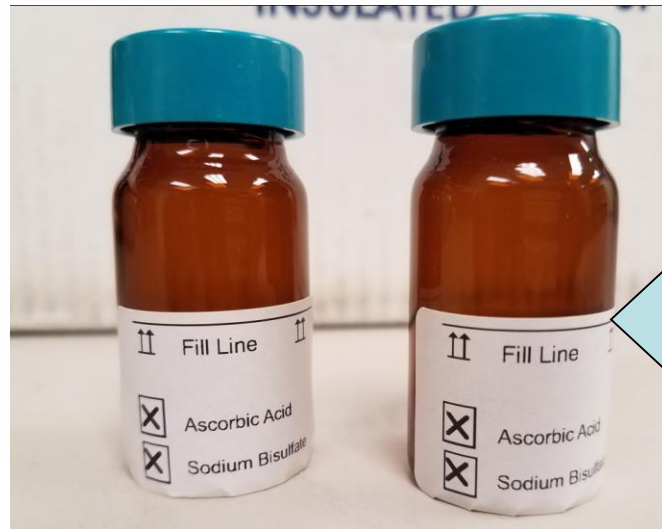
Cylindrospermopsin Confirmation Sample

- Not part of routine sampling. Not included with your sampling kits.
- Most facilities will not collect these samples.
- Collect only when requested by DEQ Lab.
- Confirmation by LC/MS/MS when cylindro detected by ELISA in drinking water (entry point, distribution system), not source water.
- Initially, only Santiam basin facilities will be sent confirmation sampling kits.
- Other facilities will be sent kits if needed.
- Confirmation sample for drinking water (entry point, distribution system), not source water.



Cylindrospermopsin Confirmation Sample

- Fill two vials per sample to the top of the label (10 mLs).
- Fill carefully. Do not flush out the 1 mL of liquid preservative.
- Preservative has a small amount of concentrated ascorbic acid.
- Use appropriate personal protective equipment (safety glasses, nitrile lab gloves).
- Record on the COC form.
- Ship to DEQ Lab next day delivery with frozen gel packs.



Fill to here, 10 mL

Do facilities have PPE or DEQ supply?



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Address: 33883 Berry Drive, NE

Albany OR 97322

Facility Contact: Karen Kelley

Facility Phone: (541) 791-0175

Office use Only
Affix Work Order Barcode Here

Qtime: _____ Survey: _____

Sample Collector (s): _____

Sampling Agency: _____

DEQ Contact: Michael Mulvey

Sample Information						
Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
	PWS00012:SRC-BA	Not Applicable	Source Water		SANTIAM RIVER	
			S F			
			S F			
			S F			

Relinquished By:	Agency/Company	Date/Time	Received By:	Agency/Company	Date/Time

Sample Receipt Checklist *Office Use Only*

Yes	No	Sampled Same Day?	Temperature Check (IR/Sample): _____ C	
Yes	No	Cooler Contained Ice?	Yes	No
Yes	No	Samples collected in the appropriate containers?	Yes	No
Yes	No	Sample containers clearly and properly labeled?	Yes	No
Yes	No	Samples received intact and without damage?	Sample Receipt Comments	
Yes	No	Sample volumes sufficient for requested analyses?	_____	
Yes	No	All samples received within their holding times?	_____	

Completing the COC form by the collector: Standard Sample

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Facility: City of Albany - OR4100012

Address: 33883 Berry Drive, NE

Albany OR 97322

Facility Contact: Karen Kelley

Facility Phone: (541) 791-0175

Sample Collector (s): **Bob Brown**

Sampling Agency: **City of Albany, Utilities Dept**

DEQ Contact: Michael Mulvey

Office use Only
Affix Work Order Barcode Here

Qtime: _____ Survey: _____

Sample Information

Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
	PWS00012:SRC-BA	Not Applicable	Source Water	5/6/19, 9:30 AM	SANTIAM RIVER	
			S F			
			S F			
			S F			

Relinquished By:	Agency/Company	Date/Time	Received By:	Agency/Company	Date/Time
B. Brown	City of Albany	5/6/19 10:00AM			

Sample Receipt Checklist *Office Use Only*

Yes	No	Sampled Same Day?	Temperature Check (IR/Sample):	<u> C </u>	
Yes	No	Cooler Contained Ice?	Yes	No	Sample preservation checked at time of sample receipt?
Yes	No	Samples collected in the appropriate containers?	Yes	No	If yes were all samples properly preserved?
Yes	No	Sample containers clearly and properly labeled?	Yes	No	COC form properly signed?
Yes	No	Samples received intact and without damage?	Sample Receipt Comments		
Yes	No	Sample volumes sufficient for requested analyses?	_____		
Yes	No	All samples received within their holding times?	_____		



Completing the COC form by the collector:

Standard sample plus an extra 125 ml EP sample

Oregon Department of Environmental Quality Chain of Custody Record

Facility: City of Albany - OR4100012

Address: 33883 Berry Drive, NE

Albany OR 97322

Facility Contact: Karen Kelley

Facility Phone: (541) 791-0175

Sample Collector (s): **Bob Brown**

Sampling Agency: **City of Albany, Utilities Dept**

DEQ Contact: Michael Mulvey

Office use Only
Affix Work Order Barcode Here

Qtime: _____ Survey: _____

Sample Information

Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
	PWS00012:SRC-BA	Not Applicable	Source Water	5/6/19, 9:30AM	SANTIAM RIVER	
	PWS00012:EP-A	-	S F	5/6/19, 9:45AM	EP FOR VINE ST WTP	
			S F			
			S F			

Relinquished By:	Agency/Company	Date/Time	Received By:	Agency/Company	Date/Time
B. Brown	City of Albany	5/6/19, 10:00AM			

Sample Receipt Checklist *Office Use Only*

Yes	No	Sampled Same Day?	Temperature Check (IR/Sample): _____ C
Yes	No	Cooler Contained Ice?	Yes No Sample preservation checked at time of sample receipt?
Yes	No	Samples collected in the appropriate containers?	Yes No If yes were all samples properly preserved?
Yes	No	Sample containers clearly and properly labeled?	Yes No COC form properly signed?
Yes	No	Samples received intact and without damage?	Sample Receipt Comments
Yes	No	Sample volumes sufficient for requested analyses?	_____
Yes	No	All samples received within their holding times?	_____



Completing the COC form by the collector:

Standard sample and an extra 125 ml EP sample and Cylindro confirmation sample

Oregon Department of Environmental Quality Chain of Custody Record

Facility: City of Albany - OR4100012
 Address: 33883 Berry Drive, NE
 Albany OR 97322
 Facility Contact: Karen Kelley Facility Phone: (541) 791-0175
 Sample Collector (s): **Bob Brown**

Office use Only
 Affix Work Order Barcode Here

Qtime: _____ Survey: _____

Sampling Agency: **City of Albany, Utilities Dept** DEQ Contact: Michael Mulvey

Sample Information						
Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
	PWS00012:SRC-BA	Not Applicable	Source Water	5/6/19, 9:30AM	SANTIAM RIVER	
	PWS00012:EP-A	-	S <input checked="" type="radio"/> F	5/6/19, 9:45AM	EP FOR VINE ST WTP	
	PWS00012:EP-A		S <input checked="" type="radio"/> F	5/6/19, 9:46 AM	EP FOR VINE ST WTP	confirmation
	PWS00012:EP-A		S <input checked="" type="radio"/> F	5/6/19, 9:46 AM	EP FOR VINE ST WTP	confirmation duplicate

Relinquished By:	Agency/Company	Date/Time	Received By:	Agency/Company	Date/Time
B. Brown	City of Albany	5/6/19 10:00AM			

Sample Receipt Checklist *Office Use Only*

Yes	No	Sampled Same Day?	Temperature Check (IR/Sample):	<u> C </u>	
Yes	No	Cooler Contained Ice?	Yes	No	Sample preservation checked at time of sample receipt?
Yes	No	Samples collected in the appropriate containers?	Yes	No	If yes were all samples properly preserved?
Yes	No	Sample containers clearly and properly labeled?	Yes	No	COC form properly signed?
Yes	No	Samples received intact and without damage?	Sample Receipt Comments		
Yes	No	Sample volumes sufficient for requested analyses?	_____		
Yes	No	All samples received within their holding times?	_____		

Completing the COC form by DEQ Lab

Oregon Department of Environmental Quality Chain of Custody Record

Facility: City of Albany - OR4100012

Address: 33883 Berry Drive, NE

Albany OR 97322

Facility Contact: Karen Kelley

Facility Phone: (541) 791-0175

Sample Collector (s): **Bob Brown**

Sampling Agency: **City of Albany, Utilities Dept**

DEQ Contact: Michael Mulvey



Office use Only
Affix Work Order Barcode Here

1905012

Qtime: **46054** Survey: **Week 1**

Sample Information

Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
1	PWS00012:SRC-BA	Not Applicable	Source Water	5/6/19, 9:30 AM	SANTIAM RIVER	
			S F			
			S F			
			S F			

Relinquished By:	Agency/Company	Date/Time	Received By:	Agency/Company	Date/Time
B. Brown	City of Albany	5/6/19, 10:00AM	G. Crosby	DEQ Lab	5/7/19, 9:30AM

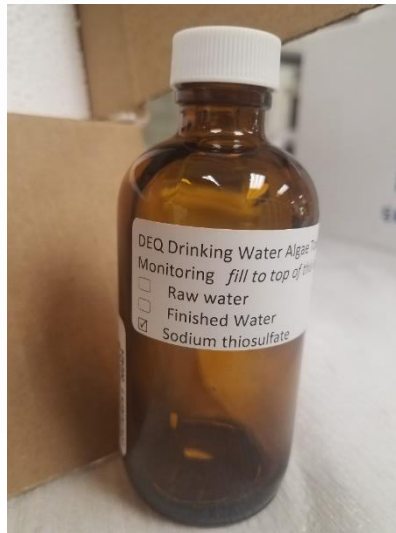
Sample Receipt Checklist *Office Use Only*

- Yes **No** Sampled Same Day?
 - Yes **No** Cooler Contained Ice?
 - Yes **No** Samples collected in the appropriate containers?
 - Yes **No** Sample containers clearly and properly labeled?
 - Yes **No** Samples received intact and without damage?
 - Yes **No** Sample volumes sufficient for requested analyses?
 - Yes **No** All samples received within their holding times?
- Temperature Check (IR/Sample): **9.5** C
- Yes** **No** Sample preservation checked at time of sample receipt?
 - Yes** **No** If yes were all samples properly preserved?
 - Yes** **No** COC form properly signed?
- Sample Receipt Comments**
-
-



Invalid samples

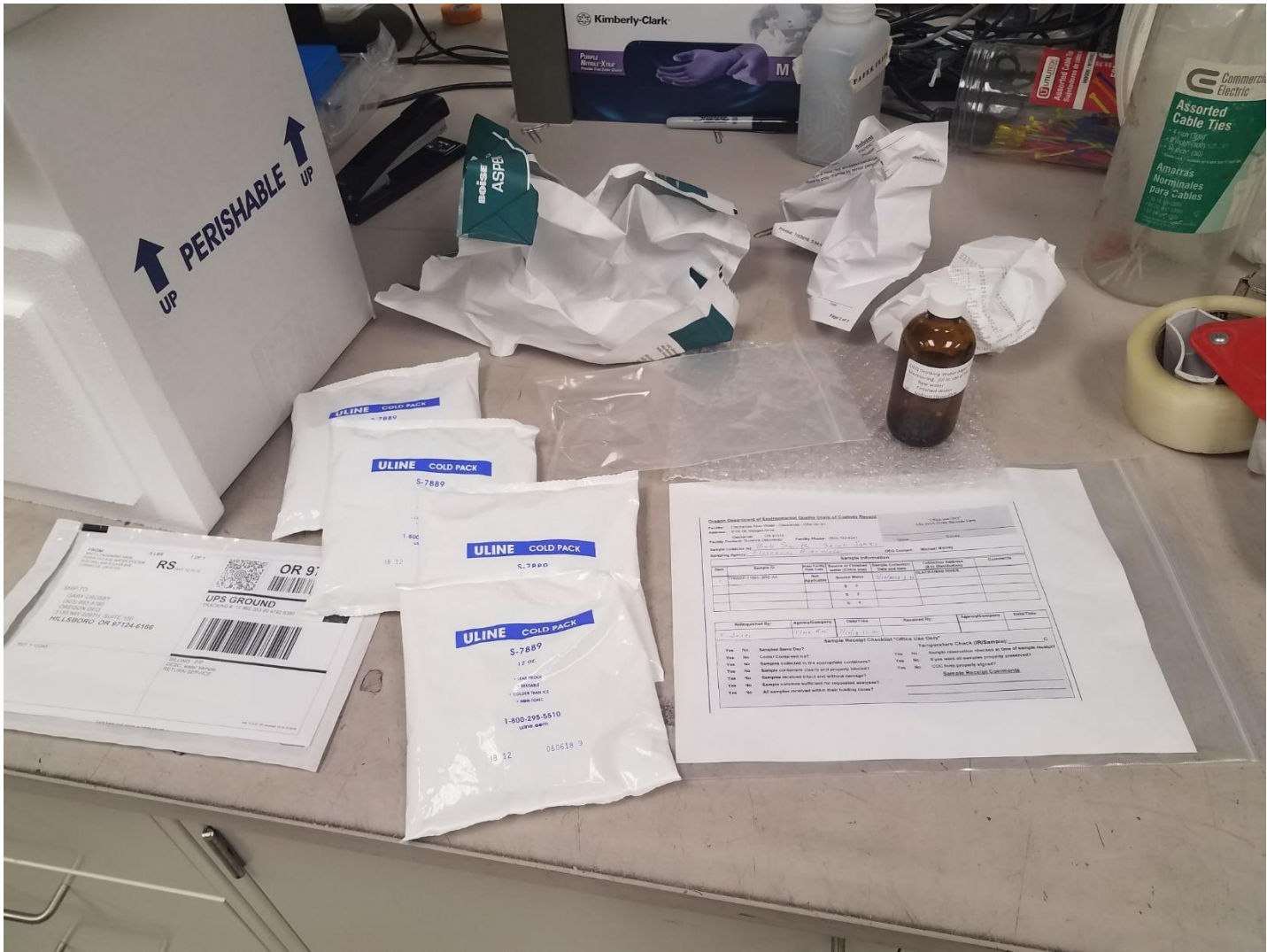
- Too warm. Temperature over 10 C
- Too old. Received lab more than 48 hours after collection
- Broken or leaking bottle
- Over filled
- Maybe incorrectly filled out COC form
- Resample



Checklist for packing the coolers for shipping

- Freeze the gel ice packs before packing cooler.
- Check the labels on sample bottle. Are they filled out correctly?
- Check the completed Chain of Custody form.
- Do samples in cooler match the samples listed on the COC form?
- Sample bottle inside bubble wrap
- Lab forms inside Ziploc bag.
- 4 frozen gel ice packs.
- Fill up empty space with crumpled scrap paper.
- Tape box shut.
- Attached self-adhesive UPS label.
- Drop off at UPS shipper for next day delivery to DEQ Lab.





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Oregon Department of Environmental Quality Chain of Custody Record

Facility: Clackamas River Water - Clackamas - OR4100187
 Address: 9100 SE Mangan Drive

Clackamas OR 97015
 Facility Contact: Suzanne DeLorenzo Facility Phone: (503) 722-9241

Office use Only
 Affix Work Order Barcode Here
 Qtime: _____ Survey: _____

Sample Collector (s): Bob Smith, Sarah Jones
 Sampling Agency: Clackamas River Water

DEQ Contact: Michael Mulvey

Sample Information

Item	Sample ID	Water Facility State Code	Source or Finished water (Circle one)	Sample Collection Date and time	Collection Address (if in Distribution)	Comments
1	TINWSF-11690::SRC-AA	Not Applicable	Source Water	7/16/2018, 8:30	CLACKAMAS RIVER	
			S F			
			S F			
			S F			

Relinquished By:	Agency/Company	Date/Time	Received By:	Agency/Company	Date/Time
S. Jones	Clack. RW	7/16/18 12:00			

Sample Receipt Check *Office Use Only*

Temperature Check (IR/Sample) _____

Sample reservation _____

If yes w _____

Yes No Sampled Same Day? _____

Yes No Cooler Contained Ice? _____

Yes No Samples collected in the appropriate containers? _____

Yes No Sample containers clearly and properly labeled? _____

Yes No Samples received intact and without damage? _____

Yes No Sample volumes sufficient for requested analyses? _____

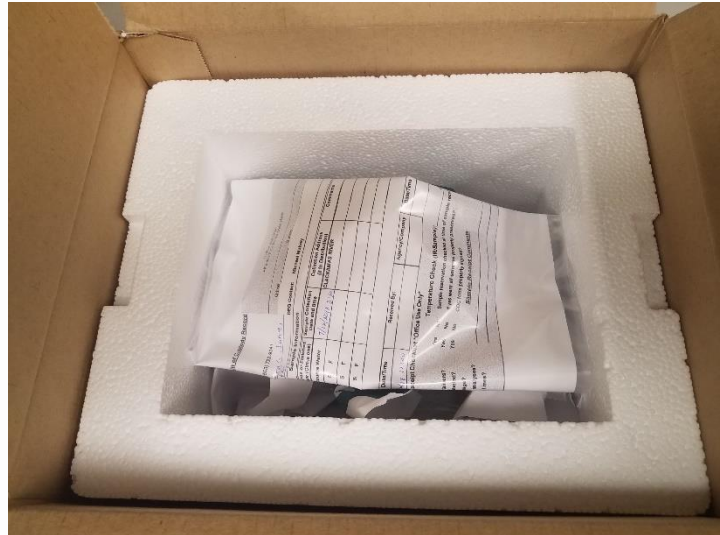
Yes No All samples received within their holding times? _____



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Shipping coolers to DEQ Lab via UPS

- Prepaid overnight UPS shipping.
- Use shipping labels once. Do not photocopy shipping labels.
- No sample receiving at DEQ Lab on Saturday, Sunday and holidays.
- Ask your local UPS service provider when is the latest you have to drop it off for next day delivery to Hillsboro.
- Check the UPS web page for your nearest service providers or call 1-800-742-5877. <https://www.ups.com/us/en/Home.page>



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Results

- Lab information system automatically generates email with results as soon as the data are released.
- I will phone call the facility contact person for results over the rule action level Thursday or Friday.
- I will email OHA with results over the rule action level Thursday or Friday.
- All results uploaded to the OHA data repository weekly.



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Results

DEQ Laboratory and Environmental Assessment Division

Analytical Report

Joint Water Commission
4475 SW Fern Hill Road
Forest Grove, OR 97116

Reported: 4/12/2019 2:29:26PM
Project: Drinking Water Cyanotoxin Monitoring
Project Manager: Michael Mulvey

Sample Name: PWS00379:SRC-AA

Sample Description: TUALATIN RIVER

Sampling Date: 08-Apr-19 08:25

Lab Number (Matrix): 1904053-01 (Source Water)

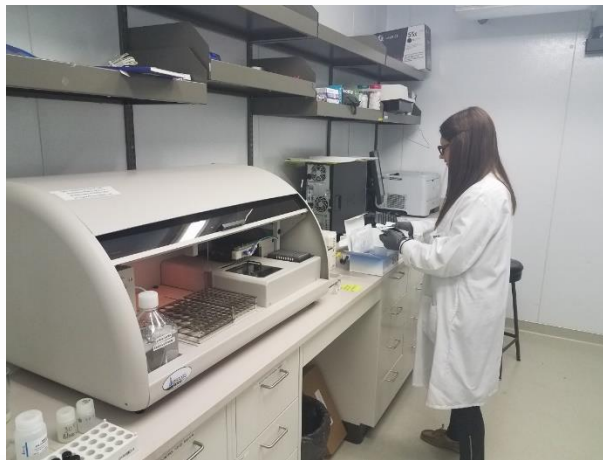
Sample Comments: A01::A

Cyanotoxin Compounds by Enzyme Linked Immunosorbent Assay

Analyte	Result	Reporting Limit	Units	Rule Action Limit	Vulnerable People Limit	People > age 6 Limit	Recreational contact limit
Cylindrospermopsin	ND	0.10	µg/L	0.3	0.7	3	8
	<i>Preparation Date: 09-Apr-19 13:28</i>						
Microcystins ADDA, Total	ND	0.30	µg/L	0.3	0.3	1.6	4
	<i>Preparation Date: 09-Apr-19 09:40</i>						

Optional sample analysis not required by the OHA rule

- DEQ Lab can analyze additional samples for a fee.
- Written agreement between facility and DEQ prior to analysis.
- Specific locations.
- Samples analyzed after OHA samples.
- Separate COC form and analytical report.
- Cost will depend in part on how many samples we receive.
- Contact Mike Mulvey if you are interested.



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Resources and Contacts

- OHA: Rules, FAQs, reporting, resources:
 - www.healthoregon.org/dwp
 - News and Hot Topics – Cyanotoxin rules
 - Contact: Gregg Baird, 971-673-0410 or gregg.c.baird@state.or.us
- DEQ: Sampling, analysis:
 - Mike Mulvey, DW Monitoring Project Manager, 503-693-5732 or Mulvey.Mike@DEQ.state.or.us



Your Questions



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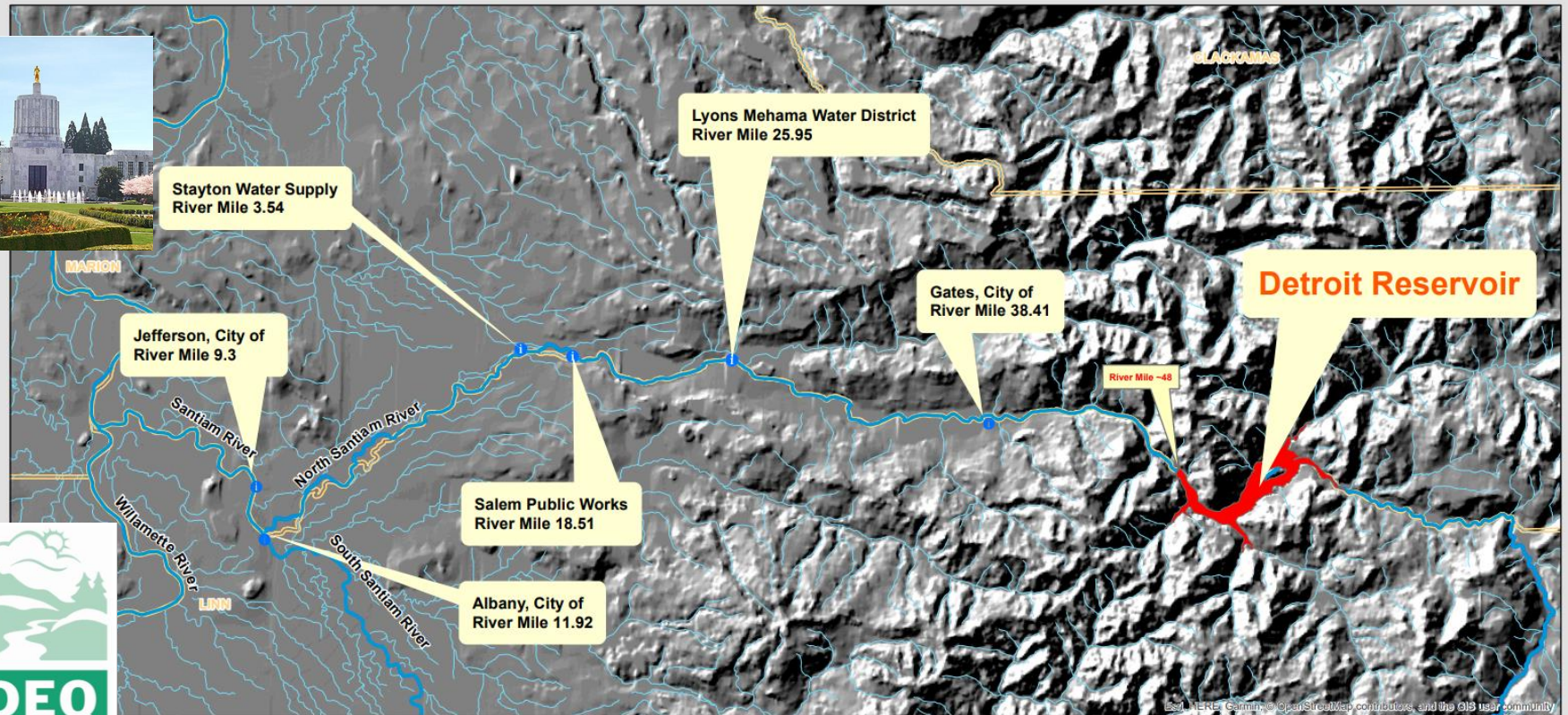
Detroit Lake



Summary of Results

Oregon Drinking Water Algal Toxins Monitoring 2018

Detroit Reservoir Harmful Algae Bloom- Potentially Impacted Downstream Public Water Systems



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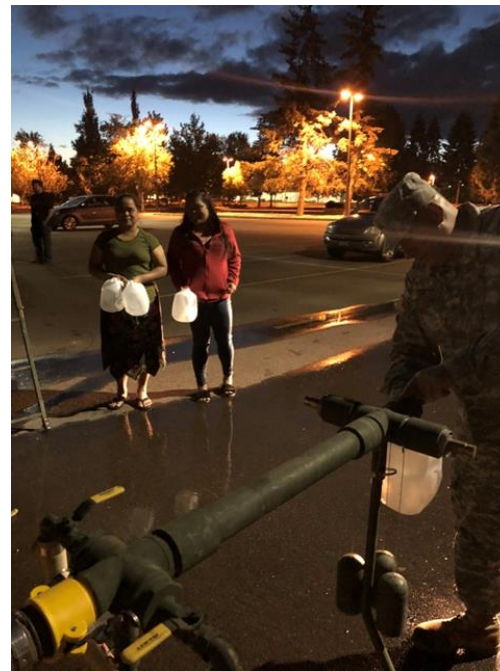
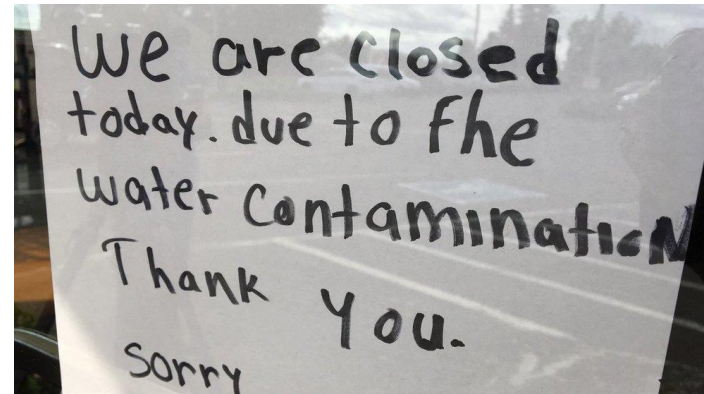
Salem, Oregon, May 2018



Dear Customers,

While the City of Salem drinking water advisory is in place, no beverages that use water or ice will be prepared or sold.

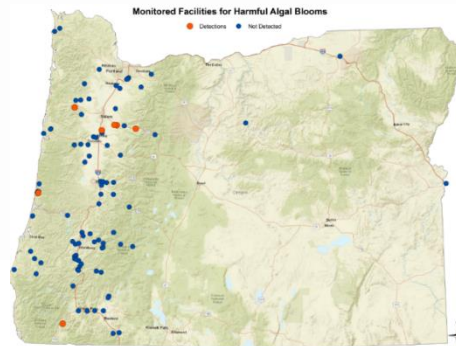
During the advisory the following can be sold: RTD beverages, and RTE food.



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Emergency Rule Monitoring

- OHA and DEQ identified about 100 facilities at risk for HABs.
- Emergency funding from the Legislature.
- 58% of the state population, more than 2.4 million people.
- Largest: Portland Water Bureau, 614,000 people.
- Smallest: Wolf Creek Campground, 10 people.
- 43% of the facilities serve fewer than 1,000 people.
- Biweekly source sampling, more sampling with detections.
- Mid-July to Mid-December.



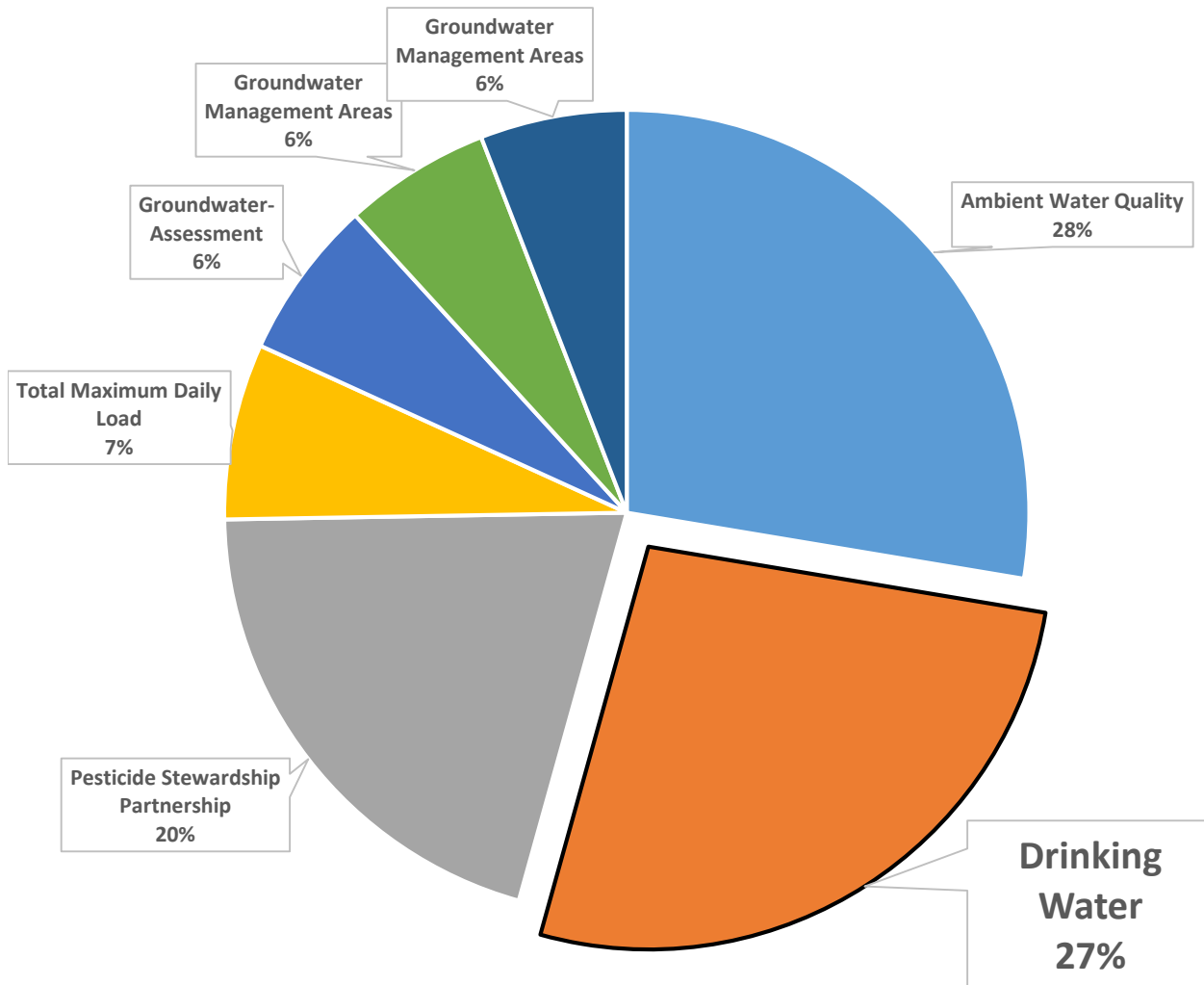
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2018 DEQ Laboratory Activity for Water Quality Monitoring Programs

1,269 Samples
2,173 Analyses

Number of Samples

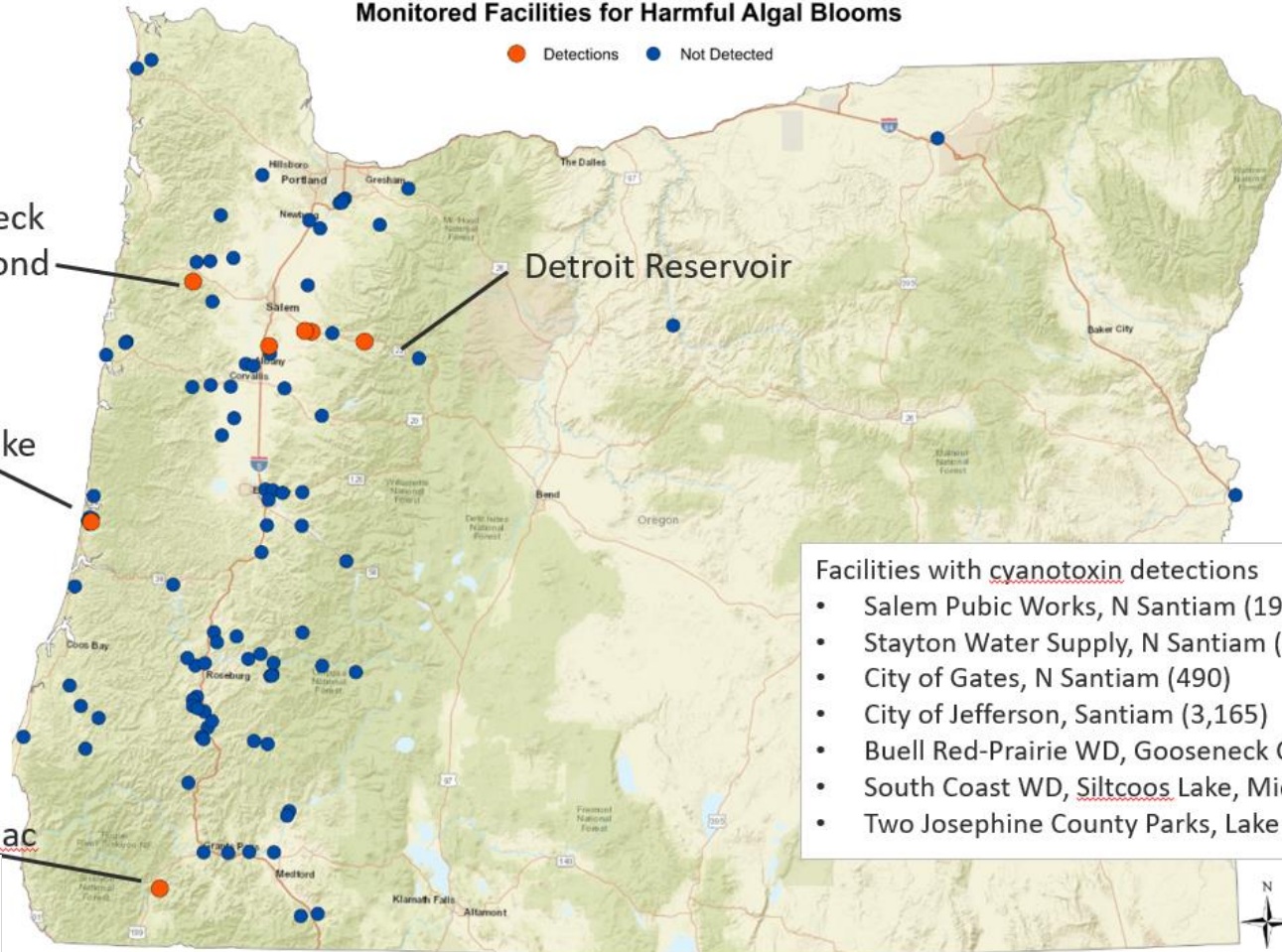


2018

Map by Lesley Merrick, DEQ Lab, January 2019

Monitored Facilities for Harmful Algal Blooms

● Detections ● Not Detected



Gooseneck
Creek Pond

Detroit Reservoir

Siltcoos Lake

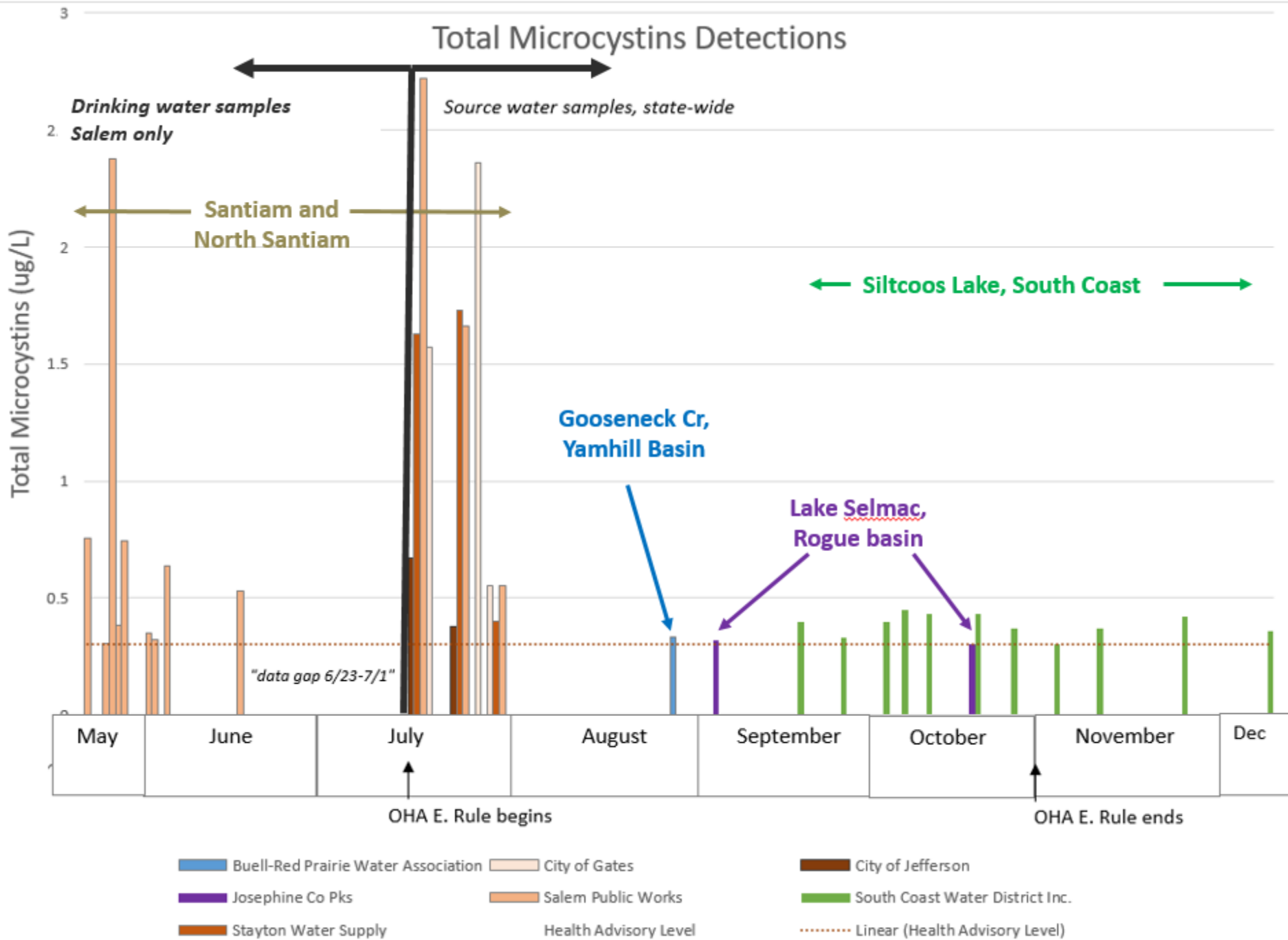
Lake Selmac

- Facilities with cyanotoxin detections
- Salem Pubic Works, N Santiam (192,000)
 - Stayton Water Supply, N Santiam (7,830)
 - City of Gates, N Santiam (490)
 - City of Jefferson, Santiam (3,165)
 - Buell Red-Prairie WD, Gooseneck Cr Pond, Yamhill basin (976)
 - South Coast WD, Siltcoos Lake, Mid Coast basin (200)
 - Two Josephine County Parks, Lake Selmac, Illinois basin (50)

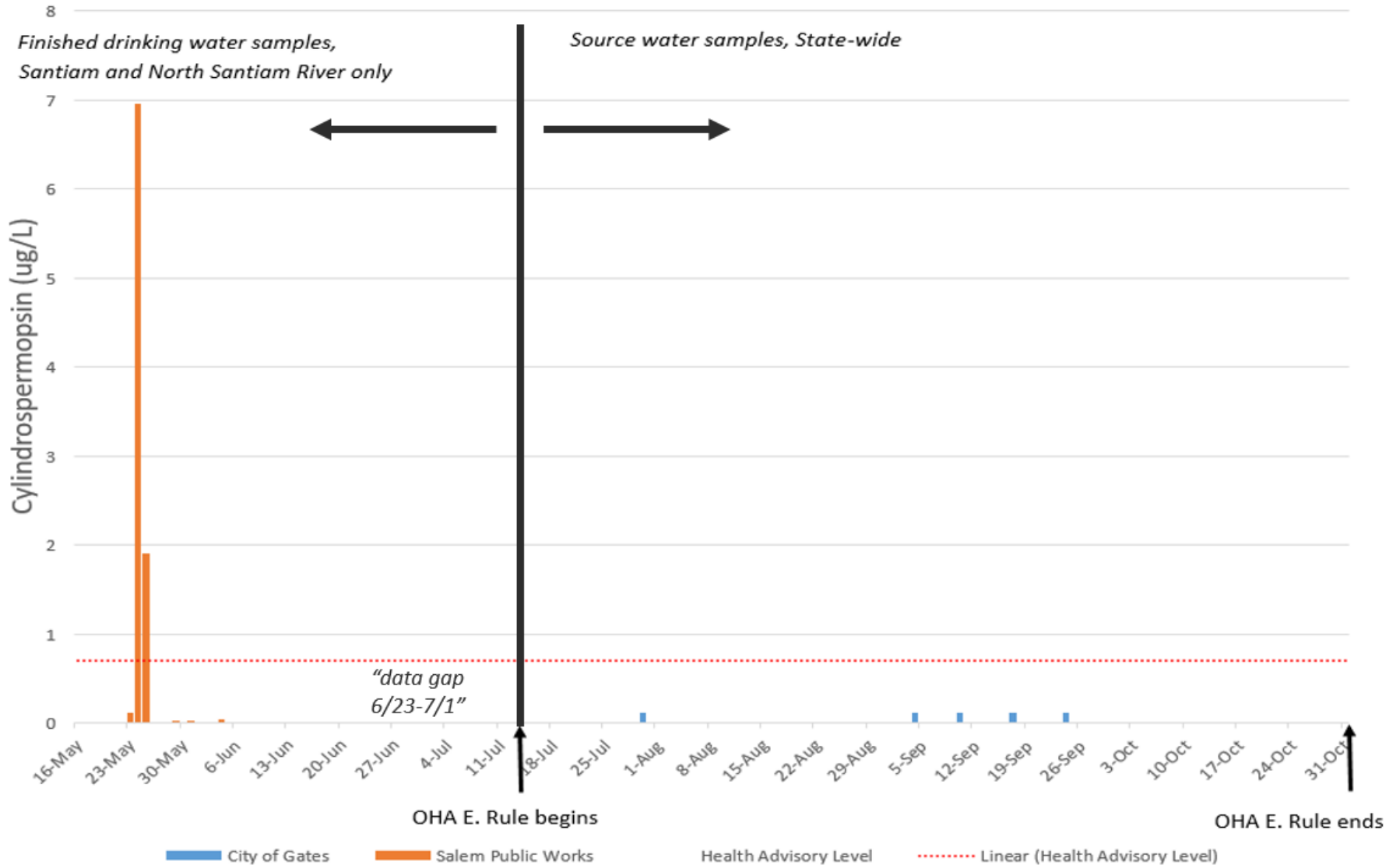


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Cylindrospermopsin Detections



Thank you



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Detroit Lake

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